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## Credit information in universal banking: A clinical study

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## **Credit and Information in Universal Banking a Clinical Study\***

Hans-Peter Burghof / Claudia Henschel\*\*

**Abstract:** We studied information and interaction processes in six lending relationships between a universal bank and medium sized firms. The study is based on the credit files of the respective firms. If no problems occur in these lending relationships, bank monitoring is based mainly on cheap, retrospective and internal data. In case of distress, more expensive, prospective and external information is used. The level of monitoring and the willingness to renegotiate the lending relationship depends on what the lending officers can learn about the future prospects of the firm from the behaviour of the debtors. We identify both signalling and bonding activities. Such learning from past behaviour seems to allow monitoring at low cost, whereas the direct observation of the firm's investment outlook seems to be very costly. Also, too much knowledge about the firm's investments might leave the bank in a very strong bargaining position and distort investment incentives. Therefore, the traditional view of credit assessment as observation of the quality of a borrower's investment programme needs to be reconsidered.

Keywords: Banking, relationship lending, renegotiations, distress

JEL classification: G21, G32, G33

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## 1 Introduction

In the age of securitisation, economists and bank practitioners take a strong interest in what makes bank lending special.<sup>1</sup> This knowledge would make it possible to draw an appropriate borderline between securities markets and bank lending as the main sources of external corporate finance. It would also explain the product to its producer and could therefore be the source for product improvements, i.e. the construction of lending relationships of greater social value. Unfortunately, bank lending relationships are of a rather complex nature. This is due to the diversity and breadth of corporate investments financed by banks. It is also attributable to the fact that lending relationships involve the multistage strategic interaction of a multitude of actors under uncertainty. Therefore, although much empirical and theoretical work has been done recently on the subject, our knowledge is still incomplete and cannot yet serve as a strategic guideline for bank policy or corporate finance.

One way to learn more about bank lending is to examine existing lending relationships. Our paper is based on six lending relationships of a Bavarian bank. We were able to study the six credit files in the context of a more comprehensive study prepared by the Center for Financial Studies in Frankfurt.<sup>2</sup> Unlike the CFS study, we did not standardise, *ex ante*, the information we registered, but instead analysed the credit files very intensively and from a very close perspective. For each individual case we recorded facts from a great number of documents, more than in other comparable studies. Of course, we had to structure and aggregate our results, partly because we had to keep the firms anonymous. Nonetheless, the credit files of the six medium-sized firms tell six interesting stories about bank lending and give some general ideas about how the interaction between banks and their debtors might work.

## 2 Bank lending theory and empirical evidence

Economic theory motivates the existence of banks with their ability to produce information about their debtors.<sup>3</sup> The seminal text on this approach to financial intermediation, Diamond (1984), interprets banks as delegated monitors. They monitor their debtors on behalf of depositors. Diamond introduces two technologies to control debtors. The first, a non-monetary penalty in case of insolvency, is used to control the bank itself. The resulting contract is equivalent to the standard debt contract of Townsend (1979) and Gale/Hellwig (1985). The second technology implies the costly verification of the true situation of the debtor and, implicitly, the ability to make the debtor pay his debt if possible. How this could be done is not specified, although the existence of this second technology is essential.

Today, monitoring is often interpreted in a broad sense, referring to all activities undertaken by banks to prevent opportunistic behaviour by debtors.<sup>4</sup> This aspect is closely related to the ability of banks to renegotiate debt contracts. In both cases the close and enduring relationship between bank and debtor allows problems of incomplete information or incomplete contracts to be solved in a way not available to the participants of anonymous capital markets. Therefore, banks can be understood as both delegated monitors and delegated contractors. Much

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<sup>1</sup> See Fama (1985). Freixas/Rochet (1997) offer a good overview of the current theory of banking.

<sup>2</sup> For general information about this data set see Elsas/Henke/Machauer/Rott/Schenk (1997).

<sup>3</sup> For an overview see Neuberger (1994), pp. 31-70.

<sup>4</sup> See Freixas/Rochet (1997), p. 17, or Besanko/Kanatas (1993). The latter authors are also particularly un-specific about banks' monitoring technology.

theoretical and empirical work has been done recently to illustrate the different aspects of relationship lending by banks. The following limited overview pays special regard to what these models and empirical findings tell us about the monitoring process itself.

Diamond (1991) develops a model of bank lending in which firms can gain reputation through banks' monitoring. Findings of abnormal positive market returns after the publication of new bank debt or renewal of already existing debt seem to support this view.<sup>5</sup> But similar results can be obtained for non-bank lending, indicating that it is not the lender's identity but its financial standing which explains positive capital market reactions.<sup>6</sup> A special monitoring ability of banks is neither described nor proved by this approach.

On the other hand, reputation is an useful argument to bind the behaviour of banks in long term lending relationships. This bonding is valuable when banks offer a kind of insurance for firms (see e.g. Sharpe (1990), Fischer (1990)), consisting of an interest rate smoothing or liquidity insurance, and naturally wish to repudiate their implicit obligations in case of financial distress on the part of the debtor. Given that, in the long run, banks offering this kind of support should also gain from their ability to do so, there must be some kind of intertemporal or interfirm compensation, which is very hard to prove empirically (see for Germany Elsas/Krahn (1997) and Harhoff/Körting (1997)). A deeper insight into the monitoring process itself cannot be expected to emerge from this approach because it does not focus on the information transfer between debtor and bank.

The potential for intertemporal compensation is strengthened if bank and debtor coexist in a bilateral information monopoly. Therefore exclusiveness might contribute to the value of a lending relationship (see Petersen/Rajan (1994) for an empirical proof of this hypothesis). On the other hand, this monopoly might give banks superior bargaining power and, in effect, lead to adverse investment incentives for the debtors. Multiple empirical evidence shows that corporate debtors reduce this effect by having a greater number of banking relationships (Berger/Udell (1995), Elsas/Krahn (1997)).<sup>7</sup> Only anecdotal evidence exists for another way to reduce the information lock-in: debtors are often reluctant to transfer available information to their creditors, possibly because they can use this information to reduce the adverse selection effect when intending to transfer their main credit relationship to another bank. Consistently with this idea, a questionnaire-based study conducted at the University of Frankfurt (Thiessen (1994)) documents a great discrepancy between the kind of information bank credit officers would like to use and the kind of information they actually get.

Bargaining power becomes important when financial contracts are renegotiated. Although renegotiation takes place almost continually in corporate finance, major wealth shifts can be expected in the case of financial distress when the bargaining power of the debtor is diminished by the threat of insolvency. A growing body of literature deals with financial contracts and recontracting with respect to security design (e.g. Harris/Raviv (1995)) and financial structure (Dewatripont/Tirole (1994)), or with institutionalised recontracting according to national bankruptcy laws in restructuring methods (Bebchuck/Chang (1992), Aghion/Hart/ Moore (1992) and many others). Different types of recontracting regimes (i.e. bankruptcy laws) are analysed extensively, - if they can be publicly observed and therefore are transparent for scien-

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<sup>5</sup> See James (1987) and Lummer/McConell (1989).

<sup>6</sup> See Preece/Mullineaux (1994) and Billett/Flannary/Garfinkel (1995).

<sup>7</sup> On the other hand, Preece/Mullineaux (1996) show that the positive reputation effects mentioned above only appear if the number of lenders is sufficiently low.

tific researchers.<sup>8</sup> When dealing with the special abilities of banks to renegotiate financial contracts, publicly notorious cases are of less interest than might be expected. Banks should be able to recontract at low cost, and therefore at a low level of publicity. Bankruptcy laws only determine the threat point of these bilateral renegotiations, but say nothing about the recontracting game itself.

As mentioned above, debtors wishing to keep their bargaining power might be unwilling to reduce information asymmetry below a certain level. Recontracting in distress can be adversely affected by this substantial amount of information asymmetry. If distress occurs, debtors might use costly signalling to avoid inefficiencies. Mooradian (1994) discusses signalling in distress with respect to chapter 11 filing. Detragiache (1995) proposes a model of capital structure signalling in the style of Ross (1977) for private workouts. An interesting result of this model is that debtors can only signal if their bargaining power in the official bankruptcy procedure is not too big. Therefore, the strong position of creditors in the German insolvency code might favour private workouts of restructuring agreements, whereas, due to their weak position under chapter 11 in the United States, a bank-dominated private workout might not be feasible in the US. There is some evidence in the cases reported in the present paper that bank and debtor do in fact play a signalling game in the case of distress.

Haubrich (1989), transferring a general concept developed by Radner (1981, 1985), describes relationship lending as a supergame in correlated strategies.<sup>9</sup> During a review phase the banks receive a sequence of cheap signals about debtors' behaviour. The bank punishes the debtor during a penalty phase if he does not pass a simple statistical test at the end of the review phase. This test almost certainly reveals misbehaviour by debtors, and therefore renders feasible allocations that are superior to allocations which can be reached with short-term contracts. Burghof (1998), interpreting the review test as a solvency test and the utility in the penalty phase as the result of a private workout, demonstrates that the long-term relationship also depends on a strong position of debtors in the official bankruptcy procedures.<sup>10</sup> Again, the German insolvency code favours a game as described above, whereas lending contracts with banks might have a different character in the United States. We have not heard of any empirical proof of this interpretation in the existing literature.

Taking these results together, we can draw some motivation for the approach followed in this paper: lending relationship design depends on the country-specific institutional setting. Therefore, even highly informative data about lending in other countries (like Berlin/Mester (1997) about the US) is of limited value for Germany. And little is known about the intertemporal and strategic aspect of relationship lending in Germany (or anywhere else), although this aspect seems to be crucial for our understanding. The reason is easy to see: During a lending relationship lasting many years a great amount of potentially interesting information arises and is documented in the credit files on paper, but only partially in electronic format. Recording and analysing all this information for a large number of credit files is beyond the capacity of scientific research. The necessary aggregation of data or even exclusion from the analysis of some documents should be based on an in-depth knowledge of what information they contain and to what degree this information is relevant to describe long-term lending relationships. Therefore, the development of stylised facts for further research still requires a lot of "storytelling", as is done below.

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<sup>8</sup> See e.g. Chatterjee/Dhillon/Ramírez (1996) or McConnell/Lease/Tashjian (1996) for the United States. International comparisons are made by Franks/Nyborg/Torous (1995) and Kaiser (1996).

<sup>9</sup> For a similar model see Boot/Thakor (1994).

<sup>10</sup> The second feasibility constraint is a discount factor close to one.

### 3 The data set

Our data stems from the credit files of six medium-sized corporate customers of a major Bavarian bank. The customers were selected by the bank's credit officers in response to six predefined types we deemed to be typical or of special interest. These predefined cases were:

K1: a lending relationship without a significant negative credit event (straight course),

K2: a lending relationship terminated by the bank (premature termination),

K3: a lending relationship based on the monitoring activities of another bank, which in the case actually studied was a foreign bank (second bank),

K4: a lending relationship in which a negative trend was turned around (turnaround),

K5: a lending relationship with a private workout of a restructuring agreement (private workout),

K6: a lending relationship with bankruptcy of the debtor (bankruptcy).

We recorded and classified every document in the credit files containing information gathered by the bank or describing interaction between the debtor and the bank. Credit files were available for about five years, i.e. from 1992 to 1996.

Compared with other studies these data have three main advantages, which compensate for the small number of cases investigated:

- The information is taken from internal credit files and not from questionnaires as in other comparable studies about bank lending in Germany.<sup>11</sup> It should therefore be less biased by whatever ideas the person answering a questionnaire might have about proper bank behaviour.<sup>12</sup>
- Taking all potentially relevant events into account should reduce the analytical bias resulting from our own ideas about the lending process.
- This is the only study concentrating on monitoring and recontracting as a procedure over the course of time.

Nonetheless, we do not pretend to have gained representative results, and we view some of our conclusions as hypotheses for further empirical research.

In the next chapter we outline the process of information gathering by the bank, based on the following criteria: availability to other market participants, origin, temporal perspective and cost of the information. Subsequently, the behaviour of debtors and bank lending officers is described. Special interest is taken in activities which might potentially bind the future behaviour of debtors. Of course, information gathering is part of the behaviour of lending officers.

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<sup>11</sup> See Drukarczyk/Duttle/Rieger (1985) and Hesselmann/Stefan (1990) dealing with collateral and distress. An overview of their results in English is given by Edwards/Fischer (1994), pp. 156-177. See also the studies by Thiessen (1994) and Harhoff/Körting (1997).

<sup>12</sup> It should be mentioned that the credit files appeared not to have been rearranged by the bank employees before we analysed them. A possible bias could therefore only result from the selection process itself.

Therefore, in the last chapter information gathering and other actions of debtors and bank lending officers are brought together. We conclude with some general hypotheses about the nature of lending relationships.

## 4 Information gathering by banks

### 4.1 Information in the credit files

The defining characteristic of information in the present context is its documentation in the credit files, where it served as the basis for the decisions of the bank's employees. Therefore, we recorded as an "information event" every document in the credit files with informational content about debtors' creditworthiness, regardless of its nature or size. For example, not only extensive expert opinions or consultant reports were counted, but also newspaper cuttings or internal computerised inquiries. We had to exclude from our analysis those documents to which it was not possible to assign a specific date and origin.

Because only documents still in the credit files at the date of our survey could be taken into account, one would expect the number of information events to decrease with growing temporal distance from our survey. This phenomenon can be observed in all six cases and distorts the results. For an analysis of a broader database this effect could be corrected by an adequate regression. For the six cases analysed in this paper we are content with the evolving structure of information gathering without correction.

The following table gives a general overview of the information events in the six credit files:

	Total number of information events	Observation period	Information events p.a.
K1: Straight course	43	55 months	9.4
K2: Premature termination	86	55 months	18.8
K3: Second bank	49	34 months	17.3
K4: Turnaround	181	59 months	36.8
K5: Private workout	165	59 months	35.6
K6: Bankruptcy	144	59 months	29.3
Average:	111.3	53.5 months	24.5

The comparatively high number of information events in all six cases gives a first impression of the intensity of relationship lending.

### 4.2 Public versus private information

A bilateral informational monopoly should rest on information not available to other market participants. Summarising the results of the study made at the University of Frankfurt, Thiessen casts doubts on this view of relationship lending.<sup>13</sup> According to the questionnaires, bank lending officers mainly use public information about past performance, whereas complex, in-

<sup>13</sup> See Thiessen (1994), pp. 686-688.

ternal data such as forecasts or financial planning statements are not applied - even though they might shed light on the potential success of debtors' investments.

Our results contradict the statement that banks mainly used information which was available to all other market participants. As public information we counted extracts from the register of companies or from the land register, status enquiries from mercantile or credit reporting agencies, sector reports and newspaper cuttings. All other information is not freely available to the markets. As can be seen below, only a few information events fall into the category of public information:

	Number of events		Percentage	
	Public information	Private information	Public information	Private information
K1: Straight course	2	41	5%	95%
K2: Premature termination	17	69	20%	80%
K3: Second bank	4	45	8%	92%
K4: Turnaround	7	174	4%	96%
K5: Private workout	7	158	4%	96%
K6: Bankruptcy	5	139	3%	97%
Total:	42	626	6%	94%

The medium-sized firms in the sample did not have to (and did not) publish their annual financial statements. Thus, balance sheet data were not counted as public information. However, even if they had been regarded as public information, this would not have changed the results significantly. Some public information, e.g. newspaper articles, might be observed by the lending officers without being documented in the credit files, but the same is true for private information, e.g. unofficial enquiries or computer research.

A greater amount of public information was only used in the case of premature termination (K2), possibly due to a significant lack of co-operation on the part of the debtor. In general, the bank used little public information. This result supports the traditional concept of lending relationships as being separated from the public capital markets by informational asymmetry.

### 4.3 Expensive versus cheap information

According to Thiessen's second statement, banks - regrettably - do not use complex internal data, and in particular, forecasts made by their debtors, despite the fact that information stemming from these sources would probably be of greater value for a prediction of the borrower's future success than the commonly used retrospective balance sheet numbers. At the same time, however, there are good reasons for lenders not to rely on a firm's internal information. For one thing, internal information provided by debtors reflects their particular viewpoint, and thus may not be very useful for creditors owning very different financial claims towards the firm. For another, complex prospective data could be very expensive. If the existence of banks is motivated by their ability to produce information about debtors, they could be expected to use

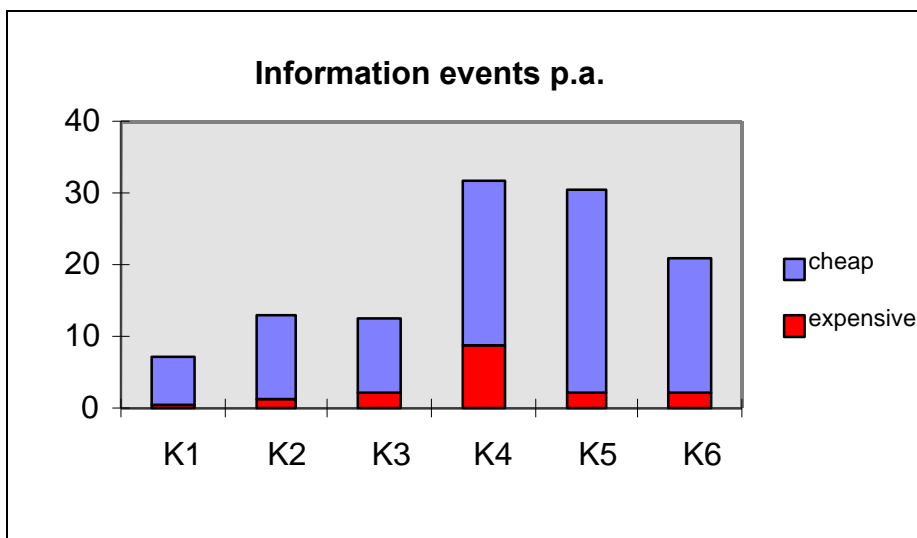


their resources economically and to employ expensive means of information-gathering sparingly.

To illustrate this idea, we roughly divided the data into expensive and cheap information. Information is expensive if it is difficult to capture and is prepared especially for the bank's informational needs. It is cheap if it is either easy to obtain or has to be available anyway in order to comply with legal regulations. According to this classification, expert opinions and consultant reports, the presence of bank advisers in the firm of the debtor, inspections and reviews of their internal accounts, financial planning statements and other prospective studies are expensive. Extracts from public registers, bankers' references and the credit reports from the regional Bundesbank offices,<sup>14</sup> status enquiries from mercantile or credit reporting agencies, sector reports, newspaper articles, routine checks and analyses using the bank's computer system, and finally conversations with customers taking place inside the bank yield cheap information. In addition, balance sheet information is cheap because it must be prepared anyway and is analysed routinely with a computer program. The classification does not consider who has to pay for the information, assuming that only the total cost of information is relevant for the efficiency of bank lending.<sup>15</sup>

We can observe that the bank usually utilises cheap information. If problems arise, not only the total number of informational events increases, but also the relative importance of expensive information. Although no approximation of information costs can be expected to emerge from our rough classification of information events, we can at least guess from our data that information costs are many times higher in cases of distress than under ordinary conditions.

To illustrate this result we first compare the yearly average of information events in our six cases:



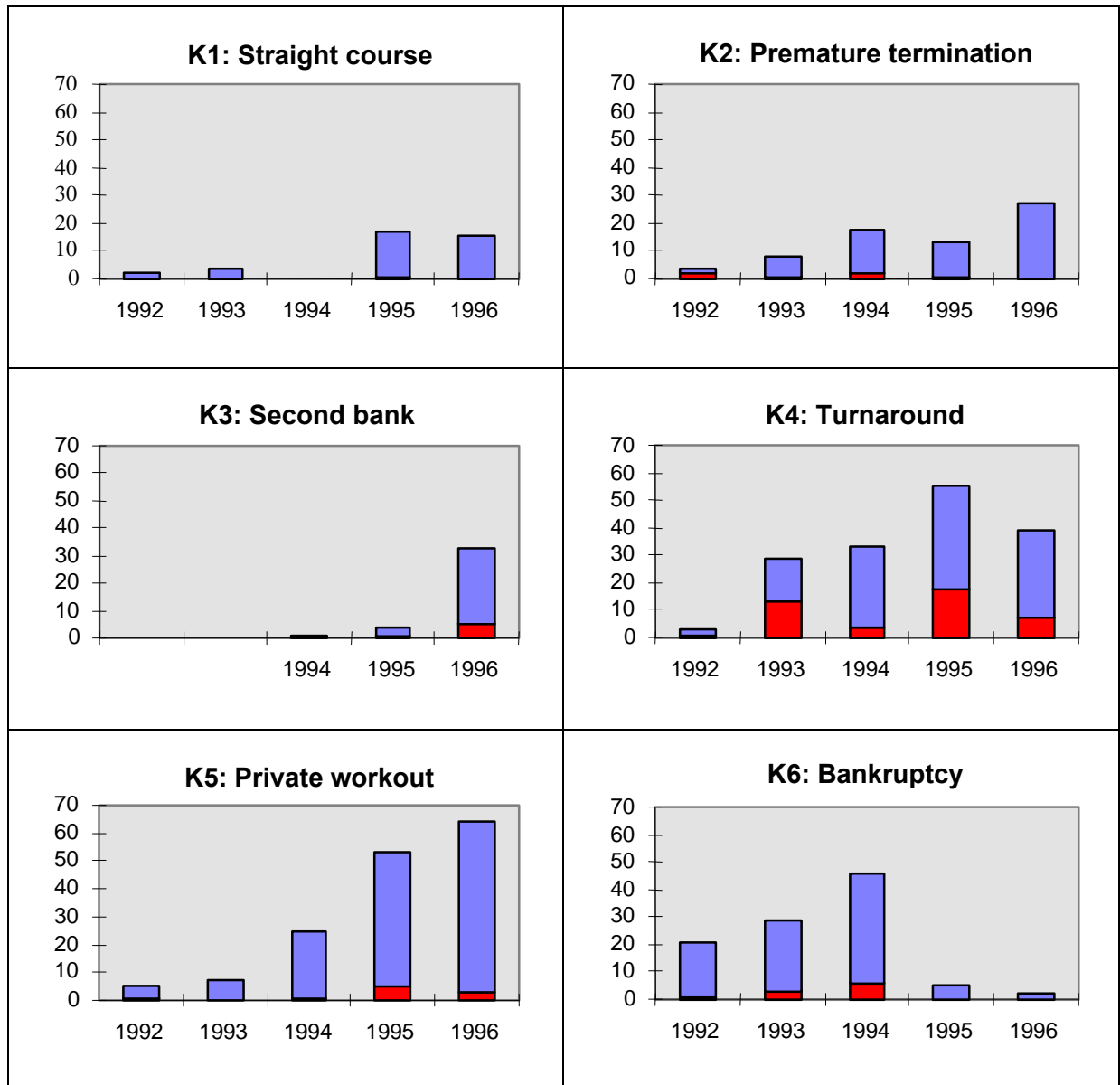
The average percentage of expensive information is 14.2% for all information events, or 12.4% if all six cases are weighted equally. Considering the six cases individually, the percentages are as follows:

<sup>14</sup> According to Section 14 of the German Banking Act, banks have to report every customer with a credit exposure in excess of DM 3 million to the Bundesbank. In response, the Bundesbank informs the bank of the total volume of reported credit exposures recorded for the debtor in question and the number of banks reporting.

<sup>15</sup> Sometimes we could not decide on whether an information event was expensive or not; therefore, the total number of information events we took into account here is smaller than in the other chapters.

K1:	K2:	K3:	K4:	K5:	K6:
3.1%	10.2%	17.1%	27.6%	6.7%	9.7%

Private workout (K5) and bankruptcy (K6) show a comparatively small relative amount of expensive information. But its importance rises in years of crisis. In the following charts, years of crisis can be identified in all six cases by the greater number and higher cost of information events:



In the bankruptcy case (K6) the bank stopped information production in December 1994, about one year before the bankruptcy actually took place. For the lending relationship without apparent problems (K1), the increasing information production after 1994 was motivated by negative forecasts for the economic sector and not by a deterioration in the creditworthiness of the debtor itself. In the case of the second-bank relationship (K3), informational needs resulted from the debtor's opaque contingencies and commitments within the group to which it belonged.

In summary, the bank did use expensive information when needed. If no problems occurred, either the bank did not want to use it or the debtor was not willing to give away such valuable information. Assuming that the proportion of debtors in distress in the loan portfolio of banks is small, it is not surprising that the relative importance of expensive information is also small, as documented in the questionnaires used in connection with the Frankfurt study. Nonetheless, its substantial qualitative importance for long-term relationship lending should not be disregarded.

#### 4.4 Perspective and origin of information

In cases of distress, the bank also used information of different origins and different temporal perspectives than under ordinary conditions. We observe a tendency towards greater use of prospective data (although the relative importance of prospective data is always small), and a growing interest in external sources of information. In cases of trouble, external data has an importance equal to or exceeding the importance of internal information.

Bank-internal statements, either as a part of the internal rating or made by lending officers in a non-standardised manner, are defined as prospective data. We also consider third party statements by auditors or consultants about the future development of the firm and various kinds of budget planning to be prospective. All other information is retrospective.<sup>16</sup> Based on this partition, we obtain the following numbers for the total observation period of each lending relationship:

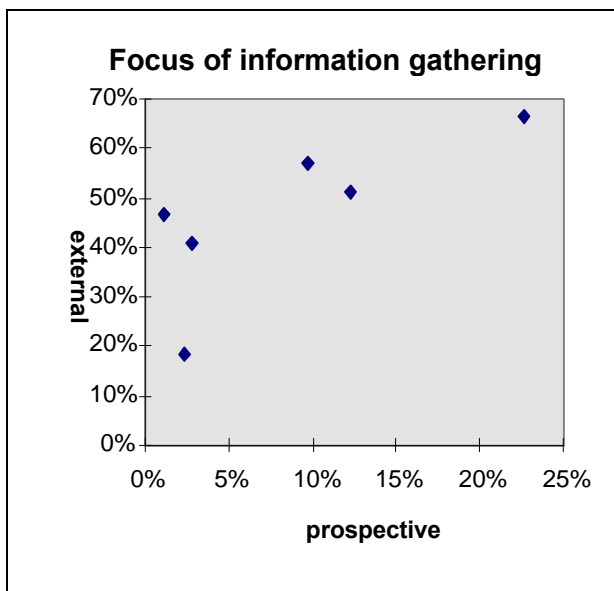
	Number of events		Percentage	
	Retrospective	Prospective	Retrospective	Prospective
K1: Straight course	42	1	98%	2%
K2: Premature termination	85	1	99%	1%
K3: Second bank	43	6	88%	12%
K4: Turnaround	140	41	77%	23%
K5: Private workout	149	16	90%	10%
K6: Bankruptcy	140	4	97%	3%
Total:	599	69	90%	10%

Internal information of the bank is defined as comprising statements by lending officers, computerised analyses of the debtor's balance sheet data or bank accounts, internal ratings and other surveys based on internal data, and the outcomes of discussions with representatives of the debtor. By contrast, external information is interpreted as consisting of extracts from public registers, bankers' references, status enquires from mercantile or credit reporting agencies, the credit reports from the regional Bundesbank offices, publications in newspapers and other analyses of the debtor or his business sector by third parties, e.g. consultants, auditors or research agencies. We obtain the following result for the total observation period:

<sup>16</sup> We do not take into account the potential prognostic value of balance sheet data.

	Number of events		Percentage	
	External	Internal	External	Internal
K1: Straight course	8	35	19%	81%
K2: Premature termination	40	46	47%	53%
K3: Second bank	25	24	51%	49%
K4: Turnaround	120	61	66%	34%
K5: Private workout	94	71	57%	43%
K6: Bankruptcy	59	85	41%	59%
Total:	346	322	52%	48%

The changing level of information production from internal and retrospective to external and prospective sources in cases of distress becomes apparent when the last two tables are combined. The following diagram shows the percentage of external and prospective data on the x- and y-axis respectively:



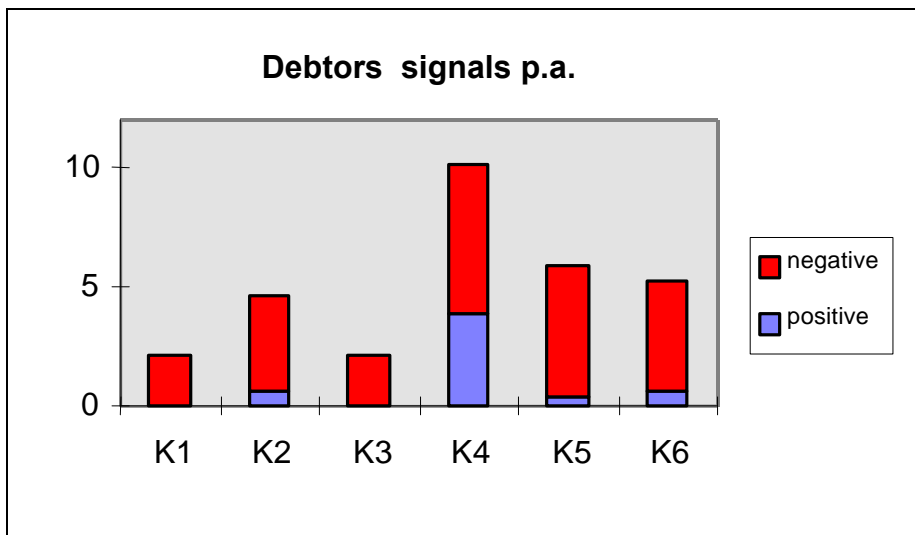
The most exhaustive information production took place for the turnaround (K4), correlating with the use of a lot of expensive information. Private workout (K5) and the second-bank lending relationship (K3) are dominated by the turnaround (K4), but dominate the remaining three cases. In K3 the bank was apparently unwilling to trust the monitoring activities of the other bank. And, in addition to normal monitoring activities, the lending officers had to find out about the true contingencies and commitments of the debtor in a complex group structure, which might explain the surprisingly high level of information production in this case. The low level of information production in the bankruptcy case (K6) is perhaps surprising and will need some further consideration, whereas in the case of premature termination (K2) it is caused by the unwillingness of the debtor to give away substantial information about his firm. The lowest level of information production is shown for K1.

## 5 Behaviour of debtors and bank reactions

### 5.1 Debtors signals

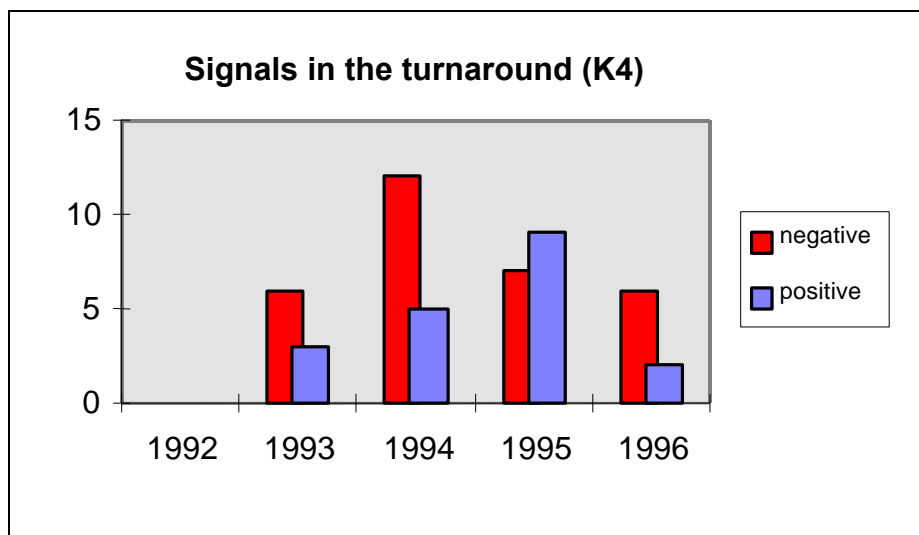
All documents classified as information events also contain some information about debtors' behaviour. However, in some cases there is an especially close correlation between debtors' behaviour and the information the bank receives. We call these information events signals. The debtor might want to confirm his creditworthiness through positive signals, or might not bother to prevent negative signals. Negative signals include unwillingness to present certain information, the breaking of agreements, frequent status enquiries from third parties, and an overall lack of co-operative behaviour. Positive signals are capital contributions or other signs of commitment, the explicit presentation of positive advances or results, and generally co-operative behaviour. It should be mentioned that lending officers frequently documented in the credit files their impression that the borrower was willing (or as the case may be, unwilling) to co-operate.

The following chart represents the yearly average of positive and negative signals:



At first sight, there is a strikingly small number of positive signals in the credit files. This could result from a bias in the lending officers' perception: On the one hand, they expect co-operation as a general precondition, and therefore do not document it explicitly. If they receive negative signals, they take them as an exception and a warning and consequently record them. In addition, lending officers might want to exculpate themselves through greater accuracy with respect to negative signals. On the other hand, debtors might have a strong bargaining position and therefore feel no need to produce positive signals or avoid negative signals.

A strategic use of signals might be suspected in the turnaround case (K4), which is outstanding for the high number of positive signals. Apparently, the debtor wanted to indicate in advance his willingness to jointly solve the problems that were emerging:



## 5.2 Bonding of debtors behaviour

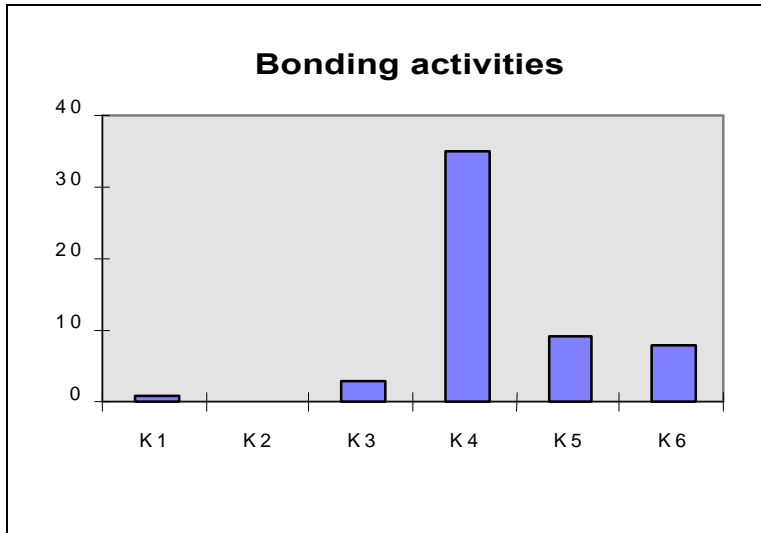
In the tradition of Jensen/Meckling (1976), banks' monitoring is complemented by bonding through debtors. In our context bonding measures are closely related to signals. In the theoretical literature, signalling is mainly interpreted as a method of avoiding adverse selection,<sup>17</sup> whereas bonding deals with moral hazard in an already existing contractual relationship. In reality, the two aspects are merged. Debtors might give certain signals to assure creditors about their future behaviour and thereby try to gain support for a restructuring plan. With the same signal, they could want to distinguish themselves from other debtors also claiming support.

Even if the distinction between signalling and bonding is not clear-cut, we can identify certain activities of debtors which have a special bonding effect. Bonding of future behaviour can concern the current managers of the debtor's firm, its owners or even third parties. With respect to the activities of the firm's managers, collateral plays a crucial role. Because collateralised assets cannot be sold, they bind investment behaviour. And, if assets serve as collateral, they cannot be used to secure fresh debt and thereby bind financing behaviour.<sup>18</sup> Likewise, owners can bind their future behaviour through capital contributions and guarantees, and so can third parties which might want to acquire an interest in the firm.

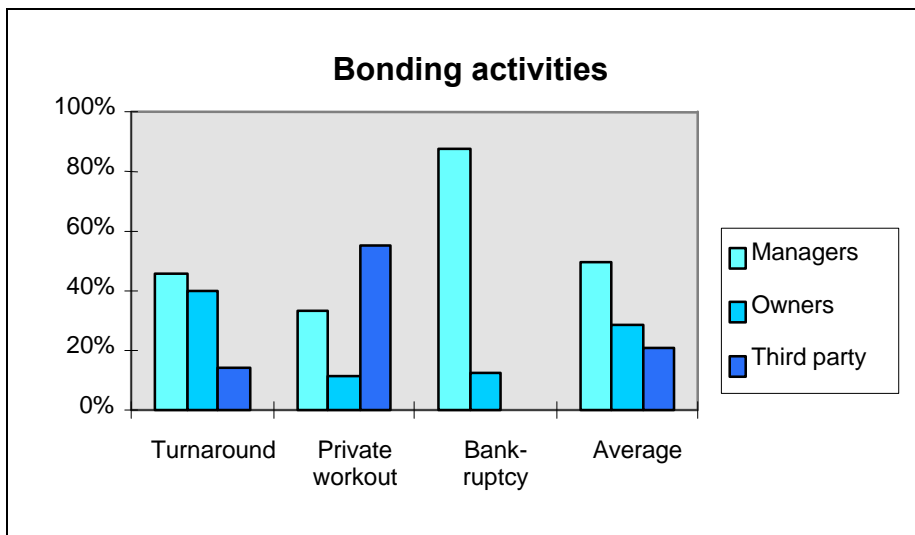
The comparison of the frequency of bonding activities shows that the turnaround (K4) features prominently again, whereas in the case without problems (K1), premature termination (K2), and monitoring by another bank (K3), bonding hardly ever occurs:

<sup>17</sup> The seminal paper on signalling in financial economics is Ross (1977).

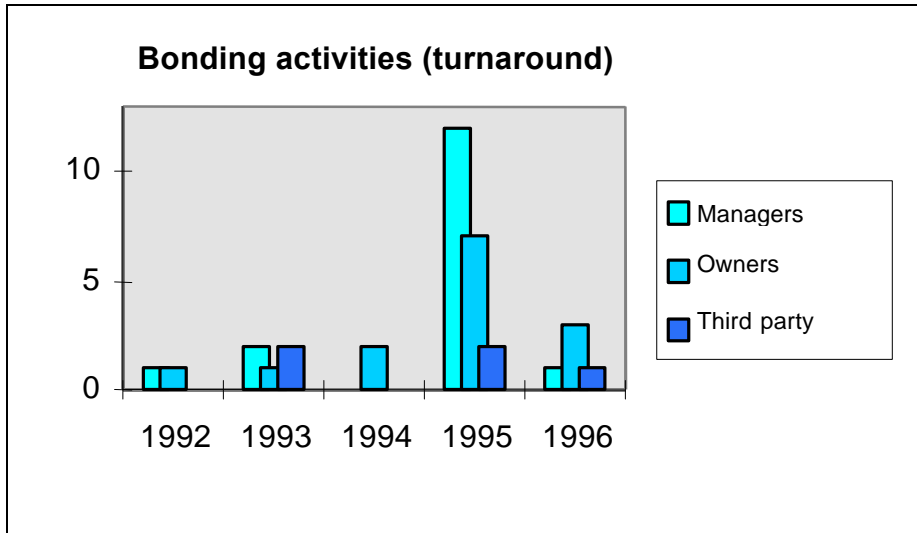
<sup>18</sup> See Rudolph (1984).



Most bonding activities (28) are concerned with the behaviour of managers. This is no surprise: this category (as defined above) includes all collateralisation activities, which are traditionally of great importance for bank lending in Germany. Of the remaining 28, 16 bonding activities were carried out by the owners and 12 by third parties. If we concentrate on the three cases with a considerable number of bonding activities (K4, K5 and K6), we find remarkable concentrations in some of these categories. In the private workout case (K5), third party involvement appears to be of crucial importance, whereas in the turnaround (K4) only managers and owners were involved. In the bankruptcy case (K6) bonding activities concentrate on the securing of already existing collateral, whereas neither owners nor a third party made a commitment worth mentioning:



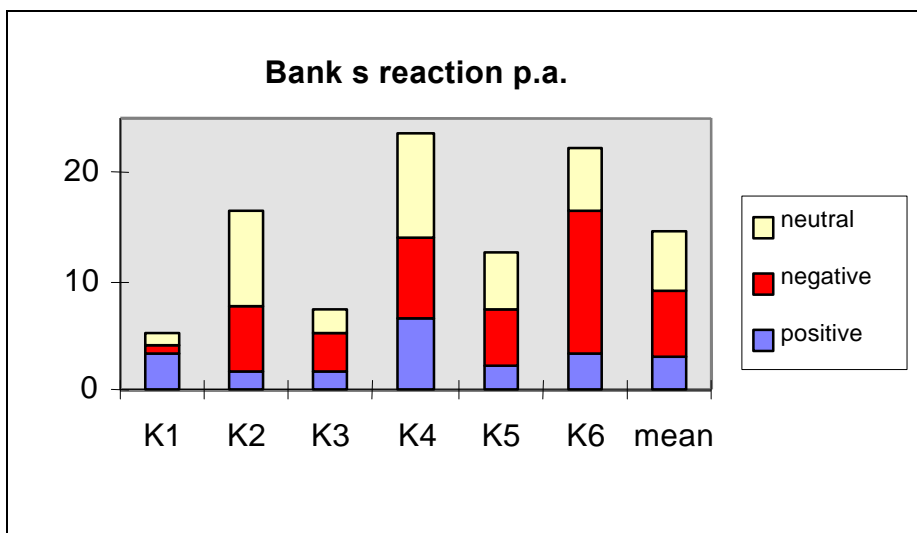
Bonding activities appear in the three cases in which an intensive recontracting process should have taken place. In the two cases where recontracting was successful, bonding activities are clustered in the years of crisis and appear to be part of packages agreed on by the parties involved. The following chart shows their temporal distribution in the turnaround case (K4):



### 5.3 Reaction of bank lending officers

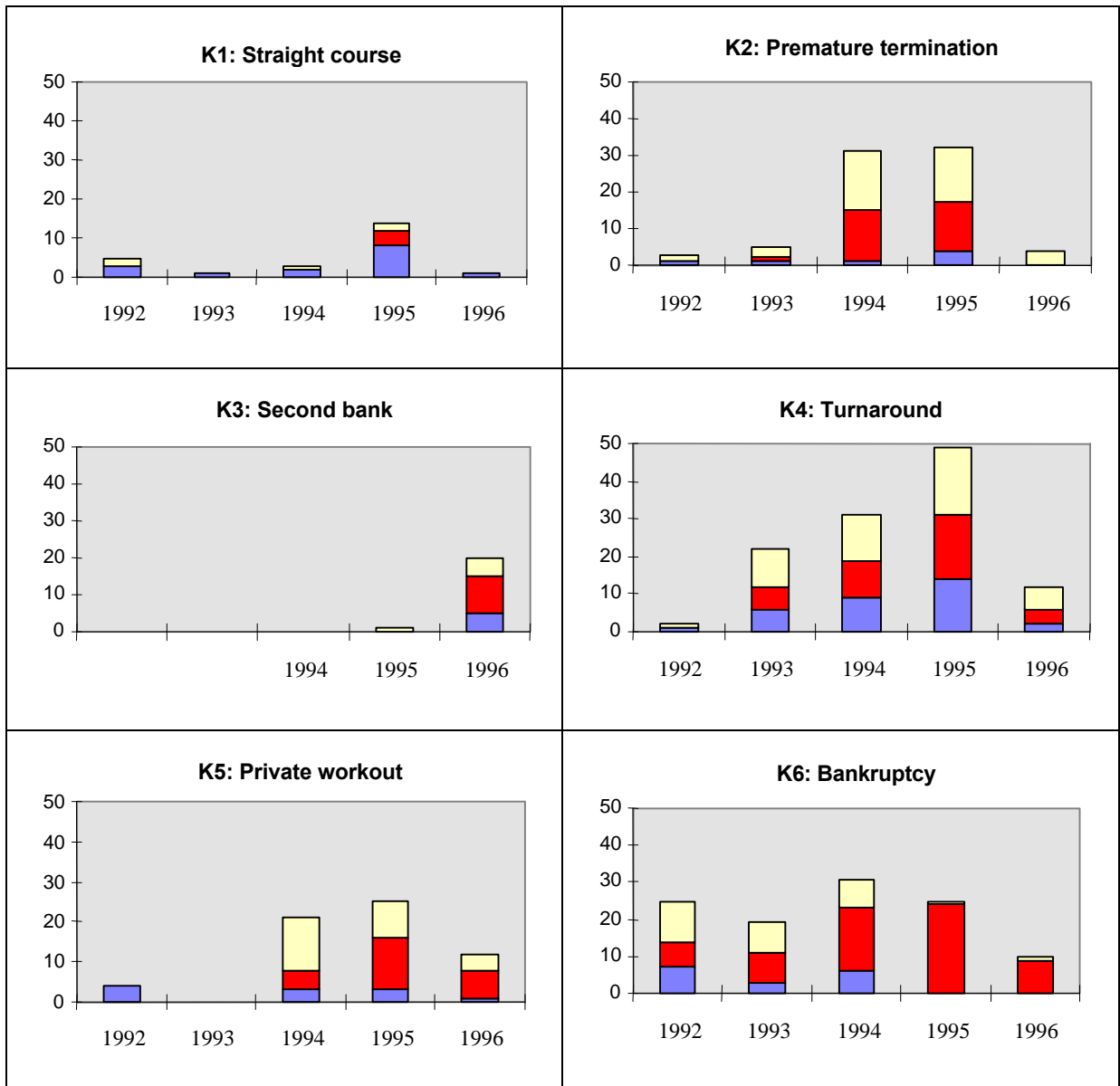
The bank's reactions consist primarily of all contractual measures, e.g. the granting, prolongation, expansion, reduction of a loan, and the termination of the loan agreement. We also recorded rejections of loan requests, threats to call in a loan, requests for more information or additional collateral, or the desire to renegotiate the lending agreements. Finally, an explicit intensification of monitoring, notification that the loan has been categorised as a problem loan, changes in pricing or in the general policy towards the exposure are internal reactions to new information. We can distinguish between positive, negative and neutral reactions.

Banks' reactions are documented thoroughly for legal reasons and to meet internal organisational requirements. As in the case of information events, their number rises sharply in the problem cases, documenting an intensive interaction between bank and debtor:

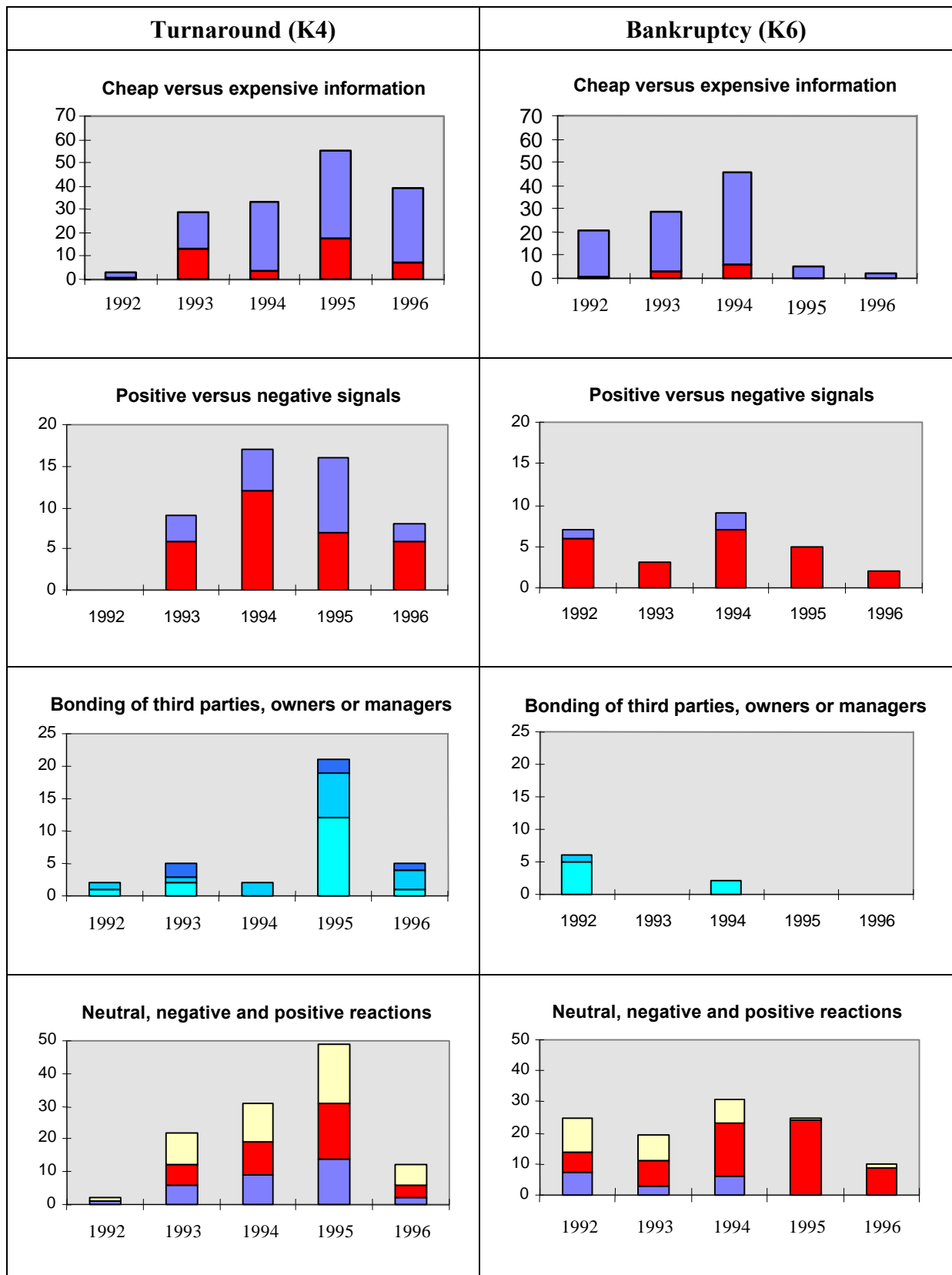


Likewise, the bank's reactions closely correlate to positive and negative developments in the six credit relationships:





It may be of special interest to compare the turnaround and the bankruptcy case. Differences between these two cases in terms of the behaviour of debtors and bank lending officers may throw light on the reasons why some firms are saved and why others fail. In the following charts, we demonstrate the different developments with respect to the four aspects discussed above, i.e. cheap and expensive information, negative and positive signals, bonding activities by different parties, and positive, negative or neutral reactions by bank lending officers (the categories are charted in the order given by each header):



These charts might induce the assumption that 1993 was in both cases decisive for the future progress of the crisis. In the turnaround (K4) all parties showed a willingness to bind themselves, and the managers produced at least some positive signals. In the bankruptcy case (K6) all parties were comparatively passive. Therefore, the following years were marked by a growing number of negative reactions and a breakdown of informational activities in December

1994. Both the bank and the owners seemed to have given up the firm, which was declared bankrupt in October 1995. We can assign approximately the same date to the climax of the recontracting process for the turnaround.

This description should not be misinterpreted: We do not suggest that the bankruptcy could have been avoided by different behaviour at that time. On the contrary, we observe that the behaviour of managers and owners contains information about the probability of recovery as seen by these parties, which seemed to be low in the bankruptcy case. The decisions as to whether to save the firm or allow it to fail may have been taken at a much earlier date. For the interpretation of long-term lending relationships it is important to note that bank lending officers deduce the probability of recovery from the behaviour of firm-insiders, which may be easier and cheaper to observe than the probability of recovery as such.

## **6 Results and hypotheses**

We can use these six bank-lending stories to formulate some results and hypotheses about bank-lending behaviour in Germany. The hypotheses put a rather positive interpretation on the lending relationship, showing that behaviour criticised by other studies as inefficient might have a rationale in the costs of information and the process of renegotiation. Unfortunately, due to the small number of intensively studied lending relationships we are not able to prove the hypotheses below (and the results must be treated with caution). Consequently, we hope for further empirical work on the subject. Our results and hypotheses are as follows:

- If no problems occur in a lending relationship, banks mainly use cheap, internal and retrospective information.
- If a crisis arises, the bank sometimes uses more exhaustive and expensive information. The bank's willingness to do so appears to depend on what the bank lending officers can learn about the true state of the firm from the behaviour of the debtor.
- Retrospective information (e.g. balance sheet data) could be interpreted as information about the debtor's behaviour and thus as containing information on the debtor's assessment of the true state of the firm. If no apparent problems exist, this information could be sufficient to assure the bank that its lending position is safe.

Credit assessment in a long-term lending relationship as described above is mainly concerned not with the investment programme of the debtor as such, but with the behaviour of the firm's insiders. This behaviour provides lending officers with information about the character, reliability and qualifications of the relevant persons, and also about their expectations concerning the firm's future success. These observations allow a bank's lending officers to view the firm with the eyes of an insider without having access to the information available to insiders. Of course, this view suffers from many imperfections, including misinterpretation, belated information access or even manipulation by the debtor. Nonetheless, the described elements of monitoring could allow close delegated monitoring at low cost while leaving the debtor a high degree of freedom and bargaining power.

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