Do bankruptcy codes matter? A study of defaults in France, Germany, and the UK

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ABSTRACT

This paper studies how bankruptcy codes and creditors' rights affect distressed reorganizations in different countries. Using a sample of 2280 small firms that defaulted on their bank debt in France, Germany and the UK, we find that large differences in creditors' rights across countries lead banks to adjust their lending and reorganization practices to mitigate the expected creditor-unfriendly aspects of bankruptcy law. In particular, French banks respond to a creditor-unfriendly bankruptcy code by requiring more collateral than lenders elsewhere, and by relying on particular collateral forms that minimize the statutory dilution of their claims in bankruptcy. Despite such adjustments, bank recovery rates in default differ substantially across the three countries, with medians of 92% in the UK, 67% in Germany, and 56% in France. Notwithstanding the low level of creditor protection, low recovery rates, and high historical bankruptcy rates in France, we find that pre-distress loan spreads there are similar to those found in the creditor-friendly UK. We conclude that, despite significant adjustments in lending practices, bankruptcy codes still sharply affect default outcomes.

Keywords: Recovery rate; Default; Reorganization; Bankruptcy code.

JEL Classification Numbers: G21, G30, G33

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Introduction

This paper focuses on how bankruptcy codes influence distressed reorganizations and lending practices. We use a large sample of defaulted firms from ten banks in France, Germany, and the UK to examine how bank lenders respond to different levels of creditors' rights incorporated in country bankruptcy codes, and the extent to which observed adjustments help mitigate creditor-unfriendly aspects of the law.

For similar firms filing for bankruptcy in different countries, we could expect different outcomes for creditors depending on the level of creditor protection provided by the bankruptcy code. For example, recovery rates may be lower in debtor-friendly countries, where creditors have little control over the bankruptcy process. However, in anticipation lenders may adjust both the terms of the loan contract, such as the required level of collateral, as well as their reorganization practices following default. Such adjustments would affect the characteristics of defaulted firms and reorganization practices, mitigating the influence of the bankruptcy code on the outcome of default. We study whether important differences in outcomes across countries persist after these adjustments, both in terms of creditors' recovery rates in default, and in the pricing of the original loan contract.

This study focuses on France, Germany, and the UK, because the levels of creditor protection in these countries are very different. In the creditor-unfriendly code of France the State imposes court-administered procedures in bankruptcy with the explicit objective of preserving the firm as a going concern and maintaining employment. To achieve these goals, French bankruptcy courts are not required to sell a bankrupt concern to the highest bidder. The role of creditors is reduced to an advisory function, and their approval is not required to execute a reorganization plan chosen by the court. By contrast, in the UK, although the State provides court-administered bankruptcy procedures, secured creditors can veto them and enforce the default provisions specified in the debt contract instead. In the principal UK procedure (known as administrative receivership), upon default secured lenders have full discretion to realize the firm's assets as they choose, and their actions cannot be challenged in the courts. Germany provides an intermediate level of creditor protection, where collective court-administered procedures are imposed on the parties in bankruptcy, but creditors retain significant control over the restructuring process, and their agreement is required to approve a reorganization plan. These differences across the three countries are reflected in La Porta *et al.*'s (1998, LLSV) scores for creditors' rights, which range from a minimum of 0 for France, to 3 for Germany, and to a maximum of 4 for the UK. The question we address is, how much do these differences matter both for restructuring practices and outcomes of defaults, and for the terms of the loan at origination.

This paper uses a unique dataset of 2280 small-to-medium size firms in France, Germany, and the UK, almost all privately owned, which defaulted on their bank debt. The data have been collected specifically for this study, under the initiative of Standard and Poor's Risk Solutions, from the private records of ten commercial banks, each with a significant market share in their respective country. The data include detailed information on the terms of the loan contract of the defaulting firm, the event of default and its resolution (either bankruptcy or workout), collateral values and sale proceeds, and lenders' recovery rates.

Our analysis shows that in response to the large differences in creditors rights across the three countries, banks adjust both the terms of lending at loan origination, and reorganization procedures subsequent to default. With these adjustments overall recovery rates narrow across the three countries, but large differences still remain. Our findings are summarized as follows. First, we find that banks' recovery rates in default are significantly different across countries when we control for firm characteristics, collateral, and the state of the economy. The ordering of recovery rates in the three countries is the same as the ordering of LLSV scores cited earlier. The differences are much more pronounced in formal bankruptcy procedures, where the influence of the bankruptcy code is greatest. Contrary to our expectations, differences in outcomes in formal bankruptcies do not appear to translate into sharp differences for out-of-court procedures, where recovery rates are very similar across countries.

Second, we find that the incidence of formal procedures in France among defaulted firms is close to that in the UK, even though the lack of control rights results in significantly lower recoveries in bankruptcy for French banks. A factor that may increase the level of bankruptcies in France is the provision in the French code that imposes severe (criminal) penalties on managers who do not report liquidity problems to the authorities in a timely fashion, which may affect the timing of bankruptcy. We also find that, even though control rights in the UK are concentrated in the hands of secured creditors, the incidence of piecemeal liquidations is lowest in the UK, contrary to the predictions of Hart (2000) and Acharya, Sundaram, and John (2004). UK banks explicitly favor going concern sales (see Franks and Sussman, 2005).

Third, collateral is the most important determinant of recovery rates in this size sector. Depending on the rights of secured creditors, the same collateral in different countries can have very different values for the bank. While real estate is by far the most important collateral type in Germany and the UK, contributing about one fifth of total bank recoveries, it accounts for only five percent of recoveries for French banks. Low realizations of real estate and many other collateral types in France reflect the dilution caused by preferential creditors in the distribution of sale proceeds, as well as the ability of French courts to sell collateral at a price below the highest bid. In contrast, accounts receivable can be realized directly by banks, and the proceeds

are not subject to dilution by preferential creditors. As a result, receivables provide the largest contribution to recoveries in France.

Fourth, French banks respond to such dilution of the rights of secured creditors by demanding higher levels of collateral per dollar of debt. Moreover, the composition of different types of collateral reflects their expected value in bankruptcy to the bank; as a result, the most widely used collateral in Germany and the UK is real estate, while in France it is receivables.

Fifth, even in the presence of all these adjustments, default outcomes in the three countries remain significantly different. Median undiscounted recovery rates for the bank are 92% in the UK, 67% in Germany, and 56% in France. Notwithstanding these differences, they would be even larger in the absence of endogenous adjustments. Delays in the realization of assets in bankruptcy reduce economic or discounted recovery rates, and the effects of delays are largest in Germany and smallest in the UK.

Finally, we find that, despite the lack of creditor protection in France resulting in the lowest recovery rates among the three countries, pre-distress interest margins are similar to those in the UK, and lower than in Germany. It is unlikely that this finding can be explained by lower ex ante default probabilities, as bankruptcy rates in France are significantly higher than both in Germany and the UK (Claessens and Klapper, 2003).

Our paper contributes to the literature studying the influence of creditors rights on debt contracts and distressed reorganization. Claessens and Klapper (2003) analyze how legal origins and creditor protection affect the incidence of formal bankruptcy procedures at a country level for a panel of 35 countries. Qian and Strahan (2005) examine their influence on the terms and pricing of bank loans, while Bae and Goyal (2004) focus on the effect of property rights on loan spreads across countries. These papers find that differences in creditors rights, particularly relating to the treatment of collateral, significantly influence the terms of loan contracts.[1] Unlike these papers, we focus on a detailed study of bankruptcy laws at the firm level in a small number of countries, instead of a limited number of metrics of creditor rights in a wide cross-section of countries. This approach allows us to relate directly the differences in debt contracts and outcomes to particular provisions of a code, such as the dilution of collateral proceeds in France.

Our paper documents reorganization practices for small French, German, and UK firms in default. Most available evidence on financial distress comes from large US corporations.[2] Studies of other jurisdictions include papers on bankruptcy auctions in Finland by Ravid and Sundgren (1998), and in Sweden by Strömberg

[1] Several papers, including La Porta *et al.* (1998) and Djankov, McLiesh and Shleifer (2004), study at the country level whether the development of debt markets is related to investor protection and the country's legal origin.

[2] See Asquith, Gertner and Scharfstein (1994), Franks and Torous (1994), Gilson, John and Lang (1990), and Weiss (1990).

(2000) and Thorburn (2000). Data limitations usually restrict available evidence on distressed restructurings to formal bankruptcies. An exception is Franks and Sussman's (2005) study of small company reorganizations in the UK. We know of no other paper that would provide a comparative study of defaults in different countries strictly controlling for data comparability. Finally, our paper contributes to existing studies of recovery rates[3] by documenting the levels and determinants of recovery rates for small firms in France, Germany, and the UK.

The remainder of the paper is organized as follows. The next section briefly outlines the main features of bankruptcy codes in France, Germany, and the UK, and provides a discussion of our hypotheses concerning the effects of bankruptcy codes on debt contracts and outcomes of default. Section III describes how our dataset was collected, and reports summary statistics, banks' recovery rates, and the importance of both the level and types of collateral. Section IV provides evidence on the importance of codes to outcomes including reorganization procedures upon default, recovery rates and interest margins at loan origination. Section V concludes. Further details on the bankruptcy codes in the three countries are provided in the Appendix.

II. Bankruptcy codes and testable hypotheses

A. Bankruptcy codes in the three countries

Bankruptcy laws and procedures in France, Germany and the UK are significantly different. Both the French and German codes require both collective procedures and court supervision, while the UK requires neither. The French code emphasizes the preservation of the going concern and employment, while the UK leaves the contracting parties to the debt contract largely free to implement the procedure stipulated in the contract. These differences are reflected in the scores for creditor rights constructed by LLSV (1998) cited earlier. They illustrate that the three countries in our study correspond to very different creditor protection environments, from very low protection in France to very high in the UK, with Germany in between, albeit closer to the UK.

INSERT TABLE I HERE

Table I provides a summary of the main features of the principal bankruptcy procedures of the three countries and those of the US for comparison. In the UK, in the event of bankruptcy control rights pass to the creditors.

[3]See Altman and Kishore (1996), Altman *et al.* (2002), and Acharya, Bharath, and Srinivasan (2004) for US evidence regarding bond recovery rates. Studies of bank loan recovery rates include Gupton, Gates and Carty (2000) for a sample of 121 traded bank loans of large US corporations, and Araten *et al.* (2004) for non-traded bank loans in an internal study for JP Morgan Chase. The results in the latter paper pertaining to small-firm defaults provide a US benchmark of comparison for the results for our three European countries.

In the principal procedure, administrative receivership, a secured creditor (designated in the debt contract) appoints a registered insolvency practitioner (called 'an administrative receiver') to assume all the powers of the company's board of directors, with the sole purpose of realizing sufficient funds to repay the debts owing to the secured creditor. The receiver has no duty to consider the interests of other lenders, in particular the unsecured, and has full discretion over whether to sell the firm as a going concern or close it and liquidate its assets piecemeal. However, he must respect the security rights of other lenders and the order of priority of their claims, as provided for in the loan contracts; for more details see Franks and Sussman (2005).

In France, in bankruptcy the court appoints an administrator who takes control of the company. The objectives of the administrator, as specified by statute, is to maintain the firm as a going concern, preserve employment, and satisfy creditors' claims, in that order. The court decides whether the firm should be liquidated or preserved as a going concern, and in the event of a sale, the court can choose a low-value bid if it provides for better prospects of employment preservation (see evidence from Blazy, 1989). Creditors cannot veto the decision of the court-appointed administrator, and can only communicate their concerns through non-binding recommendations of a court-appointed creditor representative.

In Germany, the current bankruptcy code took effect in 1999, although it was passed in 1994. Under the most recent code, a court-appointed administrator supervises the bankrupt company and devises a plan of reorganization. The new code introduced for the first time an automatic stay of three months on creditors' claims, the potential for supra priority finance and majority voting rules for approving the reorganization plan. A majority of secured creditors is required for the plan to be approved.

The differences in the three bankruptcy codes are best seen from the perspective of a secured creditor. In the UK, upon default secured creditors are firmly in control of the company. Because there is no automatic stay against creditors' claims or provisions for supra priority finance, the receiver is often under some pressure from secured creditors to sell the assets expeditiously. Unsecured creditors have few control rights and do not participate in the sale of the firm's assets, which severely limits their bargaining power. They do not, as a matter of contract and practice, obtain any payout unless secured creditors' claims have been completely satisfied. As a result, there are no deviations from strict absolute priority, and recovery rates for junior creditors are negligible.

In Germany, the position of secured creditors is a little weaker, since a collective procedure is imposed on the parties, with a three month automatic stay on all claims. Although majority voting procedures can dilute the rights of dissenting creditors, the approval of a majority of secured creditors is required for any plan to be passed by the court.

In France, the rights of secured creditors are most at risk, as their approval is not required to confirm a reorganization plan, nor is it required to sell their collateral. In addition, the State places its own claims and those of employees first in priority when collateral is sold in bankruptcy. Some types of collateral, such as guarantees and receivables, avoid this dilution of the secured creditors' claims. In these cases the secured creditor is first in priority. The rights of secured creditors are further diluted by the ability of the administrator in bankruptcy to raise supra priority finance during the bankruptcy process without the approval of creditors. Supra priority is also available in Germany, but creditors' approval is required. It is not available in receivership in the UK.

Chapter 11 of the US code provides important provisions limiting creditors' rights, such as automatic stay, debtor in possession, and supra priority financing. The bankruptcy process is supervised by the court, but in general all creditor classes must approve the reorganization plan, although they are subject to non-unanimity rules. Thus, the US bankruptcy code is neither as creditor-friendly as that of the UK, nor as hostile as that of France.

B. Testable hypotheses

The need for a state-imposed bankruptcy code can be justified if market frictions preclude efficient recontracting of distressed firms, thereby requiring statutory constraints on the implementation of default clauses in the debt contract.[4] Ayotte and Yun (2004) study the link between an optimal bankruptcy code and the legal environment, and show that the propensity to granting control rights to the creditors in bankruptcy should be higher in countries with inefficient judicial systems and a low-quality judiciary.

Given any bankruptcy code, Coase's theorem suggests that market participants will respond to minimize costs and inefficiencies. In particular, we would expect that in creditor-unfriendly jurisdictions private contracting through changes in lending practices will in part overcome constraints on lending. Djankov, McLiesh, and Shleifer (2004) argue that banks may respond to the lack of control rights in bankruptcy by relying on better screening and monitoring of borrowers ex ante. Qian and Strahan (2005) find that loan characteristics at origination, such as maturity and the presence of collateral, depend on creditors' rights protection. Acharya, Sundaram, and John (2004) show that the optimal capital structure choice for given asset characteristics depends on the allocation of control rights in bankruptcy. In our paper, we use a sample of defaulted firms to study how reorganization practices are modified depending on the country's bankruptcy

[4] Von Thadden, Berglöf, and Roland (2003) argue that in the presence of renegotiation frictions in an incomplete contracting framework it may be desirable to issue debt claims which become jointly inconsistent if the firm defaults. The ex post creditors conflict and the possibility of creditor runs in their model give rise to bankruptcy rules as a necessary part of the optimal financing contract.

code, and the extent to which such adjustments allow banks to mitigate creditor-unfriendly provisions of the code and reduce their losses in default.

Our first hypothesis predicts that for similar firms across the three countries banks' recovery rates in formal bankruptcy will increase with the level of creditor rights, implying the lowest recovery rates in France and the highest in the UK. Since French bankruptcy courts are not obliged to sell bankrupt concerns to the highest bidder, the value of the firm's assets will on average be reduced even in the absence of direct bankruptcy costs. These lower sales proceeds will be further diluted by preferential creditors, and result in lower recovery rates for secured creditors. By contrast, German banks retain significant control over the bankruptcy process, while UK banks have virtually all the control rights to recover their claims, and therefore are likely to achieve higher recovery rates.

It is important to stress that it is only for *similar* firms in formal bankruptcies that this hypothesis holds. By similar we mean defaulted firms are distressed to the same degree.[5] However, legal provisions in the French code subject managers to criminal penalties for failing to report liquidity problems promptly to the Bank of France, thereby encouraging them to report default early. An early default may allow lenders to take remedial action and increase their recovery rates. Also, if the composition and level of collateral alters in response to poor creditor protection, then recovery rates will also alter. The hypothesis also does not directly extend to recovery rates in informal renegotiations, which are not subject to bankruptcy rules. If the ratio of workouts to formal procedures also changes in response to poor creditor protection, then such adjustments may in principle alter the country's ranking in terms of recovery rates when all defaults (bankruptcies and workouts) are included.

Our second hypothesis concerns how bankruptcy codes may affect the relative incidence of formal versus informal procedures.[6] Since banks in France have limited control rights in bankruptcy, resulting (as we show) in low recovery rates, they may rely more on informal procedures than banks in other countries. However, this prediction is not unambiguous for a number of reasons. First, legal provisions require French managers to report liquidity problems, which may increase the proportion of formal bankruptcies among defaulted firms. Second, the greater control rights that UK banks enjoy in bankruptcy procedures may increase their bargaining power outside bankruptcy, making workouts easier to negotiate with firm owners. Third, borrowing from multiple banks is much more common in France and Germany than in the UK, potentially

[5] Due to data limitations, we do not address the important question of whether firms in different countries default at different stages of economic distress, implying different firm market values on entering default. See Davydenko (2005) for US evidence on the determinants of timing of default.

[6] Claessens and Klapper (2003) study how the proportion of firms that file for bankruptcy each year depends on creditors rights. However, since they have no data on workouts, it is unclear whether the differences they report across countries are due to different default rates, or to the relative incidence of workouts conditional on default.

increasing renegotiation frictions and making workouts more difficult. It is an empirical question which of these effects dominates.

While the first two hypotheses are related to default outcomes and preferred reorganization procedures, the third concerns the effect that bankruptcy codes have on the terms of the debt contract at origination, in particular those related to collateral. If, as we expect, the lack of control rights of secured creditors over the sale of assets and the dilution of their claims, lower the value of collateral for French banks, then the banks may respond by demanding more collateral per dollar of secured loan to ensure the same level of security protection.[7] Moreover, we expect French banks to rely more on particular types of collateral, which they can sell directly rather than through the bankruptcy courts, and which therefore are not subject to dilution by preferential creditors.

Finally, we hypothesize that loan interest spreads at origination will reflect expected losses from loan portfolios in each country. In particular, unless defaults rates are lower in France, the low recovery rates in default there should result in higher loan spreads at origination. The assumption regarding default rates is important, since if the overall loan portfolio quality is better in France due to more efficient screening and monitoring, then ex ante expected default losses could be lower than in other countries, despite high loss rates for those few firms that do default.[8] While we only observe spreads for defaulted firms, we use default frequencies reported in the literature in conjunction with our evidence on recovery rates to assess the merits of this proposition.

III. The data

A. Data sources and sampling procedure

Ten banks participated in this study, three in France, three in Germany, and four in the UK. Each observation in the sample corresponds to a particular firm that defaulted during the sample period. In the large majority of cases our bank was the borrower's main bank. We collect for each firm data on loan terms at origination, including limits, maturity and interest rate margins. We also collect information on measures of distress, details of the default event and its resolution, recovery rates for creditors, the different types of collateral at default and their realizations. We compare these realizations with the value of the collateral

[7] Qian and Strahan (2005) find that the presence of automatic stay on assets *reduces* the proportion of loans which are secured. By contrast, we look at the amount of collateral required for secured loans. We contrast our findings with theirs.

[8] Qian and Strahan (2005) regress loan spreads on creditor protection variables, and find no significant association. Their interpretation is that the effect of such variables is absorbed by debt contract terms. This implies that there are offsetting effects both on the probability of default and on recovery rates. We later show that this is unlikely to explain differences in spreads for our countries. See also Bae and Goyal (2004).

on the books of the bank and with the loan outstanding. Where the banks provided us with names of the companies, we use public data sources to supplement bank records on balance sheet and P&L account information and details of reorganization proceedings.

To focus on small-to-medium-sized enterprises (SMEs), we apply the following size criteria: we include in our sample firms with annual sales turnover below 75 million Euro and total debt outstanding with the participating bank in excess of 100 thousand Euro.[9] We applied Basel II default definitions to select companies in our sample. A company was considered in default and included in the sample if any of the following default conditions were present: the bank's loan was more than 90 day past due on a scheduled debt payment, formal insolvency proceedings were initiated against the borrower, a specific loss provision was raised by the bank against the exposure, or the bank's officers, using an internal rating, indicated that a material loss was likely. Our conversations with banks' officers indicate that in practice in the great majority of cases it is the last three criteria that were important for the selection of the sample, but that it is unlikely that an officer would downgrade a borrower to default unless a scheduled payment was more than 90 days due or the loan limit was exceeded.

To monitor the quality of data collection, particularly in light of differences of language and institutions, we contracted with scholars and practitioners in each of the three countries who had local knowledge of the bankruptcy code and familiarity with data collection for distressed firms. For each country, a template was designed to collect data on a company by company basis. A similar template was used for all banks within a country to ensure data comparability. We conducted numerous interviews with authorities in the banks responsible for managing distressed firms, and in many cases we were allowed unrestricted access to the original banks' files. We also held extensive conversations with insolvency practitioners and judicial authorities in the three countries in order to improve our understanding of bankruptcy laws, procedures and practices.

An important issue in our study is one of comparability of data across banks both within and across countries. We discuss these issues below and explain how we control for any perceived differences.

B. Summary statistics

Table II reports the number of companies in our sample, recorded by the date of default and by country. The UK and German samples are concentrated in the years 1996-2003, while the French sample is more widely

[9]While Basel II accord defines the SME segment in terms of turnover, the requirement that profit and loss account data be available for all companies in the sample would greatly reduce its size. We therefore defined the lower bound on firm size in terms of debt outstanding rather than turnover.

spread over the period 1993-2003. Table III shows the number of firms in each country by broad industry group. In each of the three countries, the defaulted SMEs are most frequently found in wholesale/retail trading and less frequently in the construction business. There are very few financial services or utility firms of this size.

INSERT TABLES II and III HERE

Company characteristics are summarized in Table IV. Accounting data are taken from the last accounts published immediately prior to the default date. As a result, leverage is almost certainly above the level at loan origination. Average sales turnover before default is similar in the three countries, €17.4 million in the UK, €18.6 million in France, and €23.8 million in Germany. Average book leverage at default is 61% in the UK, 65% in France and 87% in Germany. These numbers are high compared with those for non-distressed listed firms reported by Rajan and Zingales (1995), which are 48%, 38%, and 28% for France, Germany and the UK, respectively. A second measure of distress, the current ratio (current assets/current liabilities), suggests higher liquidity for French firms at 1.35, compared with just 1.05 in the UK; both are well below the healthy firm's minimum of 2.The higher ratio for French companies may be affected by a legal provision that compels French managers to report when they are having difficulties paying suppliers.[10] High leverage and low current ratios confirm that firms in all countries are seriously distressed.

Defaulted firms in the sample are rarely start-up firms, with the median age at default varying from 7 years in the UK to more than 15 years in Germany. They have long-standing relationships with the main bank, ranging from 3.8 to 4.9 years (medians). Column (6) of Table IV shows the proportion of defaulting firms that enter formal bankruptcy procedures. The proportion is similar in the UK and France, at 75.4% and 78.0%, while in Germany it is higher at 86.9% of defaulted firms. Thus, the incidence of informal workouts conditional on a Basel II default event in the SME sector is relatively low in our sample, especially in Germany. This is a much higher proportion of bankruptcies than those reported by Franks and Sussman (2005) for the UK; they report that only 31.5 percent of their sample of distressed companies entered bankruptcy. While companies in their sample are of similar size to ours, they include firms that banks classified as distressed, but which did necessarily default according to the formal Basel II definition. This comparison suggests that bankruptcy is a much more likely outcome when the firm defaults than when it simply becomes distressed. We know of no comparable statistics for smaller unlisted firms in the US. For a sample dominated by large publicly listed firms, Gilson, John and Lang (1990) report that only 53% of distressed US firms end up in Chapter 11, while about 47 percent successfully restructure outside of formal

[10] As discussed below, the requirement to report distress earlier may also affect the proportion of formal procedures among defaults in France.

bankruptcy.

INSERT TABLE IV HERE

Finally, the last column of the table reports the proportion of piecemeal liquidations, where the firm is closed prior to asset sale. These include liquidations in bankruptcy as well as private sales, although the latter are small in number. The proportions are similar in France and Germany, 62.0% and 56.9%, respectively, but much lower in the UK at 42.9%. These results are not consistent with predictions based upon some of the literature. For example, Hart (2000) suggests that because senior secured creditors are in control of the UK bankruptcy process, they will have less interest in the going concern value and as a result there will be more inefficient (piecemeal) liquidations.[11] Comparisons of the percentage of going concerns across our countries should particularly favor France because of the explicit commitment in the bankruptcy code towards the preservation of the going concern, even though piecemeal sales may imply higher proceeds. Other factors may be affecting outcomes, including macro-economic conditions which may constrain the supply of buyers bidding for bankrupt firms, and the competence of banks in managing distress. Subsequent regressions confirm the observed patterns of bankruptcy and liquidation across the three countries, controlling for particular firm characteristics that may influence the outcome of reorganization.

C. Firm debt characteristics

Table V summarizes the characteristics of the debt outstanding with the banks, on the default date. Although some firms may have banking relationships with several banks, we have information from participating banks only on their own debt facilities. For more than 90% of firms in the UK sample, our bank is the main bank lending to the firm. For the French sample the equivalent figure is lower at 59%, reflecting the fact that borrowing from several banks is much less common in the UK.

Throughout our analysis, we include all loans and overdrafts (credit lines) outstanding for the firm with the participating bank. We also have data on 'non-cash' facilities, such as performance bonds, guarantees, and interest rate swaps; however, these are excluded from our analysis, since our evidence suggests that they do not involve significant credit risk for the bank even when the firm becomes bankrupt. In much of our analysis, we aggregate all cash facilities, calculating the firm's total debt outstanding as well as the total loss on such facilities, and report the bank's overall recovery rate for the firm. This approach allows us to avoid the issue of the arbitrary allocation of recovery proceeds to different related loans by banks, and focus on bank's total losses.

[11] This argument assumes that the senior creditor is not impaired in default and therefore is not the residual claimant.

Table V shows that the average total debt outstanding at default with the bank, called Exposure at Default (EAD), is €960,000 in the UK, €600,000 in France, and €2.41 million in Germany. The medians are smaller, at €244,000, €269,000, and €1.23 million, respectively. These statistics confirm that German firms in the sample are larger than those in the UK and France on the basis of debt exposure as well as sales turnover. In the analysis below we use total debt exposure to the reporting bank as a measure of a company's size.

The second column in Table V reports the proportion of EAD that is secured (collateralized) at the time of default. The table shows very substantial differences in the levels of collateral across the three countries. While the median value of collateral in Germany is only 41% of the total debt outstanding, it is 62% in the UK, and as high as 104% in France. The figures suggest that German firms appear to be able to borrow without posting as much collateral as UK or French firms. Since we show that collateral has a major impact on creditors' recovery rates, high levels of collateral in France suggest that banks can mitigate the effects of debtor-oriented provisions of the French bankruptcy code. However, these differences in levels of collateral may also reflect differences in valuation methods, such as the degree of conservatism shown by the banks in valuation, and the timing of revaluations. We find that UK banks tend to formally update their collateral value estimates for distressed companies, whereas French banks do not. We also find that German banks are very conservative in their valuations, placing zero value on personal and company guarantees. Finally, some banks use the original cost or (written down) book values rather than open market values for particular types of collateral. More frequent revaluations of collateral may lead to demand for more collateral, if revaluations show the loan to be less secure. Competition among banks across the three countries may also affect the ability of banks to demand collateral. These issues are important when we consider the proceeds of sale of collateral and cross-country comparisons.

INSERT TABLE V HERE

Table V also provides statistics on the average number of loans per distressed company, the proportion of loans that are long and short term, and those that are subject to repayment on demand (overdrafts). Long term loans are defined as those with a maturity of more than one year, and the proportions for each firm are calculated on a value-weighted basis. The proportion is highest in France at 43%, and lowest in Germany at 19%, where the use of overdrafts by defaulting companies is much more common.The average maturity of long term loans, calculated at loan origination, is between 6.5 and 8.8 years depending upon the country. Much of the lending in France (52% of the total) is at fixed interest rates, while as much as 94% of UK

lending is contracted at variable rates.Thus, debt characteristics in the three countries differ significantly along a number of dimensions.

The last column of the table reports statistics on the interest rate margin stipulated in the loan contract at its origination. For floating-rate loans, this is the loan margin reported in the loan contract, adjusted for the difference between the reference rate and the applicable LIBOR rate. For fixed-rate loans, it is the difference between the loan rate and the level of the reference risk-free rate in the respective country on the date of spread measurement, adjusted by the applicable fixed-to-LIBOR swap spread. Interest margins are very similar in France and the UK and highest in Germany. The mean margin is 224 basis points in France, 223 in the UK, and 290 in Germany. We provide evidence below that loan margins depend on the type of debt instrument used in our sample, for example, German firms rely more on high-price short-term debt often originated around the distress event. Thus, comparisons should take account of differences in the amount of new debt negotiated around the default event.

D. Company recovery rates

We calculate company recovery rates as one minus the bank's total final loss (write-off)[12] over Exposure at Default (EAD), which is the total debt amount on all loans outstanding with the bank at the date of default. We focus on nominal (undiscounted) recovery rates. For a subsample of firms, we have detailed information on the timing of cash flows in bankruptcy that constitute the banks' recovery payments. We find that the median duration of the cash flows from the date of default is 0.78 years in the UK, 1.81 years in France, and as much as 3.58 years in Germany. The median *total length* of reorganization proceedings is 1.45 years in the UK, 3.05 years in France, and 3.82 years in Germany. By comparison, Araten *et al.* (2004) report mean recovery periods for a US bank for middle-market firms of 2.15 years. With these statistics in mind, we do not formally report discounted recovery rates, as data requirements on the timing of cash flows would reduce our sample considerably. However, reorganization periods reported above suggest that discounting makes little difference for UK banks, which recover their loans quickly, but will have a greater impact particularly for Germany. On a small sample, we have calculated that for high discount rates (e.g. 15%), longer reorganization periods in Germany make economic recovery rates closer to those in France, but the ordering of countries in term of economic losses remains the same for smaller discount rates.

Table VI summarizes undiscounted recovery rates for defaulted firms in the three countries. Recovery rates for all defaults, reported in Panel A, differ considerably across the three countries. Consistent with the

[12] A small number of the cases are still open as of the time of writing, and final write-offs are not yet available. In such cases we use latest available provisions as an estimate of future losses on resolution.

LLSV rankings for creditor rights, median recovery rates are lowest in France (56%) and highest in the UK (92%), with Germany in the middle (67%). The differences across countries are significant, both economically and statistically, despite evidence reported below that banks adjust their lending and reorganization practices to mitigate the creditor unfriendly nature of their country's bankruptcy code, particularly in France.

It is interesting to compare these recovery rates to those documented in previous studies. For a sample of small to medium-sized *bankrupt* firms in the UK, Franks and Sussman (2005) find mean recovery rates of 74–77 percent. Our figure is similar to theirs at 70 percent. Gupton, Gates and Carty (2000) estimate average recovery rates on traded senior secured bank loans for large US corporations of 70 percent; this number falls to 52 percent for senior unsecured loans. For the middle-market segment, Araten *et al.* (2004) also report bank recovery rates of 70 percent.

INSERT TABLE VI HERE

Figure I shows the distributions of recovery rates by country. In Germany and the UK the most common outcome is 100 percent recovery for the bank. By contrast, for France a distinct feature of the distribution is its bi-modal shape, with zero recovery being the second most common outcome; it also has a distribution that is hardly skewed, resulting in almost equal mean and median values of 54 and 56 percent. We find in our subsequent analysis that this bimodal distribution is largely explained by the median recovery for secured loans of 100%, while the median for the unsecured is zero; combining recovery rates for secured and unsecured lending on a firm by firm basis for the main bank produces two distinct peaks corresponding to full and zero recovery. In a US study, Araten *et al.* (2004) also report a bi-modal distribution of the bank's recovery with the higher mode at 100% recovery rate, which is not dissimilar to our French distribution, but has a somewhat more pronounced tilt towards full recovery and less – towards full loss.

INSERT FIGURE I HERE

Panel B of Table VI reports recovery rates by the type of procedure. Recovery rates in formal bankruptcies are lower than those for all defaults in the three countries, without any change in ordering. The median recovery rate in formal bankruptcy proceedings is 39% in France, 61% in Germany, and 82% in the UK. Panel B also shows recovery rates for informal procedures and for piecemeal liquidations. As expected, recovery rates in informal renegotiations are higher than in bankruptcies for all three countries. In France, median recovery rates are 100% and the mean is 83%, which is substantially higher than in formal procedures. In

the UK and Germany, although recovery rates are higher in workouts than in formal bankruptcy procedures the differences are much smaller than in France. Whereas the results for the UK and Germany are to be expected, since secured creditors have very significant control rights in bankruptcy, they are much less so for France. If the value of assets is the same at default in different countries, low creditor control rights in France should be accompanied in workouts by more debt forgiveness to borrowers and therefore lead to lower recovery rates to lenders.The fact that recovery rates are so high in workouts in France suggests that the value of assets at default is much higher than in other countries.

Panel B also shows that banks' recovery rates in piecemeal liquidations in Germany are only a little higher than for French banks, and that both realize approximately only half of what UK banks are able to recover in piecemeal liquidations. Strong control rights for secured creditors in UK bankruptcy procedures affects the UK–France comparison, but not comparisons with Germany, where control rights for secured creditors are quite high. The differences must also reflect levels and quality of collateral, an issue addressed in Panel D of the table.

Panel C of Table VI reports recovery rates by industry. There are few visible differences in patterns of recovery rates across industries. Company recovery rates are higher for construction and services, but further analysis reported below reveals that the differences are not statistically significant. We find no evidence that industry patterns systematically influence recovery rates. The lack of industry significance is consistent with findings of Gupton, Gates, and Carty (2000) and Araten *et al.* (2004) for bank loans in the US, but differs from the patterns documented by Altman and Kishore (1996) for defaulted US bonds.

Panel D reports company loan recovery rates for different samples partitioned by the fraction of debt which is secured. For all three countries recovery rates increase (almost) monotonically with the percentage of the loans secured. In the UK the large majority of the sample have collateral in excess of 80% of the loans outstanding. There are only a very small number with collateral below 40%, and even for these, recovery rates are almost 60% or more of the loan's face value. This suggests that firms giving the bank low collateral are of high quality and the collateral has high resale value in the event of default. The results for France also show a larger numbers of firms at relatively high collateral levels, but for those firms with collateral below 40% recoveries are small and below 20%. In contrast, for Germany, there are few firms with very high levels of collateral, above 80%; however, as described earlier this reflects in part more conservative valuations, a subject we return to below. For comparison, Araten *et al.* (2004) find that US bank recovery rates for secured loans is about 72%, while for unsecured loans it is less at 60%.

Comparisons with the US results suggest that for secured loans the US ranks second behind the UK,

and for unsecured loans ranks first. Given that the US scores, according to the LLSV index of creditor rights, 1 compared with 3 for Germany and 4 for the UK, these recovery rates are higher than we might have expected. It maybe that the creditor rights scores for the US, based as they are upon Chapter 11, are less applicable to SMEs, which may rely more on Chapter 7 than Chapter 11. Other interpretations are that the size of assets at default is larger than elsewhere because default is called earlier or bankruptcy procedures preserve more of the going concern.

E. The use of collateral

Whereas previously we reported recovery rates by the fraction of the company's loans that were secured, in the following two tables we describe the relative importance of each type of collateral both at the time of default (ex ante collateralization, Table VII) and when the assets of the company are realized (ex post contribution to recovery, Table VIII). Panel A of Table VII shows the importance of collateral types in the three countries expressed as a proportion of total collateral value. In the UK, real estate, guarantees and debtors are the most important types, although the value of real estate exceeds that for the other two types combined. Panel B shows the same collateral types but with their values expressed as a proportion of debt outstanding. The relative importance of the three forms of collateral are unchanged. In France, guarantees, debtors and real estate are the most important types, but in contrast to the UK, real estate comes a poor third contributing only 11 per cent of value. The figures in Panel B give a similar picture although real estate appears now slightly more important than in Panel A. The relative importance of debtors and guarantees confirms our earlier description of the bankruptcy code that collateral which avoids the dilution caused by preferential claims plays an important role in France. In Germany, real estate is overwhelmingly important, with guarantees being a very distant second, reflected in the statistics in both Panels A and B.

INSERT TABLE VII HERE

In Table VIII, we report the contribution to recovery rates of proceeds from the sale of different types of collateral. In Panel A the proceeds are expressed as a proportion of the estimated value of all collateral reported at default, and in Panel B as a percentage of total recovery of the bank. For the UK, the figures in Panel A show that the ratio of proceeds to valuation is very close to 100% for most types of collateral, reflecting more up to date valuations by banks for distressed firms. The figures in Panel B present a different picture, since they give the importance of collateral proceeds in terms of total cash flow recoveries to the

bank.[13] Real estate is the most important contributor, accounting for 22% of total recoveries, with debtors accounting for another 13% and guarantees for 7%. Thus, debtors contributes far more to realizations than guarantees, even though Table VII might suggest that ex ante their values are similar. We believe this illustrates the stale nature of some collateral values as well as difficulties in forecasting realizations.

INSERT TABLE VIII HERE

In Table VIII, we report that for France, proceeds of sale of collateral are on average 35% of valuation, compared with 83% for the UK. As reported earlier, French banks do not often revalue their collateral with the onset of distress. The low level of realizations could also be due to dilution of claims by preferential creditors, higher priority claimants, or to low realizations arising from stale valuations and the decline in the quality of collateral caused by the company's distress. The decline in quality may reflect the asset specificity of the collateral; for example, debtors and guarantees are more likely to suffer from distress than real estate.

We provide some evidence on the impact of dilution on collateral proceeds in France by preferential creditors, using data on gross realizations and net bank proceeds for a sample of 243 collateral items. We find that, for collateral types for which the State cannot dilute the bank's claims, such as guarantees or trade finance, almost all proceeds accrue to the bank. In contrast, for real estate, which is subject to dilution of preferential creditors, only 59% of the sales proceeds accrue to the bank. This is consistent with the evidence presented in Panel B, which shows that in France debtors and guarantees are the most important contributors to the bank's total recoveries.[14] No other type of collateral contributes more than 5% to total bank proceeds.

For Germany, Table VIII shows that the ratio of proceeds to collateral value is high for real estate, but very low for all remaining types. Real estate contributes 17% of all bank proceeds, and the next most important type, guarantees, contributes only 6%.

There is strong evidence that collateral matters for recovery rates. However, comparisons of collateral values across banks and across countries are affected by the timeliness of valuations and the degree of conservatism adopted by the banks. Nevertheless, our findings suggest that banks choose types of collateral that avoid the more creditor-unfriendly aspects of their bankruptcy code, such as dilution by preferential claims. Differences in the composition of collateral will also lead to differences in asset-specificity, for example proceeds from guarantees will be more affected by distress than real estate.

[13] The percentages in Panel B of Table VIII for the different types of collateral add up to less than 100% since the proceeds of unsecured loans are included in total bank recoveries.

[14] However, the supply of these claims is limited by the nature of the business and the wealth of the owners, and therefore strong differences in recovery rates remain.

IV. Regression analysis

A. Overview and control variables

In this section we perform cross-country regression analysis on the choice of reorganization procedure, recovery rates, and interest margins. The principal question we address is, do the differences across countries reported in Table IV persist after controlling for various firm, industry, and macroeconomic variables? Given that our focus is on international comparisons, we do not attempt to build comprehensive models explaining the variation of the dependent variables *within* each country. For (mostly large) US firms, a number of papers have studied the choice of formal bankruptcy vs. workouts,[15] the determinants of recovery rates,[16] and interest rate spreads on bank loans. Data limitations preclude us from using some of the variables that such studies find important, in particular those based on accounting statements. However, our tests using a limited sample of firms for which data are available suggest that our conclusions regarding the significance of *country dummies* in reported regressions would not be altered. For example, when we employed firm leverage and liquidity where available, they typically were insignificant, and inter-bank comparisons were not affected by their inclusion.[17]

We use firm-specific variables, including firm size and age, collateral, and debt characteristics. We use Exposure at Default (EAD) to control for firm size. Where the firm has accounts with several banks (more typical of France and Germany than the UK), this measure may understate the total firm's debt and thus its size. Another control variable is the fraction of debt secured, equal to the ratio of the collateral value at default to EAD. One may expect that banks would be more willing to avoid formal procedures and renegotiate privately if collateral is inadequate. We also look at the presence of particular collateral types, and we use the age of the firm at default (from incorporation) as a proxy for relationship banking and information asymmetry issues.[18] We hypothesize that for older firms the uncertainty about the asset value is smaller, making the bank more willing to make concessions in an informal renegotiation rather than demand repayment through the initiation of a formal bankruptcy procedure. Given the importance of firm age in predicting bankruptcy (documented below), we shall also use this variable as an instrument in recovery rate regressions.

To control for any possible industry effects, we use industry dummies in our regression specifications.

[15] See, for example, Gilson, John, and Lang (1990), Asquith, Gertner, and Scharfstein (1994), and Yost (2002).
[16] For example, Altman and Kishore (1996), Altman *et al.* (2002), and Acharya, Bharath, and Srinivasan (2004).
[17] These results are available on request.
[18] Giammarino (1989) argues that information asymmetry is an important factor for the bankruptcy decision, while Chen (2003) provides empirical evidence that there is more information asymmetry for Chapter 11 US firms for those in workouts.

In addition, the country's GDP is included to capture variations in the general level of economic activity within the country across different stages of the business cycle. For each country, we normalize the levels of GDP by its value in year 1991 (the first year with a significant number of defaults in our sample), and also subtract the exponential time trend, estimated between years 1991 and 2003.

B. Bankruptcy and liquidation

Univariate statistics reported in Table IV suggest that the percentage of workouts is the lowest in Germany, and the percentage of piecemeal liquidations is the lowest in the UK. Using regression analysis, we re-examine this result, and study the factors that affect the outcome of default, a formal bankruptcy procedure or a workout, and whether it will be followed by a liquidation or preserved as a going concern. Country bankruptcy codes provide different incentives to choose a particular form of reorganization. For example, French banks may choose to rely more on informal procedures than banks elsewhere, because they have no control over the bankruptcy process. In the UK, the concentration of control rights in the hands of the most senior creditor may be expected to result in more piecemeal liquidations than elsewhere (Hart, 2000; Acharya, Sundaram, and John, 2004). By contrast, we might expect the lowest incidence of liquidations to be in France, where the proclaimed objective of bankruptcy is to preserve the firm as a going concern.

Table IX presents the results of logit regressions of the probability of a formal bankruptcy, and of eventual piecemeal liquidation. The independent variables include country dummies (with France as the omitted dummy), exposure at default (our size measure), the fraction of debt secured by collateral at default, firm age as a control for the uncertainty about the value of the firm's assets, the normalized GDP level in the firm's country in the year of default, and industry dummies.

Regressions (1)–(2) of Table IX address the choice between formal and informal reorganizations. The dependent variable in these regressions equals one if the defaulted firm is reorganized in a formal bankruptcy, and zero otherwise. The regressions show that the incidence of formal bankruptcies in default is significantly higher in Germany than in both France and the UK, confirming the univariate results. Surprisingly, it is the UK rather than France that has the highest proportion of workouts, although the difference between the two countries is not statistically significant.

In regressions (3)–(4) the dependent variable equals one if the firm is eventually shut down and liquidated piecemeal (which may or may not be in formal bankruptcy), and zero if it was preserved as a going concern. The proportion of piecemeal liquidations is higher in Germany than in France, but the difference is insignificant. The most striking result is that the UK has the lowest proportion of liquidations among the three

countries, again confirming our earlier univariate results; it is significantly different from both Germany and France (regression (3)). In regression (4) the UK again has the lowest proportion of liquidations, although the differences with the other countries lose statistical significance.

The effect of other control variables on reorganization practices is broadly consistent with our expectations. Larger firms are somewhat more likely to be reorganized out-of-court and preserved as going concerns, although the effect is statistically insignificant when we control for collateral levels. Higher levels of collateral imply a higher incidence of bankruptcies, suggesting that banks use formal procedures to force the sale of collateral. While high security levels also correspond to more liquidations, the dependence is insignificant. We do not find that the stage of the economic cycle, as proxied by GDP, significantly affects the incidence of bankruptcy or workouts. There are also few discernible industry patterns of reorganization for firms of this size.

Of special interest for our purposes is the strong influence of firm age on the way the defaulted firm is reorganized. Older firms are less likely to be put into bankruptcy; upon default, banks are more willing to engage in negotiations with such firms, probably because there is less uncertainty about their prospects, in part because of greater knowledge of the firm's management. Older firms are also less likely to be eventually liquidated piecemeal. The importance of the firm age in regressions (1)–(2) allows us to use it in the analysis of Subsection C as an instrument for the decision to reorganize in bankruptcy.

INSERT TABLE IX HERE

Why does the UK have the highest percentage of workouts and the lowest percentage of piecemeal liquidations, particularly given its high level of creditor control rights? There are several potential factors that might increase bankruptcy rates in France and decrease them in the UK. First, legal provisions require French managers to report liquidity problems, which may increase the incidence of formal bankruptcies. For example, if uncoordinated trade creditors, who otherwise would be uninformed, learn about the firm's distress through these announcements, they may precipitate premature bankruptcy. Second, the greater control rights that UK banks enjoy in bankruptcy procedures may increase their bargaining power outside bankruptcy, making workouts easier to negotiate with firm owners on terms acceptable for the bank. Third, borrowing from multiple banks is much more common in France and Germany than in the UK, potentially increasing renegotiation frictions and making workouts more difficult in those two countries.[19] Fourth, the

[19]Brunner and Krahnen (2002) study credit pools in Germany for unsecured bank creditors, which are often provided for in loan contracts. These serve as a means of resolving some of the coordination problems arising from multiple lending in Germany.

recession of the early 1990s and large loan losses precipitated a switch by UK banks towards centralized management of distressed firms, mitigating the coordination problems between different branches of the same bank. Lack of coordination was perceived to have resulted in an over-supply of assets of bankrupt firms. Because a few large banks dominate the UK market, centralization of the management of distressed firms may have allowed them to regulate the supply of bankrupt firms by encouraging workouts, and thereby reducing any excess supply of bankrupt assets. By contrast, such 'oligopolistic' behavior may not be feasible in France or Germany, where coordination failures between *banks* are more likely due to the greater number of banks and the decentralized process of managing distressed companies. Our data collection experience suggested that French and German banks usually manage distressed firms on a regional rather than on a centralized basis.

Concerning differences in rates of piecemeal liquidations across countries, several factors may be at work. First, if the bank is the residual claimant when a firm defaults, it will have incentives to achieve the maximum realizable value, rather than simply sell collateral quickly. Franks and Sussman (2005) show that unsecured and preferential creditors in the UK receive virtually nothing in formal procedures, which implies that banks are in fact residual claimants in many cases. Second, UK banks are often not only the main bank lender, but also the only lender. As a result, coordination problems between creditors, which could result in sub-optimal liquidation, may be less likely. Third, the number of bankrupt firms as a proportion of all firms in business in France and Germany is higher than in the UK (Claessens and Klapper, 2004). This may restrict the demand for bankrupt going concerns in the economy. It is the net effect of all these factors that is likely to cause the cross-country differences in the incidence of bankruptcy and liquidations that we document.

C. Recovery rate regressions

Table X reports regressions of the determinants of banks' recovery rates across countries. The questions these tests address is, are recovery rates across countries different, and if so, under what conditions are the differences more pronounced? Regression (1) does not control for variables that can be adjusted endogenously in response to the country's bankruptcy code, such as collateral and the choice of reorganization procedure. This 'reduced form' regression is used to compare recovery rates across countries for all defaulted firms in the presence of such adjustments. Regressions (2) to (4) introduce progressively more controls for collateral and the reorganization procedure. They allow us to analyze the differences in outcomes for *similar* firms across countries. Finally, regressions (5) and (6) are for subsamples of bankrupt firms and informal workouts, respectively. It is for similar firms in bankruptcy that we expect the impact of the bankruptcy code to be the most pronounced.

Regressions (1)–(3) are estimated using OLS. Regression (4), which controls for the endogenously chosen reorganization procedure (bankruptcy or workout), is estimated using firm age as an instrument for the choice of the procedure. Tests of Subsection B demonstrate that this variable is a robust predictor of whether a defaulted firm will file for bankruptcy. This, and the fact that firm age is less likely to influence recovery rates directly, suggests the use of this variable as an in instrument to control for the endogeneity of the bankruptcy decision. Regressions (5) and (6) ask the question, how different are 'in-bankruptcy' and 'in-workout' recovery rates across countries, using the corresponding subsamples of firms (bankruptcies and workouts). Since firms are assigned to these subsamples endogenously, we use the Heckman (1979) two-step procedure to control for self-selection. In particular, in the first stage we use variables that in regression (2) of Table IX predicted whether the firm will file for bankruptcy (this set of variables coincides with the set of regressors in column (2)). We do not report the results of first-stage (selection) regressions, as they are similar to those reported in Table IX.[20] In all regressions, the instrument we use (firm age) is highly statistically significant in predicting bankruptcy.

We compare recovery rates in France and the UK with those in Germany by examining the significance and the magnitude of the country dummies in different specifications. The general result in Table IX is that, as we increase the number of controls for adjustable variables, the differences between France and other countries widens, while that between Germany and the UK narrows. Regression (1) confirms the univariate result that for the overall sample recovery rates are the highest in the UK and the lowest in France. In particular, recoveries are about 8 percent higher in the UK and about 11 percent lower in France than in Germany, and the differences across countries are statistically significant. This ordering of recovery rates across countries coincides with the ordering of the LLSV creditor protection scores. This regression suggests that, despite any adjustments the banks may make to mitigate the effects of country codes, the differences in outcomes remain and are large both statistically and economically.

However, as we know from the previous analysis, German firms have the lowest levels of collateralization and the highest incidence of bankruptcies, whereas French firms have the highest levels of collateral. As we control for these characteristics in regressions (2)–(4) to study recovery rates for similar firms in similar conditions, the differences between Germany and the UK disappear, while those between France and other countries increase. Regression (2) controls for the total amount of collateral, while regression (3) allows for varying contributions of the two principal collateral types, real estate and debtors (accounts receivable), in different countries. In addition, regression (4) accounts for the decision to file for bankruptcy. While in this regression recovery rates in Germany and the UK are essentially identical, they are almost 17 percent

[20] These results are available on request.

higher than those in France. Moreover, regression (5) shows that this difference grows to 22 percent when we restrict our analysis to formal bankruptcies.

We thus conclude that bankruptcies of similar firms result in recovery rates which are very similar in Germany and the UK, but much lower in France. For the overall sample of defaults, German recovery rates are between those in France and the UK, because collateral levels in Germany are lower and bankruptcy rates are higher than elsewhere. By increasing collateralization levels, relying on appropriate collateral types, and limiting the incidence of bankruptcy, French banks are able to limit the damage caused by the creditor-unfriendly code, and mitigate the differences in outcome with other countries.

The instrumental-variable regression (4) confirms that recovery rates in formal bankruptcies are significantly lower than in workouts. However, cross-country analysis of workouts in regression (6) shows that, in contrast to bankruptcies, recovery rates in workouts are similar in all three countries, and even appear somewhat higher in France than elsewhere. Thus, sharp differences in outcomes of formal procedures do not appear to translate into differences for workouts, even though the outcome of a potential bankruptcy should be the 'threat point' in out-of-court bargaining. Our results imply that the difference between banks' outcomes in formal and informal procedures is the sharpest in France. If claimants other than banks benefit from workouts in a similar way, and assuming that bankruptcy costs are not very different across countries, it must be the case that the total firm value at the time when workouts are initiated is the highest in France. In other words, the default boundary (the timing of default) is likely to be different across countries, with French banks initiating informal procedures earlier in distress. One reason for this may be that banks may prefer to address the crisis early because of the potential effects of a public announcement, that will have to be made in accordance with the French law if the firm's distress reaches a certain stage.

INSERT TABLE X HERE

Table X also shows the influence of our controls on recovery rates. The level of collateral is the single most important variable, retaining its significance in all specifications and subsamples. It is the only variable to retain significance in workouts (regression (6)), although it is more important in bankruptcy. A detailed look at the importance of particular collateral types in regressions (3)–(5) confirms our earlier finding that real estate is a significant contributor to recovery rates in the UK and Germany, but not in France. Conversely, debtors (accounts receivable) are significant in France but not elsewhere; moreover, the pledge of debtor as collateral, at the expense of other collateral types, appears to reduce recovery rates for UK banks. These results strongly reflect the impact of the rights of secured creditors on the value of their claims. Consistent

with a number of studies of recovery rates in the US, we find no discernible industry patterns; Neither is there any evidence of size effects within our sample.

In these regressions, we do not find that recovery rates depend on the stage of the economic cycle as measured by the level of GDP at default. We investigate this issue by studying the influence of GDP within country subsamples. We conjecture that the stage of the business cycle at the time of asset sales may be more important than at default. For the UK, where reorganization periods are short and asset sales quickly follow the default event, we find that the level of GDP does indeed significantly influence recovery rates. By contrast, GDP at default appears to be negatively, if insignificantly, correlated with recoveries in Germany and France, where realizations take several years and default and recovery may occur at different stages of the economic cycle. In a separate unreported regression, we use a sample of collateral items to examine the determinants of proceeds from collateral sales. We find that collateral realizations are strongly related to GDP at the time of collateral sale (rather than at the time of default) in all three countries.

We conclude that adjustments to collateral levels and the use of bankruptcy bring France closer to Germany and the UK, but that recovery rates in France remain significantly lower. In Germany, low collateralization and high bankruptcy rates depress overall recoveries, which might otherwise be very close to those in the UK.

D. Interest margins

Even though bank lenders respond in a variety of ways to low creditor protection in bankruptcy codes, large differences in recovery rates persist after these adjustments. Given that the price of credit in different countries should reflect the banks' expected losses from default, we would predict that in France low recovery rates and high overall bankruptcy rates, documented by Claessens and Klapper (2004), would be reflected in higher interest rate margins compared to the UK and Germany. Univariate analysis of spreads suggest that this is not the case. We now examine whether these results are robust to controls for loan characteristics and other variables.

In Table XI we describe regression results for the determinants of interest rate spreads for each country. The dependent variable is the pre-default interest rate margin (spread) on the loan over the applicable LIBOR rate. For floating-rate loans, this is the loan margin reported in the loan contract, adjusted for the difference between the loan contract's reference rate (such as the Bank of England base rate) and the applicable LIBOR rate; for fixed-rate loans, it is the difference between the loan rate and the level of the reference risk-free rate in the respective country at the time of spread measurement, adjusted by the applicable fixed-to-LIBOR

swap spread.[21] We regress the interest rate margin on factors which are likely to influence the credit risk of the firm when the loan contract is signed and the margin is agreed. We control for the size of the loan exposure, as proxied by the outstanding loan balance at default. We include dummy variables to control for whether the loan is secured, and for whether it is short term (defined as an initial maturity of less than one year), and for whether it is an overdraft. Firm age at the initiation of the loan contract may be an indicator of the uncertainty regarding the firm's quality, as younger firms are more likely to prove risky. Finally, we include the level of the reference risk-free rate, as both theoretical and empirical credit risk research predicts that the credit spreads should be negatively correlated with the risk-free rate.

INSERT TABLE XI HERE

The table shows that only the regressions for the German sample have considerable explanatory power, most of which is coming from sharp differences between short-term overdraft and loan rates. For Germany, short term debt and the risk free rate are significant variables. For France, there is no significant coefficient for any of the variables. For UK loans, loan size, the presence of collateral, firm age, and the level of the risk free rate are all significant, although the explanatory power of the regression is low.

Table XII presents a pooled regression for all firms, with individual dummies for both short-term and long-term loans in each country. The main finding is the effect of the country dummies on loan margins, which are significant across all specifications. Loan interest margins for short-term loans in Germany are found to be as much as 150 basis points or more higher than those in France. This difference is always significant at the 1% level. Average margins for short term loans are higher in France than in the UK with differences of up to 50 basis points for different specifications.

INSERT TABLE XII HERE

For long-term loans, interest rate margins are much smaller in Germany than in France or the UK. Also, margins in France are lower than the UK for all specifications. Loan size is important in all the regressions and loan size is significant in regressions (3) and (4).

Table XII suggests that calculating interest rate margins across all loans does not tell a complete story. The size of margins and the ordering across countries is very sensitive to the maturity of the loans. Thus,

[21] When converting the interest rate on a risky fixed-rate loan into an equivalent floating-rate loan, the swap rate in principle should be adjusted to reflect the firm's default risk. However, Duffie and Liu (2001) show that this adjustment is likely to be quantitatively inconsequential.

in Germany short term loans are the most expensive in the three countries, while long-term loans are the cheapest. France, which has the least creditor friendly code and the lowest recovery rates, does not have the highest margins: it is usually ranked second.

What are possible reasons for these findings? First, it is possible that French banks may derive more compensation for their loans through other channels than interest payments; for example, through higher arrangement or renewal fees. Second, we have assumed that the state of banking competition is similar across all three countries. There is a recent UK government report that provides evidence that the banking market for SME loans is not competitive in the UK, and banks' profitability is 'excessive'. Third, although recovery rates on loans in France are below those of the other two countries, it may be that the incidence of distress is higher in the UK than in France. In this event lower recovery rates in France could be compatible with lower aggregate loss rates. However, Claessens and Klapper (2003) report that annual rates of formal bankruptcy procedures are highest in France at 2.6% compared with 1.03% in Germany and 1.85% in the UK. Thus, it is unlikely that low interest margins in France reflect low aggregate losses on their loan portfolios. Because recovery rates in informal procedures are similar across countries, different proportions of workouts should not change this conclusion. Fourth, if the terms of loan agreements are renewed more frequently in the UK and Germany, then banks in these countries may be in a better position to identify a deterioration in the credit qualities of companies which subsequently default and end up in our sample, and to increase the required interest margin to compensate for the higher probability of default. This hypothesis is supported indirectly by the fact that the proportion of facilities with maturity shorter than one year is the highest in Germany (37%), compared to 50% in France and 31% in the UK.

V. Summary and conclusions

The paper analyzes a database of 2280 SMEs that defaulted on their bank debt in France, Germany, and the UK. We find that French banks respond to features of their bankruptcy code which limit their control rights and dilute the value of their collateral by preferential creditors, by requiring more collateral, relying on particular types of collateral which avoid the dilution of their claims, for example receivables and guarantees. Despite these endogenous reactions to the bankruptcy law, recovery rates for banks in France remain significantly below those for distressed firms in the UK and Germany.

The differences in aggregate recovery rates for banks are largely confined to the sample of distressed firms that are reorganized in bankruptcy. For informal reorganizations, differences in recovery rates are much smaller across the countries. For France and the UK they are almost identical and a little lower for

Germany. These findings do not support the view that large differences in outcomes in formal bankruptcy necessarily translate into similar differences in informal renegotiations.

Our paper raises a number of interesting questions regarding the influence of bankruptcy codes on institutions. For example, there is a strong perception of significant country differences in the way banks reorganize distressed firms. In the UK, in the wake of disastrous losses in the early 1990s, banks centralized the way they manage distressed firms to avoid uncoordinated 'dumping' of bankrupt assets on the market, which was perceived to have depressed asset prices and recovery rates previously. Such centralization in combination with the fact that a few large banks control the vast majority of SME lending, may have restrict the supply of bankrupt firms, particularly when asset markets are weak. Other institutional differences may also be at work. Asset sales of bankrupt firms in France are arranged in the public domain by the bankruptcy court, whereas in the UK they are made by the private sector, under the direction of the main bank lender. The efficiency enhancement through the reliance on private markets may have lead to the development of a wider market for distressed assets. Studying such institutional adjustments may contribute to the debate on the optimality of a particular bankruptcy code.

Although there is strong evidence that banks in the three countries do respond ex ante to bankruptcy law in their countries, the measures they take far from neutralize the impact of the legislation: The results of this paper strongly suggest that bankruptcy codes matter. It is puzzling that strong differences in outcomes are not reflected to a greater extent in interest rate margins. This may reflect other institutional considerations, such as the degree of competition in the banking market.

Appendix: Details of bankruptcy codes in the three countries

A. United Kingdom

The legal regime in the United Kingdom is generally regarded as very creditor-friendly. In many circumstances a secured creditor can liquidate the company and realize the collateral without heeding the interests of other claimants, and his actions cannot be challenged in the courts.

There are two types of security in the UK, fixed and floating charge. A fixed charge corresponds to collateral over fixed assets, whereas a floating charge is given over the whole pool of company's assets. While upon default creditors secured with either type of charge have vast powers in enforcing their claims by realizing the collateral, the floating charge allows the creditor to take control of the whole company. If the company defaults, the holder of the floating charge has the right to appoint an administrative receiver (henceforth a receiver), who assumes all the powers of the company's board of directors. The receiver exercises these powers for the sole purpose of realizing sufficient funds to repay the debt of the floating charge holder. His responsibility is limited to protecting the interests of the security-holders who appointed him. He has no duty to consider the interests of other lenders, in particular the unsecured lenders. Specifically, the receiver has full discretion on whether to sell the firm as a going concern or liquidate it piecemeal. This discretion cannot be challenged in the courts on the grounds that the receiver has, for example, underestimated the firm's prospects of recovery.

The powers of the floating charge put the unsecured creditors in a weak position. Yet they do have some liquidation rights that can be used to enforce their claim against the company. In the event of non-payment, they can apply for a winding up order. Unlike receivership, a winding up is court-supervised and is undertaken by a liquidator. Although the liquidator operates on behalf of both the secured and unsecured creditors, he is obliged to pay the lenders in the order of their seniority. Crucially, the holder of a floating charge can always pre-empt a winding up order by appointing a receiver. After the secured lenders have been fully repaid, the unsecured lenders are paid on a pro rata basis according to the size of their loans. Hence, the law provides clear rules so as to prevent any single creditor from having a first mover advantage relative to other unsecured lenders at least once the firm is placed in bankruptcy.

Finally, the Insolvency Act of 1986 introduced two new rescue procedures: Administration and Company Voluntary Arrangements (CVA). Both of these procedures are court-administered and provide the company with temporary protection from creditors' actions. However, the holder of the floating charge has the power to veto both procedures and appoint a receiver instead. These procedures therefore do not put any restriction on the rights of the creditor with the floating charge.

B. France

The current French bankruptcy code became effective in 1985, and was refined in 1994. The objectives of the insolvency proceedings stated in the law are, in order of priority, to maintain firms in operation, preserve employment, and to satisfy creditors' claims. As a result of this emphasis on preserving operations and employment creditors cannot influence the process of distressed restructuring other than through non-binding recommendations of a court-appointed creditor representative.

Firm is classified as distressed upon cessation of payments, defined as the inability to meet its outstanding liabilities with its current assets such as cash and cash equivalents. There is an "alert" procedure, whereas the authorities must be informed about a cessation of payments. This procedure is designed to help firms reorganize early in distress.

Unique to France is the possibility to restructure liabilities in an amicable settlement (*réglement amiable*) under the court's supervision. This procedure is designed to facilitate workouts by providing an independent court-appointed conciliator with expertise in resolving such disputes. There is no automatic stay on claims, and the fact that this procedure is undertaken is kept confidential. Not all creditors may choose to participate in the amicable settlement. If the firm defaults during the settlement, the creditors can move it to the official bankruptcy procedure called judicial arrangement (*redressement judiciare*).

In the judicial arrangement, management of the firm is supervised by a court-appointed judicial administrator (*administrateur judiciaire*), whose duty is to assess the viability of the firm and propose a reorganization plan, and to replace or (more commonly) supervise the existing management before the firm is reorganized. Where the existing management is retained, the administrator's agreement is required concerning important decisions such as the disposal

of assets. He also decides whether to continue or terminate existing contracts. The administrator does not represent the creditors, although his decisions may be challenged in the court.

Crucially, a stay on claims originated before the initiating of the insolvency procedure is imposed until either liquidation or a sale of the firm as a going concern. Interest on most claims ceases to accrue when the procedure is initiated. Moreover, the only way for creditors to convey their concerns is through non-binding recommendations to a court-appointed creditor representative, who may then make non-binding recommendations to the court. There is a possibility of super-priority financing after the entrance into the judicial arrangement, which will be senior to all secured and unsecured pre-filing claims except for uninsured employment salaries and court fees.

If the court does not perceive going concern a viable option, the company may be liquidated immediately. Alternatively, the judicial arrangement starts with an "observation period" of several months, during which the administrator working with the judge assess the viability of the firm and decide how it should be reorganized. After the observation period, the firm may be liquidated. If a continuation plan is adopted, the firm is kept as a legal entity, and a plan of debt repayment based on reasonable financial forecast must be proposed. The court cannot force the creditors to write down their claims, but it can redefine the terms of the debt contract, including the maturity. In practice, then, creditors may either accept write-downs with a quick repayment, or opt for a long-delayed repayment in full.

If the court determines that the sale of the firm is the best available option, it must choose the offer which ensures best prospects for continuing employment and repayment of credit. The buyer of the business must assume all employment contracts, all secured debt collateralized by the purchased assets, and in addition all ongoing contracts the court deems necessary for the preservation of the business. The sale price does not necessarily have to be commensurate with the indebtedness of the company.

Even secured creditors in France have little confidence in recovering their debts. They usually cannot seize the security even when the firm is solvent. In bankruptcy, they do not control either timing or the method of collateral realization. The stay on claims introduces further uncertainty with regards of the timing of possibly repayments. Finally, preferential creditors, such as employee salaries and bankruptcy and administration fees are ranked above the secured creditors at distribution. However, secured creditors can use the retention right over movable collateral, and especially posting of cash collateral and the transfer of title, such as the assignment of receivables, and may refuse to surrender the assets before liquidation until their claims are paid in full.

C. Germany

The current bankruptcy code in Germany, *Insolvenzordnung*, was made effective in 1999. It has introduced important differences compared to the old code, *Konkursordnung*. Since a significant part of our sample of German firms were reorganized prior to 1999, it is important to understand both codes. In addition, as the new law has not been in effect for a long time, practitioners generally agree that one can rely to a great extent on the earlier case law to determine how the courts will operate under the new regime.

Under the German bankruptcy code, a reorganization plan is worked out by a court-appointed receiver, possibly in cooperation with the creditors. The approval of the creditors' meeting is required for acceptance of the plan. The new code has for the first time limited the rights of the secured creditors by providing for an automatic stay on their claims for three months.

*C.1. The pre-1999 code (*Konkursordnung*)*

Two formal insolvency procedures existed under the old German bankruptcy code, court composition (*Vergleichsordnung*) and compulsory liquidation (*Konkursordnung*). Composition is a restructuring procedure designed to turn the company around by restructuring its unsecured debt.

The firm is classified as distressed either when it defaults, or its liabilities exceed the market value of its assets ("over-borrowing"), or when the firm considers that the inability to service its debt is imminent. In case of over-borrowing the firm must file for bankruptcy within 15 days of learning about it. If the debtor intends to request composition, it must propose a full restructuring plan together with the bankruptcy filing. The plan must provide for a minimal cash payment to unsecured creditors between 35% and 40%, depending on maturity. No possibility to replace the debt with new claims is provided for. There is an automatic stay on unsecured claims in composition. Secured and preferred creditors are not affected by the composition proceedings, and may continue legal action to satisfy their claims.

In composition, the court appoints a receiver (*Regelinsolvenzverfahren*) who overlooks the course of the company's operations, authorizes important decisions, and assesses the viability of the composition. The receiver does not represent any one group of creditors, but is bound by the resolutions of the creditors' meeting, which he has to implement. The receiver prepares a plan of reorganization in cooperation with a creditors' committee, if one is formed, which is more typical in larger cases. The plan is then voted in a creditors' meeting, where the simple majority of the voting creditors (three-quarters majority by value) is required to accept the plan. If the plan is accepted, it will normally be approved by the court.

In compulsory liquidation, the control over the assets is transferred to an insolvency administrator. Although the administrator's objective is selling the assets for cash, this can be a lengthy process if the economic conditions are deemed unfavorable for a sale. New senior financing can be raised during the proceedings. Unsecured claims are stayed until the assets are sold.

In reality, many filings for compulsory liquidation failed, because the assets remained after secured creditors' collateral was seized were deemed insufficient to cover the costs of the proceedings. The use of the composition proceedings was even more difficult because it required submission of a complete plan in 15 days after learning about the company's insolvency, imposed a minimum cash payment requirement, and did not restrict in any way the ability of the secured and preferential creditors to realize their claims irrespective of the company's restructuring efforts. Therefore, a private work-out could be the only potential alternative to whole or piece-meal liquidation.

*C.2. The 1999 code (*Insolvenzordnung*)*

The new German code recognizes only one form of insolvency proceedings. Its introduction purported to increase the probability of the firm's survival by limiting the ability of the secured creditors to strip the firm of its essential assets. Firstly, there are no longer any preferred creditors. Secondly, upon entering reorganization an automatic stay on the secured creditors is imposed for up to three months. Thus, no creditor can now seek to satisfy his claim while the administrative receiver determines whether the firm should be turned around, and proposes a reorganization plan.

As before, the acceptance of the creditors' meeting is required to pass the plan. However, secured creditors now also have to vote in the meeting, and the decision of the meeting is binding even if it prevents them from realizing their security. In situations when the proposed plan adversely affects the secured creditors, they must vote separately, with half of the votes in number (three quarters in value) of the present creditors required to accept the plan. In other words, a creditor holding more than 50% of secured claims can veto the reorganization plan which impedes the rights of the secured. On the other hand, a secured creditor can find himself bound to accept concessions and forgive debt if he is outvoted by other secured creditors. Once approved by the court, the plan becomes effective.

All assets are subject to enforcement by the receiver, except movable assets in possession of the secured creditors. Thus, collateral only defines the priority of payments but not the right of realizing the value. The receiver's fees for realizing the collateral are paid out of the proceeds from the sale; it is common that the fees are as high as nine percent of the security value, which is the maximum normally allowed by law. Thus, although the consent of a majority of secured creditors is needed to approve a reorganization plan, the security cannot be realized prior to the plan approval, and the minority of creditors can be forced to accept concession in the vote.

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Table I. Bankruptcy procedures in France, Germany, UK and US

The table lists principal bankruptcy procedures in the UK, France, Germany, and the US, and compares their main characteristics. The bottom row reports creditor protection scores for the four countries given by La Porta, Lopez-de-Silanes, Shleifer and Vishny (1998).

	UK	**France**	**Germany**	**US**	
Main procedure	Administrative receivership	*Redressement judiciare*	*Insolvenzordnung* (the 1999 code)	Chapter 11	Chapter 7
Bankruptcy trigger	Default (covenant breach)	Cessation of payments (inability to meet current liabilities)	Cessation of payments or overborrowing	No objective test. Solvent firm may enter Chapter 11	No objective test
Control rights	Secured creditor	Court-appointed administrator	Creditors under court supervision (secured creditors have more power)	Debtor, creditors collectively, bankruptcy court supervision	Trustee
Automatic stay	None	Unlimited	3 months	Unlimited	None
Super-priority financing	None	Yes	Creditors' approval required	Yes	None
Dilution of secured claims	None	Significant	Limited	Limited	None
LLSV creditors score (max=4)	4	0	3	1	N/A

Table II. Sample size by year of default

The table reports the number of firms in the sample in each of the the three countries by year of default. The sample consists of defaulted firms with loan exposure at default to the participating bank greater than €100K and with annual turnover less than €75 Mil. The default event is defined according to Basel II criteria as described in Section III.

Year	UK	France	Germany	Total
1984-1992	1	64	2	67
1993	0	94	0	94
1994	4	88	3	95
1995	2	79	6	87
1996	18	80	25	123
1997	80	52	54	186
1998	102	31	68	201
1999	129	18	37	184
2000	332	29	8	369
2001	410	27	28	465
2002-03	339	21	28	388
N/A	1	3	17	21
Total	1,418	586	321	2,280

Table III. Industry classification of defaulted companies

The table reports the number of firms in the sample by broad industry group. The sample consists of firms with loan exposure at default to the participating bank greater than €100K and with annual turnover less than €75 Mil., that defaulted on their bank debt according to Basel II criteria.

Industry	UK	France	Germany	Total
Construction	84	25	25	134
Heavy manufacturing	135	82	43	260
Light manufacturing	143	107	33	283
Services	155	47	11	213
Wholesale/retail trade	230	159	57	446
Other business activities	202	90	47	339
Total	949	510	216	1675

Table IV. Firm characteristics

The table reports sample statistics for the firms in the sample. *Turnover* is sales turnover before default. *Leverage* is the ratio of total debt to the sum of total debt and shareholders equity. *Current ratio* is the ratio of current assets to current liabilities. *Age* is the age of the company from incorporation to default. *Years with the bank* is the age of the relationship with the participating bank at default. *Formal bankruptcy* and *Piecemeal liquidation* are the proportions of defaulted firms in each country which were reorganized under formal bankruptcy and liquidated piecemeal (in or out of bankruptcy), respectively. *Turnover*, *Leverage* and *Current ratio* are as of the date of the last pre-default audited accounts dated no more than 12 months before default, if available, or management accounts otherwise. The sample consists of firms with loan exposure at default to the participating bank greater than €100K and with annual turnover less than €75 Mil., that defaulted on their bank debt according to Basel II criteria.

		Turnover (€ Mil.)	Leverage	Current ratio	Age (years)	Years with the bank	Formal bankruptcy	Piecemeal liquidation
UK	Mean	17.37	0.61	1.05	14.0	7.3	75.4%	42.9%
	Median	5.460	0.66	0.85	7.3	4.3		
	St.Dev.	34.27	0.74	1.53	16.8	8.0		
	N	195	209	226	915	955	863	266
France	Mean	18.56	0.65	1.35	18.6	9.3	78.0%	62.0%
	Median	5.738	0.63	1.01	8.6	4.9		
	St.Dev.	48.95	0.36	1.29	23.9	14.2		
	N	209	57	60	218	504	533	347
Germany	Mean	23.81	0.87	N/A	24.8	7.7	86.9%	56.9%
	Median	11.72	0.79		15.4	3.8		
	St.Dev.	39.39	0.94		26.8	13.2		
	N	67	60		80	256	267	51

Table V. Bank debt characteristics

The table reports sample statistics by company on loans, overdrafts, and other cash facilities outstanding with the bank at default date. *Exposure* is the total debt amount outstanding on cash facilities owed to the participating bank at the date of default. *Fraction secured* is the value of collateral and guarantees at default as a percentage of exposure. *No. of loans* is the number of cash facilities at default. *Long-term* is the value-weighted fraction of facilities with initial maturity more than 1 year. *Fixed-rate* is the value-weighted fraction of facilities with a fixed interest rate. *Maturity if long-term* is the average initial lending term for facilities with maturity exceeding one year. *Interest margin* is the equivalent floating-rate-loan spread over the 3-month LIBOR rate in each country at loan origination, measured in percentage points. The sample consists of firms with loan exposure at default to the participating bank greater than €100K and with annual turnover less than €75 Mil., that defaulted on their bank debt according to Basel II criteria.

		Exposure (€ Mil.)	Fraction secured	No. of loans	Long-term	Fixed-rate	Over-drafts	Maturity if long-term	Interest margin
UK	Mean	0.960	85%	3.51	31%	2.8%	54.7%	8.77	2.23
	Median	0.244	62%	3	0%	0%	100%	7.25	2.17
	St.Dev.	2.657	104%	2.80	39%	12%	37%	4.57	0.63
	N	1418	816	1386	275	291	315	183	568
France	Mean	0.600	124%	2.20	43%	52%	47%	6.48	2.24
	Median	0.269	104%	2	21%	75%	36%	5.01	2.02
	St.Dev.	1.382	108%	1.40	44%	48%	44%	3.48	1.53
	N	586	513	586	578	248	583	562	263
Germany	Mean	2.412	60%	1.88	19%	21%	75%	8.50	2.90
	Median	1.231	41%	1	0%	0%	100%	6.52	3.21
	St.Dev.	3.594	80%	1.34	34%	33%	35%	5.10	2.16
	N	276	259	72	67	70	67	44	93

Table VI. Company recovery rates by country, type of reorganization, industry, and collateralization

The table reports global undiscounted recovery rates by firm, defined as one minus bank's total final loss divided by total debt exposure at default, for the participating banks. Panel A reports the statistics for all firms. Panel B reports recovery rates for informal renegotiations, formal bankruptcies, and for firms eventually liquidated piecemeal (in or out of bankruptcy). Panel C reports recovery rates by broad industry group. Panel D reports recovery rates by *fraction secured*, the value of collateral and guarantees at default as a percentage of exposure. The sample consists of firms with loan exposure at default to the participating bank greater than €100K and with annual turnover less than €75 Mil., that defaulted on their bank debt according to Basel II criteria.

	UK				France				Germany			
	Mean	Median	St.Dev.	N	Mean	Median	St.Dev.	N	Mean	Median	St.Dev.	N
Panel A: Recovery for all firms												
All firms	0.74	0.92	0.34	1405	0.54	0.56	0.40	575	0.61	0.67	0.34	226
Panel B: Recovery by type of procedure												
Informal renegotiation	0.78	1.00	0.34	199	0.83	1.00	0.28	115	0.76	0.79	0.26	26
Formal bankruptcy	0.69	0.82	0.35	645	0.47	0.39	0.39	460	0.59	0.61	0.35	198
Piecemeal liquidation	0.68	0.78	0.34	110	0.40	0.31	0.37	245	0.40	0.41	0.37	27
Panel C: Recovery by industry												
Construction	0.70	0.90	0.38	84	0.62	0.70	0.38	25	0.68	0.75	0.28	22
Heavy manufacturing	0.73	0.89	0.35	130	0.56	0.57	0.36	81	0.55	0.50	0.34	37
Light manufacturing	0.76	0.94	0.31	142	0.56	0.61	0.41	106	0.64	0.75	0.33	29
Services	0.71	0.88	0.36	153	0.57	0.63	0.40	47	0.80	0.91	0.24	9
Wholesale/retail trade	0.66	0.83	0.38	227	0.50	0.44	0.41	153	0.49	0.46	0.38	53
Other business activities	0.69	0.81	0.35	200	0.56	0.55	0.40	87	0.69	0.74	0.32	41
Panel D: Recovery by fraction of debt secured												
0.0% (unsecured)	0.58	0.71	0.39	41	0.35	0.14	0.40	44	0.50	0.50	0.35	59
0–40%	0.58	0.59	0.36	61	0.36	0.19	0.36	50	0.58	0.54	0.32	31
40–80%	0.59	0.62	0.33	133	0.42	0.39	0.35	56	0.64	0.69	0.31	95
80–120%	0.78	0.93	0.31	191	0.62	0.76	0.38	111	0.79	0.86	0.29	18
120%+	0.86	1.00	0.27	465	0.58	0.63	0.38	232	0.74	0.80	0.29	18
All secured	0.76	0.94	0.32	1049	0.54	0.57	0.38	507	0.64	0.72	0.32	171

Table VII. Collateral value at default

The table summarizes the relative importance of different collateral types at default. Panel A reports the value of collateral of each type as a fraction of the total collateral value at default (for firms that do provide collateral). Panel B reports the value of collateral of each type as a fraction of the total debt exposure at default (for both firms with and without collateral). The sample consists of firms with loan exposure at default to the participating bank greater than €100K and with annual turnover less than €75 Mil., that defaulted on their bank debt according to Basel II criteria.

	UK			France			Germany		
	Mean	Median	St.Dev.	Mean	Median	St.Dev.	Mean	Median	St.Dev.
Panel A: Estimated collateral value as a fraction of total collateral value at default									
Real estate	0.46	0.47	0.41	0.11	0	0.27	0.55	0.64	0.42
Guarantees (indiv. or firm)	0.22	0.05	0.33	0.35	0.22	0.38	0.04	0	0.16
State/bank guarantees	0.02	0	0.07	0.05	0	0.16	0.14	0	0.29
Debtors	0.16	0	0.29	0.19	0	0.35	0.08	0	0.22
Stock	0.05	0	0.16	0.02	0	0.11	0.06	0	0.21
Plant & machinery	0.04	0	0.11	0.09	0	0.23	0.07	0	0.21
Cash & marketables	0.01	0	0.07	0.02	0	0.13	0.02	0	0.11
Other	0.03	0	0.12	0.17	0	0.31	N/A		
Panel B: Estimated collateral value as a fraction of total debt outstanding at default									
Real estate	0.55	0.30	0.72	0.18	0	0.52	0.27	0	0.45
Guarantees (indiv. or firm)	0.21	0	0.37	0.44	0	0.69	0.12	0	0.50
State/bank guarantees	0.02	0	0.10	0.05	0	0.23	0.08	0	0.24
Debtors	0.22	0	0.43	0.18	0	0.40	0.04	0	0.18
Stock	0.06	0	0.22	0.02	0	0.15	0.02	0	0.10
Plant & machinery	0.07	0	0.25	0.13	0	0.41	0.04	0	0.30
Cash & marketables	0.02	0	0.13	0.02	0	0.16	0.02	0	0.09
Other	0.04	0	0.16	0.23	0	0.56	0	0	0

Table VIII. Collateral realizations

The table the effectiveness of different collateral types on realization. Panel A reports for each collateral type the bank's undiscounted net realized proceeds from realization as a fraction of the estimated value at default. Panel B reports for each collateral type the bank's undiscounted net realized proceeds from realization as a fraction of the total undiscounted amount recovered by the bank. The sample consists of firms with loan exposure at default to the participating bank greater than €100K and with annual turnover less than €75 Mil., that defaulted on their bank debt according to Basel II criteria.

	UK				France				Germany			
	Mean	Median	St.Dev.	N	Mean	Median	St.Dev.	N	Mean	Median	St.Dev.	N
Panel A: Net bank proceeds from collateral realization as a fraction of its estimated value at default												
Real estate	0.92	0.87	0.59	412	0.30	0.19	0.34	72	0.72	0.81	0.44	87
Guarantees (indiv. or firm)	0.23	0	0.42	358	0.25	0	0.37	213	0.32	0	0.46	14
State/bank guarantees	0.88	1.00	0.29	95	0.60	0.70	0.42	39	0.89	1.00	0.30	35
Debtors	0.86	0.92	0.58	101	0.66	0.92	0.41	153	0.50	0.26	0.47	20
Stock	1.14	1.00	1.02	60	0.47	0.21	0.59	15	0.09	0.02	1.75	13
Plant & machinery	1.18	1.00	0.76	76	0.14	0	0.27	73	0.49	0.37	0.40	24
Cash & marketables	0.74	1.00	0.41	17	0.82	1.00	0.33	18	0.88	1.00	0.46	11
Other	0.82	0.97	0.64	14	0.34	0.32	0.36	106	N/A			0
All collateral	0.83	0.79	0.70	306	0.35	0.22	0.39	364	0.73	0.77	0.55	120
Panel B: Net bank proceeds from collateral realization as a fraction of bank's total recovery												
Real estate	0.22	0	1.90	188	0.05	0	0.20	299	0.17	0	0.64	178
Guarantees (indiv. or firm)	0.07	0	0.30	202	0.13	0	0.30	266	0.02	0	0.10	187
State/bank guarantees	0.00	0	0.05	294	0.05	0	0.19	309	0.06	0	0.34	197
Debtors	0.13	0	0.96	272	0.28	0	0.40	315	0.03	0	0.17	185
Stock	0.05	0	0.59	289	0.01	0	0.09	315	0.00	0	0.08	180
Plant & machinery	0.05	0	0.19	285	0.04	0	0.17	307	0.02	0	0.09	212
Cash & marketables	0.01	0	0.07	296	0.02	0	0.12	314	0.00	0	0.02	193
Other	0.00	0	0.07	262	0.14	0	0.31	271	N/A			0

Table IX. Determinants of restructuring procedure and outcome

The table reports results of logit regression analysis of the determinants of the type of reorganization upon default and the eventual decision to liquidate the firm piecemeal. In regressions (1)–(2) the dependent variable is the dummy that equals one if a formal bankruptcy was initiated in the course of restructuring, and zero if the firm was reorganized in a workout. In regressions (3)–(4) the dependent variable is the dummy that equals one if the firm was eventually liquidated piecemeal, and zero if it was preserved as a going concern. *UK* and *Germany* are country dummies. *EAD* is Exposure at Default, the total debt amount outstanding on cash facilities owed to the participating bank at the date of default, measured in million Euros. *Collateral* is the last available estimate of the value of collateral before default. *Firm age* is the age of the firm from incorporation to the default date. *GDP* is the de-trended normalized level of firm's country GDP in the year of default. Other variables are industry dummies. The sample consists of firms with loan exposure at default to the participating bank greater than €100K and with annual turnover less than €75 Mil., that defaulted on their bank debt according to Basel II criteria. ***,** and * indicate coefficients significant at 1%, 5% and 10% levels, respectively. Standard errors are reported in parentheses.

	Formal bankruptcy		Piecemeal liquidation	
	(1)	(2)	(3)	(4)
UK	-0.178	-0.228	-0.451**	-0.271
	(0.206)	(0.251)	(0.213)	(0.255)
Germany	0.945***	0.979***	0.042	0.328
	(0.272)	(0.297)	(0.350)	(0.397)
EAD	-0.050**	-0.026	-0.054*	-0.057
	(0.021)	(0.034)	(0.029)	(0.051)
Collateral/EAD		0.282***		0.124
		(0.110)		(0.094)
Firm age	-0.009**	-0.013***	-0.010**	-0.006
	(0.004)	(0.005)	(0.005)	(0.006)
GDP	-0.090	2.95	3.84	1.65
	(7.403)	(8.36)	(7.66)	(8.30)
Industry: Construction	0.018	0.404	1.02**	1.05*
	(0.453)	(0.587)	(0.46)	(0.55)
Industry: Trading	-0.248	0.056	0.473	0.671*
	(0.326)	(0.385)	(0.316)	(0.367)
Industry: Light Manufact.	-0.058	0.075	0.054	0.389
	(0.342)	(0.402)	(0.333)	(0.385)
Industry: Heavy Manufact.	0.099	0.111	0.863**	0.912**
	(0.359)	(0.416)	(0.352)	(0.410)
Industry: Other	-1.01***	-0.824**	0.702*	0.829**
	(0.34)	(0.391)	(0.377)	(0.419)
const.	1.77***	1.40***	0.020	-0.347
	(0.31)	(0.38)	(0.300)	(0.372)
Pseudo-R^2	5.38%	6.44%	4.16%	2.77%
N	972	771	601	451

Table X. Company recovery rates across countries

The table reports results of regression analysis of the bank's recovery rate by company. Regressions (1)–(4) are for all firms, while regressions (5) and (6) are restricted, respectively, to firms reorganized in formal bankruptcies and workouts. Regressions (1)–(3) are estimated using OLS. Regression (4) is estimated using *Firm age* as an instrument for *Formal bankruptcy*. Regressions (5) and (6) are estimated with the Heckman two-step estimation procedure to correct for self-selection, using all variables of regression (2) as predictors of *Formal bankruptcy*. The dependent variable is the undiscounted recovery rate, defined as one minus bank's final write-off divided by *EAD*, which is the total debt amount outstanding on cash facilities owed to the participating bank at default, measured in million Euros. *UK*, *FR*, and *GE* are country dummies. *Formal bankruptcy* is the dummy equals one if a bankruptcy was initiated, and zero otherwise. *Firm age* is the age of the firm from incorporation to the default date. *Collateral*, *Real estate*, and *Debtors* are the last available pre-default estimate of the value of all collateral and the the two respective collateral types. *GDP* is the de-trended normalized level of firm's country GDP in the year of default. Other variables are industry dummies. The sample consists of firms with loan exposure at default to the participating bank greater than €100K and with annual turnover less than €75 Mil., that defaulted on their bank debt according to Basel II criteria. ***,** and * indicate coefficients significant at 1%, 5% and 10% levels, respectively. Standard errors are reported in parentheses.

	All firms				Bankruptcies	Workouts
	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	OLS	OLS	IV	Heckman	Heckman
UK	0.076**	0.060*	0.088**	-0.004	-0.005	0.050
	(0.036)	(0.035)	(0.041)	(0.057)	(0.066)	(0.111)
FR	-0.115***	-0.141***	-0.114***	-0.166***	-0.220***	0.057
	(0.036)	(0.036)	(0.041)	(0.049)	(0.055)	(0.103)
Formal bankruptcy				-0.650***		
				(0.252)		
Firm age	0.002***	0.002***	0.002***			
	(0.001)	(0.001)	(0.001)			
EAD	0.005	0.006	0.005	0.002	0.005	-0.007
	(0.005)	(0.005)	(0.005)	(0.005)	(0.007)	(0.008)
Collateral/EAD		0.058***	0.038***	0.053***	0.063***	0.057*
		(0.011)	(0.015)	(0.016)	(0.019)	(0.031)
Real estate/EAD * UK			0.087***	0.074**	0.083***	0.020
			(0.029)	(0.030)	(0.031)	(0.054)
Real estate/EAD * FR			0.040	-0.012	0.003	-0.004
			(0.036)	(0.042)	(0.046)	(0.047)
Real estate/EAD * GE			0.173**	0.181**	0.163**	0.115
			(0.069)	(0.071)	(0.074)	(0.166)
Debtors/EAD * UK			-0.084*	0.027	-0.062	-0.418
			(0.046)	(0.063)	(0.046)	(0.298)
Debtors/EAD * FR			0.099**	0.199***	0.163***	0.076
			(0.043)	(0.057)	(0.043)	(0.272)
Debtors/EAD * GE			-0.006	0.020	-0.010	-1.18
			(0.128)	(0.132)	(0.129)	(1.31)
GDP	-0.902	-0.289	-0.143	0.596	1.04	0.592
	(1.095)	(1.087)	(1.079)	(1.109)	(1.28)	(1.883)
Industry: Construction	-0.031	-0.012	-0.024	-0.0001	0.003	0.063
	(0.059)	(0.059)	(0.058)	(0.0607)	(0.069)	(0.134)
Industry: Trading	-0.083*	-0.068	-0.065	-0.077*	-0.099*	0.005
	(0.043)	(0.043)	(0.042)	(0.044)	(0.051)	(0.082)
Industry: Light Manuf.	-0.010	0.005	-0.0001	-0.019	-0.004	-0.009
	(0.046)	(0.046)	(0.0453)	(0.047)	(0.055)	(0.085)
Industry: Heavy Manuf.	-0.006	0.008	0.003	-0.00000	0.009	-0.024
	(0.048)	(0.047)	(0.047)	(0.04856)	(0.055)	(0.099)
Industry: Other	-0.011	0.005	0.006	-0.104*	-0.097	-0.148
	(0.046)	(0.045)	(0.045)	(0.062)	(0.077)	(0.102)
const.	0.634***	0.581***	0.554***	1.17***	0.501***	0.908***
	(0.048)	(0.048)	(0.051)	(0.24)	(0.070)	(0.297)
Adj. R^2	6.20%	8.74%	10.70%	5.34%		
Wald χ^2					170.25	58.48
N	930	930	930	930	751/930	179/930

Table XI. Determinants of loan interest margins in the three countries

The table reports results of OLS regression analysis of loan interest margins in the three countries, by loan. The dependent variable is *Interest margin*, the equivalent floating-rate-loan spread over the 3-month LIBOR rate in each country at loan origination, measured in percentage points. *Loan size* is the debt amount outstanding on the loan at the date of default, measured in million Euros. *Short-term* is a dummy that equals one for facilities with initial maturity less than one year, including on-demand overdrafts. *Overdraft* is a dummy variable that equals one if the facility is an overdraft, and zero otherwise. *Secured loan* is a dummy that equals one if there is specific or general collateral attached to the loan. *Age at review* is the age of the company from incorporation on the date or loan origination. *Risk-free rate* is the 3-month LIBOR rate in the respective country at loan origination, measured in percentage points. The sample consists of firms with loan exposure at default to the participating bank greater than €100K and with annual turnover less than €75 Mil., that defaulted on their bank debt according to Basel II criteria. ***,** and * indicate coefficients significant at 1%, 5% and 10% levels, respectively. Standard errors are reported in parentheses.

	UK	Fra	Ger	UK	Fra	Ger
	(1)	(2)	(3)	(4)	(5)	(6)
Loan size	-0.048***	0.133	-0.118	-0.045***	0.107	-0.134
	(0.013)	(0.136)	(0.162)	(0.008)	(0.135)	(0.173)
Short-term	-0.048	0.470	3.28***			
	(0.059)	(0.315)	(0.37)			
Overdraft				-0.086*	0.647	3.07***
				(0.050)	(0.576)	(0.39)
Secured loan	0.659**	0.461	0.564	0.862***	0.398	0.583
	(0.267)	(0.357)	(0.509)	(0.239)	(0.354)	(0.543)
Age at review	-0.007***	-0.002	-0.015	-0.008***	-0.0002	-0.014
	(0.002)	(0.007)	(0.012)	(0.002)	(0.0072)	(0.012)
Risk-free rate	-0.067***	-0.008	-0.326***	-0.061***	0.004	-0.363***
	(0.025)	(0.055)	(0.116)	(0.022)	(0.055)	(0.122)
const.	2.12***	1.60***	2.06***	1.90***	1.67***	2.35***
	(0.31)	(0.50)	(0.72)	(0.27)	(0.50)	(0.75)
Adj. R^2	6.23%	-1.20%	59.41%	9.50%	-2.15%	54.11%
N	418	107	74	544	107	74

Table XII. Loan interest margins across countries

The table reports results of OLS regression analysis of loan interest margins, by loan. The dependent variable is *Interest margin*, the equivalent floating-rate-loan spread over the 3-month LIBOR rate in each country at loan origination, measured in percentage points. *UK*, *France*, and *Germany* are country dummies. *Short-term* is a dummy that equals one for facilities with initial maturity less than one year, including on-demand overdrafts. *Long-term* is equal to one minus *short-term*. *Loan size* is the debt amount outstanding on the loan at the date of default, measured in million Euros. *Secured loan* is a dummy that equals one if there is specific or general collateral attached to the loan. *Age at review* is the age of the company from incorporation on the date or loan origination. *Risk-free rate* is the 3-month LIBOR rate in the respective country at loan origination, measured in percentage points. The sample consists of firms with loan exposure at default to the participating bank greater than €100K and with annual turnover less than €75 Mil., that defaulted on their bank debt according to Basel II criteria. The constant was not included in the regressions. ***,** and * indicate coefficients significant at 1%, 5% and 10% levels, respectively. Standard errors are reported in parentheses.

	(1)	(2)	(3)	(4)
Short-term * UK	2.42***	2.50***	2.69***	2.27***
	(0.14)	(0.16)	(0.16)	(0.22)
Short-term * France	2.91***	2.67***	2.90***	2.63***
	(0.19)	(0.25)	(0.25)	(0.27)
Short-term * Germany	4.41***	4.48***	4.63***	4.28***
	(0.17)	(0.17)	(0.18)	(0.22)
Long-term * UK	2.43***	2.53***	2.75***	2.32***
	(0.15)	(0.16)	(0.17)	(0.23)
Long-term * France	2.19***	2.13***	2.51***	2.17***
	(0.16)	(0.20)	(0.21)	(0.24)
Long-term * Germany	1.12***	1.18***	1.27***	0.857***
	(0.20)	(0.20)	(0.20)	(0.251)
Loan size		-0.054***	-0.044**	-0.042**
		(0.019)	(0.019)	(0.019)
Secured loan				0.480***
				(0.170)
Age at review			-0.004	-0.005*
			(0.003)	(0.003)
Risk-free rate	-0.031	-0.035	-0.068***	-0.075***
	(0.021)	(0.024)	(0.025)	(0.025)
N	781	637	606	599

Figure I. Distributions of company recovery rates by country

These graphs show by country the distributions of undiscounted recovery rates by firm, defined as one minus total final loss divided by total debt exposure at default, for the participating banks. The distributions are truncated to be between 0 and 1. The sample consists of firms with loan exposure at default to the participating bank greater than €100K and with annual turnover less than €75 Mil., that defaulted on their bank debt according to Basel II criteria.