

Lehmann, Erik; Neuberger, Doris

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## SME Loan Pricing and Lending Relationships in Germany: A New Look

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Working Paper No. 18

**SME Loan Pricing and Lending Relationships  
in Germany: A new Look**

by

Erik Lehmann and Doris Neuberger

**Universität Rostock**

Wirtschafts- und Sozialwissenschaftliche Fakultät

Institut für Volkswirtschaftslehre

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# **SME Loan Pricing and Lending Relationships in Germany: A New Look**

Erik Lehmann and Doris Neuberger\*

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## ***Abstract***

*Strong lending relationships between banks and small and medium-sized enterprises (SMEs) play a key role in the bank-based financial system of Germany. So far, they have been mainly described by the notion of a housebank and transactional features of long-term bank-customer relationships. The present paper takes a new look by considering also interactional variables which try to measure social relations between loan officer and firm manager. We find that these variables do affect loan pricing, but that their influence varies according to firm age and housebank status.*

Keywords: Banking, Relationship Lending, Small Business Finance

JEL-classification: G2, L2

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\* Lehrstuhl für Volkswirtschaftslehre – Geld und Kredit, Universität Rostock, Parkstr. 6, D-18057 Rostock. For helpful comments we thank Monika Lindner-Lehmann.

## 1. Introduction

A financial system consists of institutional arrangements designed to transfer savings from those who generate them to those who are willing to make use of them. These arrangements are ultimately determined by legal rules, like the right of banks to own corporate shares or to be active both as lenders and underwriters on the capital market. They also affect bank practices and relationships between banks and borrowers which shape a financial system. A bank-oriented system as prevalent in Germany is characterized by long-term relationships between banks and firms, going along with bank interests in firms and cross-selling activities of banks as the principal suppliers of credit. In contrast, the Anglo-Saxon market-based system shows a bias towards generating revenues from short-term or "arms' length lending" rather than long-term relationship lending (see KELTNER 1995, p. 62).<sup>1</sup> While short-term or volume-oriented lending is mainly characterized by transactional features of contract design or bargaining power (e.g. loan rates, collateralization, switching costs), long-term relationships are shaped by both transactions and interactions.

Although there is growing evidence about long-term or housebank relationships between banks and borrowers, we know little about the role of social interactions in these relationships. For the U.S., empirical studies on relationship lending focus on effects of the duration of the firm's relationship with the bank or of the number of banks from which it borrows (BLACKWELL/WINTERS 1997, BERGER/UDELL 1995, PETERSEN/RAJAN 1994). For Germany, ELSAS/KRAHNEN (1998) and MACHAUER/WEBER (1998) additionally examined the role of the housebank status in the provision of loans to SMEs, where a housebank relationship is viewed as an information-intensive relationship with a long-term commitment. Besides the usually discussed transactional variables of relationship lending, HARHOFF and KÖRTING (1997) examined also mutual trust as a proxy for social interactions between bankers and firm managers. Moreover, a case study suggests that in long-term lending relationships of German banks, credit assessment is more concerned with the behaviour of the borrowing firm's insiders which provides information about the character, reliability and qualifications of the relevant persons, than with the investment programme of the debtor as such (BURGHOF/HENSCHEL 1998).

Given that Germany's financial system is the prototype of a bank-based system, further research about the nature and role of its bank-borrower-relationships is particularly needed here.<sup>2</sup> Since the early 1980s, all German banking groups have increasingly aspired the goal to provide SMEs comprehensive financial and business services, following the "Allfinanz-Strategie" or one shop-shopping strategy (see DEEG 1998). To compete more successfully in the SME market, banks seek stronger relationships with their clients by cross-selling.

In the present paper, we postulate that loan rate differentials may not only be explained by the theory of financial intermediation and the related theory of relationship lending, but also by

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<sup>1</sup> Rather than working and growing with small- and medium sized firms, commercial banks use short-term loans to pursue pro-cyclical lending: in times of prosperity, when banks have excess capital at their disposal, they improve their interest offerings and in times of recession, they curtail their lending operations (Business Week, July 18, 1994 pp. 66-67). This explains why in the U.S., the performance of small firms is strongly correlated with the business cycle (GERTLER/GILCHRIST 1994).

<sup>2</sup> As to evidence about the effects on firms' liquidity constraints see Fohlin (1998).

the theory of social interactions. Lending relationships are determined by both transactions and interactions between the contracting or bargaining partners. While transactional relationships are rather anonymous, interactional relationships are shaped by social interactions between people, i.e. loan officer on the one hand and firm manager on the other hand. We will analyze whether the impact of the interactional variables depends on the housebank-status or on firm age. Our hypotheses are tested with data from a recently concluded survey of German banks about their lending relationships to SMEs.

The paper is organized as follows. In chapter 2, we formulate the hypotheses concerning loan rate determination which are derived from the theories of financial intermediation and relationship lending, combined with the interaction theory which has been used to analyze business-to-business markets. Chapter 3 describes our empirical approach concerning data collection, measurement and descriptive statistics. In Chapter 4, we discuss the results and in chapter 5, we draw conclusions. The regression results and some descriptive results are presented in the appendix.

## **2. Loan Pricing and Lending Relationships: Theory and Hypotheses**

### **2.1 The Theory of Financial Intermediation**

The theory of financial intermediation suggests that asymmetric information and the resulting problems of moral hazard and adverse selection are the major impediments to the provision of credit to SMEs. In this regard, FAMA (1985) argues that commercial banks are unique financial intermediaries because they overcome information deficiencies by collecting inside or private information about the firms managers and projects. Given that the problems of asymmetric information tend to be most acute in SMEs, banks specialize in information production and loan contract design to resolve credit rationing problems of these firms. Their comparative advantage in tackling this task is the higher, the more they are able to reap economies of scale and scope in information production. The more the banks succeed in gathering information about their customers, the better they are able to screen and monitor borrowers and the less they have to resort to indirect devices of setting loan contract terms (interest rates, collateral requirements) to improve borrower incentives.<sup>3</sup>

#### ***2.1.1 The Role of Firm Characteristics***

Since information gathering is costly, banks will expand their search for information only as long as its expected return exceeds its cost. This precludes that the first-best outcome of complete information can be reached. If higher information asymmetry is compensated by a risk premium<sup>4</sup>, we expect that firms with high information asymmetry will have to pay higher loan rates. The degree of information asymmetry depends on borrower characteristics as firm size, firm age and firm governance or legal form. Typically, small firms provide less information to outside financiers than large firms, because of fixed costs of information disclosure or

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<sup>3</sup> For surveys see SWANK (1996), THAKOR (1995), NEUBERGER (1994), (1998a).

<sup>4</sup> This compensation device has the draw-back that rising loan rates aggravate moral hazard and adverse selection problems, so that the supply curve of loans may bend backwards. However, the more information a bank has gained, the more it is able to rise loan rates, because its loan offer curve is less likely to bend backwards.

the absence of disclosure rules. Moreover, the lack of reputation constrains small firm borrowing (see MARTINELLI 1997). With respect to loan pricing, we obtain the hypothesis

H1: Small firms have to pay higher loan rates than larger firms.

Moreover, the information asymmetry decreases with growing age, because older firms may build up reputation by tracing a good credit history. This leads to

H2: Young firms have to pay higher loan rates than older firms.

Firm governance as measured by the legal form is important because it affects the amount of private information that the firm managers have and their incentives and ability to shift risk to the bank and other fixed-claim holders. As limited liability restricts the bank's access to private assets of the owners in the event of distress, credit risk tends to be higher in corporations than in unincorporated firms (ELSAS/KRAHNEN 1998). Moreover, partnerships and proprietorships where the owners are liable for the firm's debt with their whole private property should be less prone to moral hazard, and their managers have higher incentives to prevent bankruptcy. They hold more personal stakes in their firms which are often their only source of income (HAX 1990, p. 116). Thus, we expect

H3: Incorporated firms have to pay higher loan rates than unincorporated firms.

### ***2.1.2 The Role of Collateral***

The role of collateral in loan contracts may be explained by positive incentive and signaling effects which help resolve moral hazard and adverse selection problems under asymmetric information.<sup>5</sup> If a loan is secured by a specific asset (inside or outside the firm) that serves as collateral, the lender has first claim to that asset in the event of default. First, this tends to deter the borrower's incentive to choose a riskier project after obtaining the loan. Second, collateralization may induce a borrower to reveal its otherwise hidden risks. If there are two indistinguishable borrowers with different risk and the bank offers a secured loan with a low interest rate and an unsecured loan with a higher interest rate, a borrower's willingness to accept the collateralized loan contract will be inversely related to its default risk on the loan.<sup>6</sup> This leads to the hypothesis

H4: Collateralization reduces loan rates by resolving asymmetric information problems.

This theory of collateralization is based on the assumption that the bank cannot distinguish between borrowers of different risk. In practice, however, banks classify borrowers in risk classes on the basis of their observations. If a firm which is able to provide collateral is perceived as less risky than a firm without collateral, it may obtain a better credit rating. If a lower observable risk implies a lower risk premium, we expect that collateralization reduces loan rates by lowering observable risk.

On the other hand, more information about the creditworthiness of a borrower may be a substitute for higher loan rates and collateral requirements. Then both loan contract devices

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<sup>5</sup> For an explanation under symmetric information see NEUBERGER (1995).

<sup>6</sup> For surveys see GREENBAUM/THAKOR 1995, pp. 229; HARTMANN-WENDELS et al. 1998, pp. 171; NEUBERGER 1998b.

should move into the same direction and we should expect a positive correlation between collateral and loan rate.

### ***2.1.3 The Role of Credit Use***

The risk of a bank credit depends on the project in which it is invested and on the bank's ability to monitor credit use. It is the lower, the higher the marketability of the collateralized asset in the event of default and the lower are the costs of monitoring credit use. If the credit is used for specific purposes as capital expansion, replacement investments or investments in new plant and equipment, the monitoring costs are low, but the marketability of the assets declines as asset specificity increases. On the other hand, an unspecific credit use (e.g. credit line) implies higher monitoring costs and, in the absence of a tangible collateral, higher credit risk. In the first case, the bank may reduce the exogenous risk by portfolio diversification, whereas in the second case, it faces an endogenous, undiversifiable risk of moral hazard. This implies

H5: Banks demand a higher risk premium on unspecific credits than on credits with a specific use.

## **2.2 The Theory of Relationship Lending**

### ***2.2.1 The Transaction-Based View***

The cost of gathering information about the creditworthiness of a borrower may be prohibitively high if borrower and lender transact only once, but can be reduced when the bank has more time to learn about the characteristics and actions of its customer in repeated transactions. The reusability of information creates economies of scale in the technology of information production: information which has been acquired during a lending relationship can be reused in future credit decisions, lowering the costs of lending (see BHATTACHARYA/THAKOR 1993, THAKOR 1995). Economies of scope may be achieved, if the relationship with the customer encompasses lending so that the bank can resort to information gathered in other transactions, e.g. deposit accounts (see PETERSEN/RAJAN 1994). Hence, the gains from relationship lending are the higher, the more intense or the broader is the relationship.

Moreover, relationship lending may be explained as an efficient arrangement in a world of incomplete contracts. By providing private information over a longer time period, it offers a technology for a valuable commitment by the lender vis-à-vis the borrower or for low cost renegotiations of debt contracts. As a result, loan rates should be lower or credit rationing should decrease (see ELSAS/KRAHNEN 1998).

In the relationship lending literature, the intensity of the relationship has been measured by two variables: the duration of the relationship and the status of a housebank (PETERSEN/RAJAN 1994, BERGER/UDELL 1995, ELSAS/KRAHNEN 1998, HARHOFF/KÖRTING 1997). The duration is expected to affect the bank's stock of private information. If a bank learns about firm quality over time, it may improve contract terms after having gained proof that investment projects have been successful. This leads to the hypothesis:

H6: As the duration of the lending relationship increases, loan rates will be lowered due to positive informations about the borrower's quality.

On the other hand, long-term relationships to borrowers may enable a bank to conduct compensatory pricing. At the beginning of a relationship it demands the same price from all bor-

rowers. This price is lower than the price related to expected average quality in order to avoid an increase in risk by adverse incentive and adverse selection effects. Having lent to borrowers of different risk, the bank will incur losses, when the bad borrowers go bankrupt at the beginning of their lending relationships. These losses may then be compensated, if the bank is able to bind the remaining good borrowers and raise loan rates above the level for high quality borrowers in a short-term transaction (HARTMANN-WENDELS et al. 1998, pp. 174).

The ability of the bank to achieve such a binding depends on its bargaining power vis-a-vis the borrower, which is also affected by information production in a long-term relationship. If the bank is the borrower's sole long-term financier, it obtains an information monopoly which provides a competitive advantage vis-à-vis outside banks (see FISCHER 1990; SHARPE 1990). Thus we obtain

H7: As the duration of the lending relationship increases, loan rates will be raised due to an information monopoly.

An information monopoly is often related to the status of a housebank. "...a housebank is regarded as the premier lender of a firm, being equipped with more relevant, and more timely information than any 'normal', nonhousebank institution" (ELSAS/KRAHNEN 1998, p. 2). This leads to a hold-up situation, where the housebank may extract a rent from its ex-post superior bargaining power:

H8: By gaining an information monopoly, housebanks set higher loan rates than normal banks as the duration of the relationship increases.

A borrower should be willing to bear these extra costs of lending only if he also expects gains from a housebank relationship. In the theoretical literature on housebanking, these gains are explained by an intertemporal implicit contract: housebanks offer insurance-like services to their borrowers, bearing a special responsibility or lowering loan rates in the event of financial distress (EDWARDS/FISCHER 1994, pp. 8; for a survey see ELSAS/KRAHNEN 1998). Thus, we expect

H9: For potentially distressed firms or firms with higher credit risk (measured by firm size, firm age, credit use), housebanks demand lower loan rates than normal banks.

ELSAS and KRAHNEN (1998) did not find evidence for intra- or intertemporal price differentiation related to housebanking. They concluded that housebanks might resort to another, indirect device to be compensated for their higher monitoring efforts: selling additional financial products to their borrowers at unfavorable rates (cross selling). This leads to the hypothesis

H10: Housebanks resort more to cross-selling than normal banks to be compensated for their higher monitoring efforts instead of raising loan rates.

### ***2.2.2 The Interaction-Based View***

The relationship of a housebank to its customer is not only determined by the information effects of repeated transactions, but also by social interactions between the bargaining partners. To describe these interactions, we compare the housebank relationship with a typical customer-supplier relationship of industrial firms. If housebanks are viewed as buyers of risk-bearing investments in SME loans, both relationships have in common:

- the suppliers are mostly smaller than the buyers (see LEHMANN 1996);



- because of their high turnover share, the buyers are key customers;
- by making specific advance deliveries or payments, the buyers obtain monopoly power which they may use to the detriment of the suppliers;
- information asymmetry between buyer and supplier implies a hold-up problem.

Hence, by holding a large share of the information-intensive loans available from an SME, the housebank takes the role of a key customer of that firm.<sup>7</sup> For the industrial sector, key customer relationships have been analyzed under transactional as well as interactional aspects (LEHMANN 1996). The interactional view of business relationships is based on the interaction theory, which considers that on both sides of a relationship, people are actively involved (for a detailed and actual discussion see FORD 1997 and AXELSSOHN/EASTON 1992).

While the term 'relationship' implies social relations or interactions, the relationship lending literature has neglected these aspects so far, focussing on the duration of a relationship as a means to reduce problems of asymmetric information (see HARTMANN-WENDELS et al. 1998, p. 174). Compared to goods markets, the social interactions between the managers of banks and SMEs are less clear and highly variable. PERRIEN and RICARD (1995, p. 40) conclude: "they (the bank managers) differ in their perceptions of the relationship orientation of both their own bank and competitors." Concepts as trust, positive experience or obligation to a partner which are used to describe social interactions, are subjective and difficult to operationalize.

If we resort to the interaction theory, it assumes that two interacting partners trade off the gains against the costs of interacting. They will continue the interaction only if, based on their experience, they feel that their contributions are adequately valued and paid for. Since relationships between borrowers and lenders tend to be conflicting (e.g. moral hazard, different wishes concerning collateral or flexibility of contract terms), the cognitive perceptions of both partners about the value of the relationship should play a large role.

In the recent past, several studies have tried to develop a theoretical framework for the determinants of a successful long-term relationship (see PERRIEN/RICARD 1995). One finding is that trust, confidence and satisfaction play the key role in the development of a relationship (see GANESAN 1994). ENNEW and BINKS (1995) find out that the nature of the relationship between banks and firms affect the extent to which firms feel constrained. Trust is an inter-subjective phenomenon and, like reputation, it may be created through positive experience in the past. Trust leads to decreasing control costs by lowering moral hazard. In a dyadic relationship, lower monitoring costs may lead to lower markups. Therefore, our hypothesis is:

H11: Lending Relationships which are characterized by mutual trust and positive experience imply lower loan rates.

Although perfect information is an unobtainable goal, the quantity and quality of information available to a bank will be influenced by the nature of its relationship with its business partner. A close relationship has the potential to provide the bank with a better understanding of the operating environment facing a particular business. Banks can get a clearer picture of the

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<sup>7</sup> There is, however, an important difference between buyer-supplier relationships in the industrial sector and the retail (small business) banking sector: in the latter, vertical integration is ruled out.

managerial attributes and a more accurate overview of the business prospects. Thus, from the perspective of the bank, the relationship provides the basis for understanding customer needs and resources. In a good banking relationship, the flow of information is such that both parties will have a better understanding of each other (ENNEW/BINKS 1995). A closer relationship, and consequently more accurate information exchange, would *ceteris paribus* decrease monitoring costs and ultimately loan rates. Specifically, we state our hypothesis as:

H12: Lending relationships which are characterized by a rich information flow from the borrower to the bank imply lower loan rates.

A major issue in relationship lending is the return on investing in relationships with customers. KOLARI, BERNEY and OU (1996) find empirical evidence that while small business loans likely have a negligible effect on the profits of large banks, they tend to increase the profitability of small banks over time - holding constant various bank risk characteristics. An effective banking relationship is not a simple one way process and requires a positive contribution from both partners. The bank can only meet customer needs if the manager or owner of the SME provides it appropriate and timely information. This cooperation ends up in a stable relationship, where the partners feel obliged to each other. This leads to the following hypotheses:

H13: A stable relationship between bank and borrower implies a lower loan rate  
and

H14: If the bank feels obliged to its customer, it provides loans at lower prices.

Furthermore, we will postulate:

H15: In housebank relationships social interactions play a larger role than in non-housebank relationships.

### **3. Data Collection, Measurement and Expected Signs**

#### **3.1 Data Collection and Measurement**

For our empirical analysis, we use data obtained from a survey of German banks in 1997. Approximately 1200 questionnaires were mailed to banks in towns with a location of a state-owned savings bank (Sparkasse). In those towns, we sent the questionnaire to the wholesales managers of three different bank types: big private banks<sup>8</sup>, state-owned savings banks and cooperative banks (Genossenschaftsbanken). The respondents were asked to refer to loan applications of SMEs with a loan volume ranging between DM 100.000 and 10 millions. We obtained 395 complete responses which implies a response rate of 32.5 percent. From the total of 395 cases, we analysed only those which refer to appropriated loans. Our dataset thus comprises 357 cases.

Apart from questions about firm characteristics (firm size, firm age, legal form) and contract terms (interest rate, collateral, repayment terms), we asked for the type of credit use (capital expansion, replacement investment, investments in new plant and equipment, credit lines, no

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<sup>8</sup> Including the Deutsche Bank, the Dresdner Bank, the Commerzbank, and the now merged Bayerische Vereinsbank and the Bayerische Hypotheken und Wechsel-Bank.

special use). As ELSAS/KRAHNEN (1998) and MACHAUER/WEBER (1998), we also asked for the bank-internal credit rating of borrowers. Moreover, the questionnaire contained a variety of questions related to the methods and costs of information gathering and the nature of the relationship between banks and their small and medium-sized borrowers.

Specific aspects of the *bank-borrower relationship* were measured using a set of multi-item scales. The respondents were asked to indicate their perceptions about these aspects on a range of statements scored on a 5-point Likert scale.

To operationalize the social aspects of the lending relationship, we followed the interaction approaches to business-to-business relationships (see CAMPBELL 1985). As interaction variables, we chose ‘control and distrust’, ‘positive experience in the past’, ‘obligation to the partner’, ‘willingness of the borrower to inform about problems’, and ‘stability of the relationship’. Obviously, these aspects are interdependent (see also ENNEWS/BINKS 1995).

To measure the borrower’s willingness to provide information, we used a 5-point scale which takes the value 3, if the willingness is perceived as neither better nor worse than that of other borrowing firms and the value 5 (1), if the willingness is perceived as remarkably better (worse) than the average. In the same manner, we compared the costs of loan processing and the economic and technical competence of the borrower’s management as perceived by the bank. These variables were ranked on a 5-point-scale which takes the value 1 (5), if the respondent chooses the judgement “very low” (“very high”).

To avoid ordinal variables, we transformed them into dummy variables: for each 5-point-scaled ordinal variable, all values below the median are proxied by the value zero and all values at or above the median by the value 1. The same procedure was applied to the measurement of the housebank status. The bankers had to evaluate on a 5-point-scale whether they perceive their bank as the customer’s housebank (1 = does not apply; 5 = applies completely). To avoid an industry bias in the measurement of firm size<sup>9</sup>, we computed the median of sales volume for each industry and transformed the size variable into a dummy variable.

The grouping of firms into age categories follows the classification as usually practiced by banks: young firms of age less than 2 years, middle-aged firms of age between 2 and 6 years and old firms of age 7-10 years or more than 10 years. This classification provides a kind of signal about credit risk. As shown by the time-series study of BRÜDERL and PREISENDÖRFER (1998), firms in the age class 2-6 years carry the highest bankruptcy risk, whereas a long-term success cannot be expected before 7 years after birth. For the youngest firms with less than 2 years of age bankruptcy risk tends to be low, because they can often resort to government aid or to own reserves built up in the start-up phase.

Similarly, we grouped the duration of the lending relationship in the following way: new customer (first contract), young relationship with a duration less than 2 years, duration according to the ‘problem age class’ of 2-6 years and old relationship with longer duration.

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<sup>9</sup> E.g. the minimum efficient size related to sales volume is higher in the trade sector than in the services sector.

We include four *control variables*: (1) bank type to control for differences between banking groups<sup>10</sup>, (2) management skill of the borrower as perceived by the bank, (3) industry dummies and (4) regional dummies.

The regional dummies shall capture differences in credit risk between the "new" and the "old" German states. Given that the transformation of the former communist system of the German Democratic Republic to a market economy is not yet concluded, the location of a firm in the 'new' states implies higher information asymmetries and managerial deficiencies than when it is located in the 'old' states of West Germany.

All variables which are included in the estimations are described in table 1.

### **3.2. Expected Signs**

Table 2 shows the expected signs for all cases. Furthermore, there should be differences between the loan pricing of housebanks and non-housebanks. If we expect that a variable exerts more (less) influence in the housebank subsample than in the non-housebank subsample, we will remark this difference as strong (weak).

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<sup>10</sup> We distinguish between the big private banks on the one hand and the savings banks and cooperative banks on the other hand, because the last two have in common a decentralized organizational structure, as opposed to the centralized structure of the big private banks (see VITOLS 1998).

Table 1

## Definition and Measurement of Variables

	Variable	Explanation and Measurement
Dependent	Interest rate	measured as percentage points above the refinancing interest rate
Firm Characteristics	Age	dummy variable indicating whether the firm is less than 2 years, 2 - 6 years, 7 - 10 years or more than 10 years old
	Firm size	dummy variable indicating whether the firm size is above the median size in that industry. Firm size was measured by turn-over-size categories.
	Incorporated firm	dummy variable indicating whether the firm is incorporated (limited liability company, GmbH or stock corporation, AG) or not (KG, OHG, BGR)
Relationship ables	Experience*	"We made positive experience in the past"
	Obligation*	"We are obliged to the borrower"
	Information*	"The borrower informs us immediately about problems"
	Stability*	"Our relationship is stable under pressure"
	Mutual trust*	"Our relationship is dominated by trust instead of control and distrust"
Transaction variables	Repayment flexibility*	"The repayment terms are very flexible for the client"
	Credit use	dummy variable, indicating the type of credit use: investment in new plant and equipment, capital expansion, replacement investment, no special use, credit line
	Collateral	measured as percentage points
	Credit rating	qualitative variable, indicating the credit rating, ranging from 1 (=best rating) to 5 (=worst rating). <sup>11</sup>
	Duration of loan processing	measured in days
	Cost of loan processing*	dummy variable, indicating whether the costs of loan processing are above the median (1) or not (0). The median was computed from 5 classes, ranging from 1 (=below average) to 5 (=above average).
	Duration of the relationship	dummy variable indicating to which class the duration of the relationship belongs (new client, less than 2 years, 2 - 6 years, 7 - 10 years, more than 10 years)
Control variables	Cross-selling	dummy variable indicating whether cross-selling aspects played a role in lending
	Bank type	dummy variable indicating whether the bank belongs to the big private banks or not
	Management skill*	"The management skill/competence is ... under the average (1) .... over the average (5)"
	Industry	Set of dummy variables indicating to which industry the firm belongs to (manufacturing and production; trade, service, building and construction; others)
	West German firm	dummy variable indicating whether the firm is located in West Germany (old states of Germany)

- qualitative variable, measured by a Likert scale, based on answers ranging from 1 (=not at all) to 5 (=to a very large extent). In the OLS-regression, we transformed the qualitative variable into a dummy variable, indicating whether its value is below median (0) or not (1).

<sup>11</sup> See ALTMAN/SAUNDERS (1997).

Table 2

## Variables and Hypotheses about their Influence on the Loan Rate

	Variable	Hypothesis	
		All cases	Housebank versus Non-Housebank
Firm Characteristics	Firm size	negative (H1)	weak (H9)
	Age	negative (H2)	weak (H9)
	Incorporated firm	positive (H3)	
Credit use	Specific use (New, Expansion, Replace)	negative (H5)	weak (H9)
	Unspecific use	positive (H5)	weak (H9)
Interaction Variables	Mutual trust	negative (H11)	strong (H15)
	Experience	negative (H11)	strong (H15)
	Obligation	negative (H14)	strong (H15)
	Information	negative (H12)	strong (H15)
	Stability	negative (H13)	strong (H15)
Transaction variables	Collateral	negative (H4)	
	Credit rating	positive	weak (H9)
	Repayment flexibility	positive	
	Duration of loan processing	positive	
	Cost of loan processing	positive	
	Duration of the relationship	negative (H6)	
		positive (H7)	strong (H8)
	Cross-selling	negative	strong (H10)
Control variables	Bank type	neutral	
	Management skill	negative	
	West German firm	negative	weak (H9)
	Industry	neutral	

## 4. Estimations and Results

### 4.1 Specifications

To measure the influence of transaction and interaction variables on the loan rate, we use several multivariate specifications. As shown in table 3, all specifications include firm-specific variables, credit rating and collateralization (no loan is granted without credit rating and collateral) and the control variables defined above. The first specification (simple model) shows the influence of these variables on the loan rate. The second specification (transaction model) includes also transaction variables and the third specification (total cases or interaction model) also interaction variables (including housebanking). Since we expect that the latter are more relevant in a housebank relationship than in a 'normal' lending relationship, we further differentiate between the housebank and non-housebank subsamples (table 4). Moreover, we expect that the age of the borrowing firm plays an important role in lending decisions. Interviews with loan officers indicated that there is no linear relationship between firm age and lending or loan pricing, where the firms are grouped in age classes. Therefore, we also tested differences between the subsamples of different age classes (table 5).

### 4.2. Empirical Results and Discussions

#### Firm Characteristic

As expected, there is a negative correlation between firm size and loan rate. This result, which has also been found in other empirical studies (e.g. Harhoff/Körting 1997), indicates that the

banks use firm size as a proxy for credit risk. This is corroborated by our results for different age groups (table 5). The negative impact of firm size is significant in the group of the youngest firms (< 2 years), where the information asymmetry is largest, whereas it is insignificant in the group of 2-6 year old firms. That it is again significant in the group of older (7-10 years old) firms, may be explained by their higher bargaining power rather than by a risk premium. As found by COWLING and SUDGAN (1995, p. 94), banks exert monopoly power in small firm financing. In this respect, our findings are different. As shown in table 4, firm size plays no significant role in housebanking relationships, where monopoly power should be highest this supports H9. For non-housebank relationships the negative influence of firm size is stronger, although not highly significant.

The legal form of the firm shows the influence according to H3 for all specifications. An incorporated firm with limited liability involves a higher credit risk for the bank than an unincorporated firm that provides unlimited access to private assets of the proprietors. The risk premium for limited liability is highest in the group of the youngest firms, where the legal form provides a signal to evaluate credit risk (see table 5). In this age group, the coefficient of the legal form is not only absolutely highest, but also significantly different from zero (at the 89% value), which is not the case in the other age groups. Obviously, with growing age, the legal form becomes less important to signal credit risk.

Our results indicate that the influence of firm age on loan pricing is not linear. In the group of the youngest firms, the banks compete intensively for new customers. Here, price competition leads to lower interest rates (see e.g. AUSTERBERRY et al. 1997). This negative effect seems to compensate a higher risk premium. However, the risk is not likely to be very high in this age class. Young firms are often backed by government guarantees or other collateral at the beginning of their lives. Moreover, our sample contains only data on appropriated loans and hence excludes the highest risks.

The highest interest rates are paid by firms which are 2 to 6 years old (see table 3). This age class shows the highest insolvency rate of German firms (see BRÜDERL/PREISENDÖRFER 1998), which explains a high risk premium. Moreover, the banks may extract rents from their higher bargaining power towards these firms. However, as indicated by table 4, this does not apply to housebanks, which are most likely to gain from a hold-up situation. Non-housebanks demand significantly higher loan rates from their 2-6 year old customers. As shown in tables 4 and 5, the role of the housebank is highest in this age group<sup>12</sup> and manifests itself in lower loan rates, as theoretically expected (see H9). Housebanks seem to provide liquidity insurance over the life cycle of a firm, demanding the lowest loan rates when the insolvency risk is highest. In contrast, a 'normal' bank demands the highest loan rate in the high-risk age class.

With increasing age, the probability that the firm survives increases, lowering the banks' credit risk. Moreover, growing skill of managers (see tables 3 and 5) and larger firm size reduce a firm's switching costs, which explains lower loan rates for the oldest firms.

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<sup>12</sup> Note that the fourth age class of firms older than 10 years have not been included into the regression analysis to avoid absolute multicollinearity. Its influence is included in the coefficient of the constant. We chose the first three age classes to obtain a clear ranking.

## Credit Use

All regressions support hypothesis H5, indicating that unspecific loans or credit lines have to pay significantly higher interest rates than loans with a specific use. There are, however, differences depending on the housebank status and firm age, which supports H9 (see tables 3, 4, 5). Non-housebanks demand an almost significantly ( $p = 0.1515$ )<sup>13</sup> higher premium on loans without specified use and hence higher endogenous credit risk (see table 4)<sup>14</sup>. This may be due to a negative signal: if a firm applies for such a credit at a bank which is not its housebank, that bank should interpret this as an unfavorable signal about the firm's quality. Because of their higher monitoring efforts, housebanks reduce the risk of unspecified loans and reject loans that are too risky.

## Interaction Variables

Although social interactions between the bargaining partners seem to be of less importance in small business lending than in the components supplying industry, aspects such as mutual trust and positive experience do play a role. The mutual trust variable shows the expected negative influence (see H11), which is significant only in housebank relationships (H15). Hence, the creation of trust leads to lower loan rates for housebank customers. Also positive experience from the past exerts a negative influence on loan prices (H11), which is, however, not significant. If the bank feels obliged to its customer, loan rates rise. Although this rise is insignificant, it may indicate that 'obligations' does not express a cooperative attitude (according to H14), but rather that banks demand a compensation for their commitments to customers (see ELSAS/KRAHNEN 1998). This applies most to the group of the 2-6 year old firms (see table 5), where the t-value is almost significant ( $p = 1.556$ ).

The willingness of the borrower to inform its bank immediately about problems exerts always a positive influence on the loan rate, which is significant for the group of the 2-6 year old firms and for housebanking relationships. This result cannot be explained by a higher cooperation from the side of the borrower, but rather by the expectation of financial distress when problems are reported (see also HARHOFF/KÖRTING 1997). Hence, housebanks do not seem to smooth loan rates as credit risk deteriorates, which has also been found in the times-series studies of ELSAS/KRAHNEN (1998) and MACHAUER/WEBER (1998).

A higher stability of the lending relationship leads to the expected reduction of loan rates (H13), which is significant for all cases (see table 3). In this regard, we find no significant difference between housebank and non-housebank relationships (see table 4). The results reported in table 5 indicate that the stability of the relationship is rather related to firm age. It shows only a significant influence in the first 10 years of a firm's life, but not if the firm is older than 10 years. This is consistent with our conjecture that the oldest firms face lower switching costs and have higher bargaining power which they use to reduce interest rates. Moreover, they are more likely affected by successor problems which impair the stability of a lending relationship. In the next decade, more than half a million SMEs in Germany will need a new generation of leaders (DEEG 1998, p. 96).

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<sup>13</sup>  $p$  represents the level of significance, i.e. the probability of false rejection of the null hypothesis. Since the tables contain only levels of  $p < 0.10$ , we indicate the higher level here.

<sup>14</sup> Here, a chi square test shows a highly significant difference between housebanks and non-housebanks (see table 8).



Compared with the transaction model (see table 3), the inclusion of the interaction variables increases the explained dispersion and lowers the coefficient of the constant. As expected (H15), the influence of these variables tends to be stronger in housebanking relationships and in lending relationships with young, less than 10 year old firms.

### **Transaction Variables**

We find a significant impact of credit rating on loan pricing according to the hypothesis of a risk-premium, which is consistent with other empirical studies (e.g. ELSAS/KRAHNEN 1998, MACHAUER/WEBER 1998). Collateralization shows the expected negative influence (H4), which is significant for the specifications of table 3 (for an opposing result see MACHAUER/WEBER 1998). Housebanks obtain more collateral than non-housebanks (see table 7). Since they tend to be the first lenders of a firm, they are more likely to get the best collateral and have a comparative advantage in evaluating those assets of the borrower that are suitable for collateralization (see also MACHAUER/WEBER 1998). If the same firm applies for a credit at another bank, it may not be able to provide collateral of the same quality or to the same extent. This might explain why an increase in collateral is of higher value for non-housebanks, leading to a significant loan rate reduction only there (see table 4).

Also the repayment terms have a significant influence on loan pricing, more flexible terms being compensated by higher loan rates (see table 3). This applies especially to housebanks, which seem to use their monopoly power in this regard (see table 4). It applies also to all firms which are younger than 10 years, but not to the older firms. In this age group, the loan rate is raised less and insignificantly, when the bank offers more flexible repayment terms. This result can again be explained by the higher bargaining power of older firms.

The duration of loan processing shows no significant influence in all specifications, whereas the loan rate increases as expected, if the cost of loan processing is above average. Cross-selling activities have a negative influence on the loan rate, which is, however, only significant in non-housebank relationships. Thus, the hypothesis that housebanks use cross-selling to be compensated for their special services (H10) is not supported by our data. Rather, non-housebanks may use cross-selling to be compensated for obtaining less collateral.

According to the theory of relationship lending, the duration of the relationship should be an important determinant of loan pricing. The hypothesis that the loan rate declines because the costs of information production become lower as the duration of the lending relationship increases, is not supported by our regressions. Since this finding corresponds with that of HARHOFF/KÖRTING (1997) and MACHAUER/WEBER (1998), it does not seem to be an anomaly or to be caused by inconsistencies in the data.

### **Control Variables**

As HARHOFF and KÖRTING (1997), we find a significant influence of the regional dummy, which indicates that firms located in the new states of Germany have to pay higher loan rates than the firms in the old states to compensate the banks for the higher credit risk in the new states (for details see LINDNER-LEHMANN et al. 1998). For housebank relationships, the significance of this influence vanishes supporting H9 (see table 4). The coefficients of the industry dummies show different signs depending on the model specification and are not significant. Also the banking type does not play a significant role. A significant influence is exerted from the variable management skill. Banks which perceive the management skill of their customer as above average demand lower loan rates from these firms. This may be due to lower

credit risk, but also to a higher bargaining power of the competent managers. Table 4 indicates that this control variable plays a significant role only in housebanking relationships, maybe because housebanks gather more information about their borrowers than 'normal' banks.

## **5. Conclusions**

We have postulated that a lending relationship depends on transactions as well as interactions between the bargaining partners. An empirical analysis of bank lending to small and medium-sized firms in Germany has shown that loan prices are not only influenced by firm characteristics and credit risk variables, but also by the social interactions between loan officer and bank manager. They vary significantly according to firm age and the status of a housebank. The relationship between firm age and loan prices is not linear and depends on age classes.

Housebanks seem to provide loan rate smoothing over the life cycle of a firm, demanding significantly lower loan rates from firms of the age class 2-6 years, when insolvency risk is highest. Interactional variables as mutual trust and obligation play a larger role in housebank relationships than in 'normal' lending relationships. To be compensated for their special services, housebanks use loan pricing more than cross-selling. For non-housebanks, on the other hand, cross-selling seems to be important as a compensation for less collateral. Like HARHOFF/KÖRTING (1997) and MACHAUER/WEBER (1998), we cannot support the theoretical hypothesis that loan rates depend on the duration of the lending relationship.

Unlike the relationships between suppliers and buyers in the industrial sector, the relationships between banks and their customers in small business lending have not been sufficiently analyzed yet. Although we have tried to go a step further, the present study is incomplete and contains open questions. For example, it does not consider possible interdependencies between the regression variables. Moreover, it neglects credit availability as an important variable of SME financing. Also, there are more social dimensions of the lending relationship than trust, obligation, experience and stability which could be examined as determinants of lending. These are tasks for future research.

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## Appendix

Table 3

Determinants of Loan Pricing: The Influence of Transactions and Interactions

Dependent Variable: Interest rate

OLS Regression Coefficients (t-Value)

	Simple Model	Transaction Model	Total Cases
<b>Firm Characteristics:</b>			
Age: < 2 years	+0,138794 (0,704)	+0,250510 (1,098)	+0,257492 (1,073)
2 - 6 years	+0,400753 (2,483)**	+0,339885 (1,684)*	+0,371031 (1,725)*
7 - 10 years	+0,268472 (1,393)	+0,199834 (1,008)	+0,199834 (0,864)
Firm size	-0,143471 (1,035)	-0,274073 (2,039)**	-0,278956 (1,990)**
Incorporated firm	+0,092162 (0,726)	+0,055710 (0,456)	+0,102585 (0,809)
<b>Credit use:</b>			
New		-0,122768 (0,741)	-0,027364 (0,170)
Expansion		-0,066501 (0,424)	-0,040972 (0,271)
Replace		-0,233715 (1,190)	-0,178718 (0,912)
Unspecific		+0,493027 (2,529)**	+0,586606 (3,055)***
Housebank			-0,156234 (0,102)
<b>Interaction Variables</b>			
Mutual trust			-0,119712 (0,786)
Experience			-0,118255 (0,748)
Obligation			+0,100930 (0,780)
Information			+0,201656 (1,301)
Stability			-0,354942 (2,155)**
<b>Transaction Variables</b>			
Credit rating	+0,318855 (4,043)***	+0,218709 (2,747)***	+0,256860 (2,961)**
Collateralization	-0,009730 (4,235)***	-0,007780 (3,260)***	-0,006201 (2,374)**
Repayment flexibility		+0,291246 (2,545)**	+0,320277 (2,695)***
<b>Duration:</b>			
First contract		-0,014506 (0,070)	+0,004387 (0,018)
< 2 years		+0,030651 (0,143)	-0,062478 (0,259)
2 - 6 years		+0,054372 (0,215)	+0,064507 (0,296)
7-10 years		+0,043450 (0,223)	+0,047280 (0,193)
Duration of loan processing		-0,002847 (1,185)	-0,002009 (0,770)
Cost of loan processing		+0,281627 (1,864)*	+0,275141 (1,839)*
Cross-Selling		-0,215478 (1,396)	-0,238644 (1,493)
<b>Control Variables</b>			
West German firm	-0,365775 (2,036)**	-0,528843 (3,066)	-0,517522 (2,854)***
Bank type	-0,007319 (0,055)	-0,054975 (0,412)	-0,027339 (0,192)
Management skill	-0,267220 (2,116)**	-0,281651 (2,305)**	-0,282958 (2,203)**
Production Industry	+0,081270 (0,414)	+0,085292 (0,459)	+0,091670 (0,480)
Trade Industry	+0,157632 (0,736)	+0,064939 (0,316)	+0,048535 (0,226)
Service Industry	+0,203305 (0,800)	+0,264055 (1,095)	+0,373245 (1,493)
Building Industry	+0,025323 (0,112)	-0,139207 (0,642)	-0,105108 (0,466)
Constant	+1,560719 (3,782)***	+2,024136 (4,436)***	1,776681 (3,646)***
Adj. R-square	0,15976	0,22644	0,24130
F-Value	5,49548***	4,65320***	4,06763***
N	357	357	357

Note: \*, \*\*, \*\*\*: Significance at the 10%, 5% and 1% level, respectively

Table 4

## Determinants of Loan Pricing: The Role of Housebanks

Dependent Variable: Interest rate

OLS Regression Coefficients (t-Value)

	Total Cases	Housebank	Non-Housebank
<b>Firm Characteristics:</b>			
Age: < 2 years	+0,257492 (1,073)	+0,400584 (1,115)	+0,403679 (1,111)
2 - 6 years	+0,371031 (1,725)*	+0,220756 (0,682)	+0,651807 (1,867)*
7 - 10 years	+0,199834 (0,864)	+0,330150 (1,006)	+0,174910 (0,468)
Firm size	-0,278956 (1,990)**	-0,081139 (0,305)	-0,242680 (1,329)
Incorporated firm	+0,102585 (0,809)	+0,213581 (0,982)	+0,092217 (0,547)
<b>Credit use:</b>			
New	-0,027364 (0,170)	-0,165372 (0,564)	-0,175965 (0,814)
Expansion	-0,040972 (0,271)	-0,220613 (0,894)	-0,049070 (0,233)
Replace	-0,178718 (0,912)	-0,061231 (0,173)	-0,380971 (1,474)
Unspecific	+0,586606 (3,055)***	+0,285620 (0,929)	+0,389727 (1,434)
<b>Interaction Variables</b>			
Mutual trust	-0,119712 (0,786)	-0,552250 (2,063)**	+0,030475 (0,145)
Experience	-0,118255 (0,748)	-0,195472 (0,749)	+0,172574 (0,953)
Obligation	+0,100930 (0,780)	+0,105262 (0,588)	+0,129118 (0,574)
Information	+0,201656 (1,301)	+0,858025 (2,595)***	-0,160838 (0,800)
Stability	-0,354942 (2,155)**	-0,394584 (1,021)	-0,215204 (1,060)
<b>Transaction Variables</b>			
Credit rating	+0,256860 (2,961)**	+0,481319 (3,218)***	+0,305090 (2,663)***
Collateralization	-0,006201 (2,374)**	-0,005672 (1,290)	-0,007637 (2,003)**
Repayment flexibility	+0,320277 (2,695)***	+0,389059 (1,972)*	+0,149874 (0,890)
<b>Duration:</b>			
First contract	+0,004387 (0,018)	+0,117530 (0,343)	-0,351552 (0,866)
< 2 years	-0,062478 (0,259)	-0,415190 (1,193)	+0,199163 (0,530)
2 - 6 years	+0,064507 (0,296)	+0,313083 (0,948)	-0,237888 (0,684)
7-10 years	+0,047280 (0,193)	-0,057454 (0,147)	+0,002368 (0,006)
Duration of loan processing	-0,002009 (0,770)	+0,001031 (0,224)	-0,003751 (1,067)
Costs of loan processing	+0,275141 (1,839)*	+0,185786 (0,724)	+0,311362 (1,583)
Cross-selling	-0,238644 (1,493)	-0,048275 (0,148)	-0,490172 (2,389)**
<b>Control Variables</b>			
West German firm	-0,517522 (2,854)***	-0,180875 (0,598)	-0,500301 (2,070)**
Bank type	-0,027339 (0,192)	-0,332311 (1,452)	+0,227993 (1,156)
Management skill	-0,282958 (2,203)**	-0,460263 (2,159)**	-0,010254 (0,052)
Production Industry	+0,091670 (0,480)	+0,028706 (0,092)	-0,038919 (0,141)
Trade Industry	+0,048535 (0,226)	-0,099450 (0,309)	+0,252557 (0,786)
Service Industry	+0,373245 (1,493)	+0,330813 (0,656)	+0,326759 (0,982)
Building Industry	-0,105108 (0,466)	-0,123509 (0,349)	-0,172700 (0,524)
Constant	1,776681 (3,646)***	+0,846556 (1,023)	+2,126955 (3,168)***
Adj. R-square	0,24130	0,30929	0,26891
F-Value	4,06763***	2,70448***	3,34925***
N	357	205	143

Note: \*, \*\*, \*\*\*: Significance at the 10%, 5% and 1% level, respectively

Differences between the number of data in the three columns are due to missing values of some variables.

Table 5

## Determinants of Loan Pricing: The Role of Firm Age

Dependent Variable: Interest rate

OLS Regression Coefficients (t-Value)

	< 2 years	2-6 years	7-10 years	> 10 years
<b>Firm Characteristics:</b>				
Firm size	-0,361570 (2,359)**	-0,217482 (1,497	-0,409479 (2,706)***	-0,165250 (0,736)
Incorporated firm	+0,209024 (1,567)	+0,145554 (1,150)	+0,101729 (0,749)	+0,147023 (0,680)
<b>Credit use:</b>				
New	+0,025039 (0,157)	+0,057871 (0,361)	+0,057069 (0,342)	-0,190532 (0,700)
Expansion	+0,022049 (0,129)	+0,008151 (0,052)	+0,061706 (0,388)	-0,164298 (0,633)
Replace	-0,162949 (0,791)	-0,039613 (0,215)	-0,103561 (0,502)	-0,664864 (1,827)*
Unspecific	+0,600663 (2,987)***	+0,680028 (3,402)***	+0,690232 (3,329)***	+0,536747 (1,735)*
Housebank	-0,101172 (0,648)	-0,355203 (2,353)**	-0,072326 (0,464)	-0,043322 (0,185)
<b>Interaction Variables</b>				
Mutual trust	+0,019440 (0,114)	-0,184214 (1,199)	-0,156389 (0,953)	-0,084544 (0,320)
Experience	-0,199654 (1,200)	-0,111448 (0,702)	-0,122297 (0,727)	-0,194935 (0,689)
Obligation	+0,101716 (0,717)	+0,182419 (1,426)	+0,086174 (0,620)	+0,096996 (0,422)
Information	+0,1678707 (0,993)	+0,474012 (3,063)***	+0,128019 (0,768)	+0,199609 (0,776)
Stability	-0,295484 (1,660)*	-0,490034 (2,949)***	-0,351631 (1,996)**	-0,281763 (1,000)
<b>Transaction Variables</b>				
Credit rating	+0,300171 (3,223)***	+0,174729 (2,039)**	+0,230564 (2,480)**	+0,351295 (2,219)**
Collateralization	-0,005748 (2,040)**	-0,003793 (1,392)	-0,004613 (1,633)	-0,006070 (1,364)
Repayment flexibility	+0,278907 (2,172)**	+0,390241 (3,318)***	+0,368607 (2,904)***	+0,139738 (0,695)
<b>Duration:</b>				
First contract	+0,022634 (0,102)	+0,088222 (0,425)	+0,026772 (0,119)	+0,372300 (0,544)
< 2 years	+0,194679 (0,819)	+0,235339 (1,136)	+0,208190 (0,985)	+0,086995 (0,128)
2 - 6 years	-	+0,181076 (0,955)	+0,346116 (2,008)**	+0,144411 (0,201)
7-10 years	-	-	+0,045071 (0,155)	+0,352397 (0,526)
Duration of loan processing	-0,002452 (0,836)	+0,001632 (0,617)	-0,001407 (0,525)	-0,006085 (1,373)
Costs of loan processing	+0,235125 (1,434)	+0,177668 (1,188)	+0,207010 (1,284)	+0,491040 (2,018)**
Cross-selling	-0,174028 (1,033)	-0,227552 (1,416)	-0,214326 (1,268)	-0,386916 (1,317)
<b>Control Variables</b>				
West German firm	-0,720530 (3,795)***	-0,428957 (1,927)**	-0,674588 (3,597)***	-0,498317 (2,121)**
Bank type	-0,056098 (0,359)	-0,122289 (0,848)	-0,055072 (0,362)	-0,074684 (0,326)
Management skill	-0,298389 (2,168)**	-0,312493 (2,317)**	-0,245301 (1,724)*	-0,431054 (1,981)**
Production Industry	+0,076171 (0,371)	+0,011944 (0,060)	+0,103836 (0,516)	+0,099063 (0,300)
Trade Industry	+0,036119 (0,157)	+0,056110 (0,257)	-0,011224 (0,050)	-0,069524 (0,183)
Service Industry	+0,631477 (2,239)	+0,375277 (1,469)	+0,234343 (0,860)	+0,400391 (0,980)
Building Industry	-0,105172 (0,435)	-0,134594 (0,562)	-0,110907 (0,458)	-0,137571 (0,378)
Constant	+1,960934 (3,844)***	+1,682925 (3,323)***	+1,896747 (3,606)***	+2,156097 (2,112)**
Adj. R-square	0,22707	0,26020	0,23458	0,19250
F-Value	3,82903***	3,59536***	3,77933***	2,30703***
N	51	99	48	159

Table 6

## Descriptive Statistics for Regression Variables

	Mean* (Cases)**	(Ca- Valid Cases	Median (Min-Max)
Firm Characteristics:			
Age: < 2 years	0,137 (49)	357	
2 - 6 years	0,286 (103)	357	
7 - 10 years	0,123 (44)	357	
Firm size	0,678 (242)	357	
Incorporated firm	0,560 (200)	357	
Credit use*:			
New	0,322 (115)	357	
Expansion	0,384 (137)	357	
Replace	0,115 (41)	357	
Refunding	0,171 (61)	357	
Unspecific	0,275 (98)	357	
Interaction Variables			
Housebank	0,589 (203)	348	
Experience	0,397 (137)	345	
Obligation	0,343 (121)	344	
Information	0,232 (80)	345	
Stability	0,351 (125)	357	
Mutual Trust	0,467 (189)	355	
Transaction Variables			
Repayment flexibility	0,496 (173)	349	
Credit rating***	2,5	356	2 (1;5)
Collateralization (in%)	56,80	356	60 (0;100)
Duration:			
First contract	0,180 (67)	357	
< 2 years	0,143 (51)	357	
2 - 6 Years	0,275 (99)	357	
Duration of loan processing	14,2	353	8 (1,180)
Costs of loan processing	0,585 (191)	352	
Cross-selling	0,826 (295)	357	
Control Variables			
West German firm	0,801 (286)	357	
Bank type	0,435 (155)	356	
Management skill	0,465 (166)	357	
Production Industry	0,381 (137)	357	
Trade Industry	0,213 (77)	357	
Service Industry	0,112 (40)	357	
Building Industry	0,179 (64)	357	
Others	0,104 (38)	357	

Note: \* Mean = in percent above the median;

\*\* Cases with dummy = 1

\*\*\* multiple answers allowed



Table 7

## Housebanks and Non-Housebanks

Descriptive Statistics; Chi-Square-Test (dummy, ordinal), T-Test (metric),

	Non-Housebank		Housebank	
	Mean (Cases/SD)	Median	Mean (Cases/SD)	Median
Interest margin	1,6914 (SD:1,179)	1,200	1,5145 (SD: 1,154)	1,100
Credit Refuse***	0,019 (4)		0,159 (27)	
Age classes				
< 2 years	0,140 (20)		0,127 (26)	
2 - 6 years*	0,231 (33)		0,322 (66)	
7 - 10 years	0,140 (20)		0,111 (23)	
> 10 years	0,483 (69)		0,421 (90)	
Credit use:				
New	0,301 (43)		0,332 (68)	
Expansion***	0,287 (41)		0,444 (91)	
Replace	0,105 (15)		0,127 (26)	
Refunding	0,189 (27)		0,161 (33)	
Unspecific***	0,331 (46)		0,179 (36)	
Credit rating classes*		3		3
1	0,077 (11)		0,107 (22)	
2	0,415 (59)		0,424 (90)	
3	0,408 (58)		0,376 (77)	
4	0,085 (12)		0,088 (18)	
5	0,014 (2)		0,005 (1)	
Collateralization(***)	44,965 (SD:31,4)	50	64,375 (SD: 23,2)	65
Duration of Relationship		3		3
First contract***	0,280 (40)		0,145 (29)	
< 2 years	0,140 (20)		0,146 (30)	
2 - 6 years	0,245 (35)		0,307 (63)	
7 - 10 years	0,105 (15)		0,088 (18)	
> 10 years***	0,231 (33)		0,314 (65)	
Duration of loan processing	13,7 (SD: 23,3)	7	14,5 (SD:23,8)	10
Cross-selling	0,867 (124)		0,790 (162)	
West German firm	0,811 (116)		0,791 (163)	
Bank type***				
Big private bank	0,643 (92)		0,294 (60)	
Savings bank	0,203 (29)		0,371 (76)	
Cooperative bank	0,154 (22)		0,335 (69)	
Industry				
Production Industry	0,349 (50)		0,410 (84)	
Trade Industry**	0,280 (40)		0,161 (33)	
Service Industry**	0,007 (10)		0,137 (28)	
Building Industry	0,161 (23)		0,195 (40)	
Other Industries	0,088 (18)		0,126 (18)	
Cases	143		205	

\*, \*\*, \*\*\*: Significance at the 10%, 5% and 1% level, respectively (Chi-Square-Test)

(\*), (\*\*), (\*\*\*):Significance at the 10%, 5% and 1% level, respectively (two-tailed t-test)

SD: Standard deviation