BANK EQUITY CLAIMS IN BORROWING FIRMS AND LOAN AVAILABILITY

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Abstract

This study investigates the effect that bank equity claims in borrowing firms have on the availability of finance to the firm. The results suggest that allowing banks to hold equity claims in borrowing firms enhance debt availability to the firm. The results are consistent with arguments that equity claims may be helpful in transferring the benefits of an ongoing relationships to the borrowers, and thus eventually also enhance investment efficiency in the economy as a whole. The results, however, also suggest that very small or very large bank equity claims in borrowing firms do not have this impact. The results suggest that allowing banks to hold equity in borrowing firms may have some advantages. Policymakers should take this into account when reconsidering or creating regulations in this area.

Keywords: Relationship lending, Bank equity claims, Loan availability.

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Introduction

A firm that wishes to fully utilize its investment opportunities is frequently reliant on different sources of outside funding. These sources may include bank loans, publicly or privately placed bonds, stock offers, supplier credit facilities etc. In a frictionless capital market, funds from these sources should always be available to firms with positive net present value investment opportunities. In practice managers often complain about not being able to borrow enough capital at reasonable rates. The fact that reasonably priced capital not always flows to firms with profitable investment opportunities may be explained by market frictions such as information asymmetries and agency costs.

The essence of the theories on asymmetric information is that firm managers or other insiders are assumed to possess private information about the characteristics of the firm's future cash flows or investment opportunities. While most theories on asymmetric information suggest that the issuance of debt is a positive event, recently more attention has been paid to the different sources of debt that a firm has to choose from.

Formal models concerning the monitoring role of banks have been developed by for example Diamond (1984) and Ramakrishnan and Thakor (1984) who state that banks have a gross cost advantage in collecting information. Assuming that this holds, and that information is durable and not easily transferred, these theories suggest that firms with close ties to financial institutions should have greater availability of capital and a lower cost of funds relative to a firm without such ties. Mayer (1988), Mayer and Alexander (1990), Petersen and Rajan (1994, 1995) and Keysey and Watson (1995) among others are in favor of this view.

A number of other studies by, e.g., Greenbaum, Kanatas and Venezia (1989), and Sharpe (1990), argue that if the information generated in the relationship is private to the lender and not transferable to others, the fundamental consequence of close relationships is the potential creation of monopoly power. Houston and James (1997) verify this empirically and find that information monopolies associated with borrowing from a single bank lender limit the use of bank debt.

Models by Petersen and Rajan (1995), and Berlin, John and Saunders (1993, 1996) further imply, that if banks are allowed to hold equity claims in borrowing firms on a routine basis, the overall investment efficiency in the economy will improve. In other words, banks would be more willing to finance positive Net Present Value (NPV) projects with lower credit quality. In fact, a number of studies on Japanese data suggest that firms in which a main bank is one of the largest equity holders have better access to capital and are less likely to be liquidity constrained than firms without such ties. Hoshi, Kashyap, and Sharfstein (1990, 1991) show that, firms with closer ties to their main banks are less liquidity constrained than their counterparts. Weinstein and Yafeh (1998) find that close bank-firm ties increase the availability of capital to borrowing firms. Agarwal and Elston (2001) extend these investigations into the German financial markets and show, that bank-influenced firms have easier access to capital in the form of bank-debt.

This study differs from the existing literature on relationship lending and the role of bank equity ownership in two important ways. First of all, while previous studies have only suggested that bank equity claims might have an impact on loan availability or used robust measures of bank ownership, this study is the first one to empirically investigate their relationship by using actual ownership figures. Furthermore, most previous empirical studies on relationship lending have used data on small businesses and raised questions about whether their results are applicable to large enterprises. This study employs data on listed corporations making it thus possible to extend the scope of bank-borrower relationship effects to that arena as well.

The purpose of this study is to empirically investigate how corporate debt availability is affected by the existence and size of the equity claims that banks hold in these corporations. The sample includes 363 observations representing 65 Finnish firms during the years 1985 through 1991. The Finnish financial markets present an ideal environment for testing the potential benefits of close banking relationships and bank equity claims in borrowing firms, because banks play a major role in Finnish corporate finance, so much so that it is often characterized as being a "bank-based" system similar to those of Germany and Japan. Furthermore, the data on Finnish banks' equity holdings in other corporations is publicly available for the time period in question from corporate shareholder records. The findings concerning the connection of bank equity claims and loan availability are consistent with existing literature on relationship lending in that bank equity claims seem to increase debt availability to a firm. This does not however hold for firms in which the bank holds a very small or a very large equity claim. Firms in these categories seem to be even more credit constrained than the firms in which no bank holds an equity claim.

Section two of this study summarizes previous literature on relationship lending, while section three describes the data. Section four presents the econometric tests of the determination of loan availability. Section five concludes the discussion.

Literature on Relationship Lending

The theoretical role of financial intermediation has not always been as clear cut as it seems today. The basic problem has been that earlier theories on financial markets could not warrant the intermediaries any specific role that the market could not provide as easily. Subsequently, a number of theories have suggested that banks have a cost advantage in monitoring borrowers.[i] The fact that a bank monitors and lends to a firm is proposed to certify firm quality and viewed as a signal of creditworthiness by outside investors. Empirical evidence using U.S. data provide ample evidence to support this proposition[ii]. Based on this literature, it seems evident that the existence or renewal of a banking relationship is viewed positively by the stock market. Positive signals to outside stakeholders are not the only potential benefits of strong firm-creditor relationships, however. Other potential benefits include enhanced credit availability and a lower cost of funds.

While evidence seems to accord with the view that an ongoing relationship between the lender and the borrower lowers pre-contract information costs, it is dubious whether these benefits are always passed on to the firms. An important determinant in this aspect is how competitive the capital market is for the borrower. The state of competition depends, of course, on the number of potential lenders in the market and how informed they are. If potential new lenders can verify the information generated in prior relationships, they can compete on par with the current lender. Should this information not be verifiable by new lenders, the current lender acquires competitive advantage vis-à-vis new lenders - a so-called information monopoly. The bank is therefore in a position to extract rents from borrowers when short-term bank loans are renewed and the firm is doing better than expected. Greenbaum, Kanatas, and Venezia (1989), and Sharpe (1990) argue that this information monopoly allows the current lender to extract rents attributable to knowing that the borrower is less risky than average.

Mayer (1988) and Petersen and Rajan (1994, 1995) express another view as to the role of credit-market competition and the value of relationships in the loan market. They claim that increased competition in financial markets reduces the value of relationships because it prevents a financial institution from reaping the rewards of helping a firm at an early stage or when in difficulties. While the absence of credit market competition is not a relevant option for creditors and firms to share future surplus the rational bank would and should require some security on the continuation of the relationship. One way to ensure bilateral commitment is for the contractual claim between the bank and the firm to include equity. According to the above mentioned studies, bank equity claims in borrowing firms may be one way to ease the transfer of the benefits of an ongoing relationship to the borrowers as enhanced credit availability.

Berlin, John and Sauders (1993, 1996) investigate in more detail the role of bank equity claims in borrowing firms. They claim that banks with (not too small) equity claims in borrowing firms are willing to finance riskier positive NPV projects than banks with all debt claims. They base this argument on a model which focuses on two key functions of an informed bank lender: (i) credibly communicating the firms prospects to its uninformed non-equity stakeholders, and (ii) controlling a borrowing firms incentives to take excessive risks, and find that the bank's optimal financial claim will always include equity. Berlin, John and Saunders (1993) in particular claim, that a bank's optimal claim in a firm will always include both debt and equity, since a bank

holding an all-debt claim will be excessively cautious, and a bank with an all equity claim will favor risky projects in excess. Based on a model where the bank's optimal claim will depend upon the degree of control over the firm's investment policy, the existence of a bank equity claim which is not to small (the bank will be cautious and limit its own credit supply) or too large (outside creditors will be cautious and limit their credit supply) will enhance overall credit availability to the firm.

Data and Descriptive Statistics

The data for this study are obtained from two different sources. The data on corporate ownership, or more specifically on bank ownership of corporate equity, are obtained from corporate shareholder records. Firm specific financial data are obtained from annual reports. The sample includes all nonfinancial Finnish corporations that had a listing for at least three consecutive years on the Helsinki Stock Exchange, in the OTC-list, or the stockbroker's list during the years 1985 through 1991. The final sample consists thus of 65 firms and 363 observations.

[TABLE 1 HERE]

TABLE 1 summarizes the variables used in the study and TABLE 2 presents descriptive statistics. The mean book value of assets for all firms in the sample is FIM 3,159 million. On average the largest owner bank holds 5.3 percent of the company's total voting power, the minimum being 0 percent and the maximum 72 percent. While these excessively high ownership rations are few in number, they are observed even if the banks are legally restricted to holding a maximum of 10 percent. Higher ownership ration can be obtained by organizing sets of various holding companies. These groups of companies that center around banks used to be a typical feature of the Finnish corporate sector (much like the Keiretsu in Japan) until the mid 1990's.

[TABLE 2 HERE]

The average ratio of accounts payable to total assets for all firms in the sample is 0.11, and the average ratio of accounts payable to sales is 0.10. These figures seem relatively low given the average Days payables outstanding period of 78 days and the average purchases to assets ratio of 0.57. The average debt to assets ratio for the firms is 0.70, while the average debt from financial institutions to assets ratio is only 0.19.

Empirical Results

How to Measure the Availability of Credit.

While the issue of whether close banking relationships enhance credit availability is undoubtedly interesting, it is unfortunately difficult, if not impossible, to measure credit availability directly. Some studies use leverage to measure credit availability. Nakatani (1984) shows that Japanese firms with close ties to their main banks are more levered than independent firms, while Morck and Nakamura (1999) suggest that high leverage and a high ratio of loans from financial institutions to total debt can be used as indicators of strong bank ties. The validity of this approach is undermined by the fact that the firm's debt ratios are simultaneously determined by the firm's demand for credit and the supply of credit from different sources. Thus regressions that use the firm's debt ratio as the dependent variable will suffer from a simultaneous equations bias. Changes in the debt ratio can be due to changes in demand for credit or by changes in supply for credit. This statistical problem is apparent when I regress the debt from financial institutions-to-assets ratio on characteristics of the firm. The results are reported in TABLE 3.

[TABLE 3 HERE]

The dependent variable is the debt from financial institutions divided by the book value of assets[iii]. It should be obvious that credit availability is greater for higher quality firms. Consistent with this intuition, larger firms tend to have a high debt from financial institutions-to-assets ratio. However, older firms (which also are expected to be of higher quality), more profitable and more liquid firms seem to have lower debt from financial institutions-to-assets ratios. The problem with these coefficients is that we cannot tell whether older firms (or more profitable and more liquid firms) are rationed by their creditors or whether they actually have lower demand for credit. To overcome this bias, I propose an alternative and indirect measure of the credit available to the firm. A similar approach has been adopted in, e.g., Niskanen and Niskanen (2006) and Petersen and Rajan (1997).

This alternative measure will be based on an intuition that if financial institutions limit the credit extended to a firm, the firm will borrow from more expensive sources. Firms with unlimited access to institutional credit will never turn to the more expensive source. Therefore, the amount borrowed from the expensive sources should measure the degree to which firms are supply constrained by institutional lenders.

Studies by Jaffee and Stiglizt (1990) and Petersen and Rajan (1994, 1997) accord with a widely held assumption in the literature and claim that trade credit is more expensive than bank credit, and that the former is taken only if the firm is rationed by less expensive creditors. Danielson and Scott (2004) provide more recent evidence on this relationship. They use data on small US firms and find that firms increase their reliance on trade credit when bank loans are not available. All of the firms in the sample of this study are offered, and use, trade credit, which suppliers provide with their goods and services.

Clearly, this is an initially costless way to finance short-term assets, but if the payments are deferred beyond the initial discount period, the costs exceed by far the cost of any institutional loan. Therefore, it could be argued that the firms, who use trade credit more than the average firm in their industry, are credit constrained by financial institutions.

Trade Credit Data. In TABLE 4 I present summary statistics for the accounts payable to sales and the days payables outstanding ratios by industry. There is little evidence to support the common argument that there are considerable industry specific differences as to the usage of trade credit. The figures in panel A of TABLE 4 only suggest that the firms in the steel industry have higher accounts payable to sales ratios than the average firm and that while the firms in the forest industry have lower accounts payable to sales ratios than the average firm, the firms in the retail industry have shorter payables outstanding periods than the average firm. The differences altogether are quite small. When the firms are divided into to subcategories by the amount of total assets that they employ, the totals in panel B and panel C indicate that the smaller firms use trade credit slightly more than the larger firms do.

[TABLE 4 HERE]

The data are further divided to reflect differences in trade credit usage by firm size, age and the size of the largest bank owner's equity stake in TABLE 5. Size does not seem to be a very important determinant of trade credit usage, although the firms in the smallest quartile seem to use trade credit slightly more than the average firm. The youngest firms seem to stretch out their payments more than the older firms do. Finally, the firms in which the largest bank owner holds between one and five percent of equity seem to rely less on accounts payable as a source of funds, and it seems that the days payables outstanding increases with bank ownership. This could be interpreted to mean that the higher the largest owner bank's equity claim is, the more financially constrained the firm will be.

[TABLE 5 HERE]

The Effect of Relationships on Credit Availability. When I examine credit availability by using an indirect measure such as the level of trade credit used there are a number of things that need controlling for before I can draw any conclusions between relationship effects and debt availability in general. The variables used in the regressions can be broken down to variables measuring the supply of trade credit, corporate financial characteristics measuring corporate demand for capital, corporate financial characteristics measuring the supply side of capital, relationship characteristics and industry characteristics.

Since there is no cost to accepting trade credit (at least until the discount date), the fraction actually purchased on account is relatively close to the fraction that is offered on account.[iv] This is the amount of credit voluntarily offered by suppliers. In the case of relatively large, listed firms, it is in my opinion relatively safe to argue that the purchases to assets ratio can be used as a proxy for the amount purchased on credit. The firm's purchases normalized by the value of book assets will therefore be used as a measure of the trade credit that it is supplied. When this variable is regressed against the accounts payable to assets ratio in column 1, TABLE 6, we can see that the coefficient estimate of 0.03 is economically large and statistically significant. This coefficient implies that an increase in the purchases to assets ratio from 0 to the median of 0.37 increases the firm's stock of accounts payable by about 1.1 percent of assets.

[TABLE 6 HERE]

The corporate financial characteristics measuring the firm's demand for capital include measures for investment opportunities and asset maturity. Firms that are growing more quickly are proposed to have more investment opportunities. A proxy for this is the change in sales scaled by assets. Because the underlying relationship between the firms' demand for credit and sales growth is non-linear[v], I have divided this variable into two separate variables. The first one stands for positive changes in sales and second one for negative changes in sales. Increases in sales raise the firms' demand for trade credit. Each additional Finnish Markka of sales increases the demand for trade credit by 0.4 pennies. To put this number in perspective, a firm's purchases average 59 percent of sales in this sample. So firms finance about 0.7 percent of this with trade credit. However, since trade credit is short-term credit, we should recalculate this percent based on monthly sales increasing by one currency unit. This being the case, firms finance about 14 percent of their increased purchases with trade credit. The coefficient on sales declines is negative, but nonsignificant. As an additional measure of the firms' demand for capital, investment opportunities are typically thought to decline with firm size in samples of large firms. Contrary to expectations, the estimates in TABLE 6 indicate that firm size is positively correlated with the firm's accounts payable.

An obvious measure of a firm's demand for short term financing is its short-term assets. This is because the rational firm should not finance long term projects with trade credit; rather, most firms match the maturity of assets and liabilities. The rational for this is presented by, e.g., Diamond (1991), and Hart and Moore (1991). Firms whose assets consist mainly of current assets should thus demand significantly more trade credit. From TABLE 6 we can see that at the margin 11 percent of the firm's current assets are financed with trade credit.

Having controlled for the availability of trade credit, the firms' investment opportunities, and the maturity of its assets, I now turn to investigate whether the firm's liquidity position and availability of credit from other sources affect its demand for trade credit. I find that the firm's ability to generate cash internally does not have a significant effect on trade credit usage. An increase in profitability will however increase the probability that the firm will stretch its payables more than the average firm will in the same industry. Finally, a listing at the Helsinki Stock Exchange, which presumably enhances availability of outside funding, does not have a significant effect on trade credit usage.

The relationship variables that measure the availability of finance from financial institutions consist of two variables measuring the strength and existence of bank-borrower relationships. The variable Age refers to the number of years the firm has been in existence. The purpose of this variable is to capture the ability of the bank to learn more about the borrowing firm through its relationship with the borrower. The impact of age can however be expected to decline with time. I use a log transformation of log (1+age) to take into account this possibility. This variable (and also the log transformation) has been previously used as a measure of lending relationships in a number of studies, e.g., Boot and Thakor (1994), Berger and Udell (1995), Petersen and Rajan (1994, 1995), and Keasey and Watson (1995). These studies predict that the longer a firm has been in existence, the more capital it will have access to. The regression coefficient on this variable is nonsignificant and negative in columns 1 and 2, but takes a statistically significant and positive coefficient in column 3[vi]. This result indicates that the older the firm is, the more likely it is to stretch the payment of its accounts payable.

This study is the first one to measure directly the relationship effects of bank ownership of corporate equity on corporate loan availability. Like described above, several studies, e.g., Petersen and Rajan (1994, 1995), Mayer (1988) and Berlin, John and Saunders (1993, 1996) have suggested that bank equity claims in the borrowing firms may enhance loan availability[vii]. I use two alternative specifications for the variable measuring the importance of bank equity claims. The first one is a continuous variable, which indicates the largest bank owner's share of the firm's total votes. To take into account the possibility of a nonlinear relationship, I also include a quadratic formulation of the votes variable. The coefficients for these two variables in column 1, TABLE 6 are both highly statistically significant and indicate that while increases in bank equity claims initially decrease trade credit usage, this effect is reversed for higher levels of bank equity claims.

An alternative treatment of the bank equity claim variable is suggested by Berlin, John and Saunders (1993) and a related literature on the impact of management equity ownership, [e.g., Morck, Schleifer and Vishny (1988), and McConnell and Servaes (1990)]. The Berlin, John and Saunders (1993) model suggest that the owner bank will limit its own supply of credit, when its equity claim is small, and that outside creditors will limit their credit supply when the bank's equity claim is large. The breakpoints of 5 and 20 percent are drawn from the management equity ownership literature and the 10 percent is added because Finnish banks are legally restricted to this maximum. Based on the results in column 2, TABLE 6 it seems evident that the firms, in which the largest owner bank holds between 5 and 20 percent of total equity, use less trade credit. This effect is most significant for equity claims between 5 and 10 percent.

The Probit regression in column 3, TABLE 6 investigate trade credit usage by introducing an alternative dependent variable, that is, a dummy variable which takes the value of 1 the Days Payables Outstanding (DPO) for the firm is above industry median. This specification is included to take into account the possibility that part of the demand induced variation in trade credit usage is not captured by the control variables. Based on the results for this regression model we can see that the firms in which the largest owner bank holds small equity claims (below 5 percent) or large equity claims (more than 10 percent) stretch their payments more than the firms in which no bank holds equity. Also, the firms in which the largest owner bank holds between 5 and 10 percent of equity stretch their payments less than the firms in which no bank holds equity do. The results in column 3 can be interpreted to indicate that the firms in which the largest owner bank holds some equity (but less than 5 percent), and the firms in which the largest owner bank holds more than 10 percent of equity are more financially constrained than the firms in which no bank holds equity. And also, the firms in which the largest owner bank holds between 5 and 10 percent of equity are less financially constrained than the firms in which no bank holds equity.

The industry variables are included in the regressions to control for industry specific differences in trade credit practices and investment opportunities. Based on the estimates in TABLE 6 these differences are significant. Finally, the year dummies are included to control for changes in macroeconomic conditions. When 1991 is set to be the reference year, theresults suggest that trade credit usage was higher between 1985 and 1988.

Discussion and Conclusion

This study examines the role that bank equity claims in borrowing firms have on debt availability to the firm by using data on listed Finnish firms during 1985 through 1991. The results suggest that allowing banks to hold equity claims in borrowing firms enhance debt availability to the firm if the bank's equity claim is neither very small nor very large. The results are to some extent consistent with arguments that equity

claims may be helpful in transferring the benefits of an ongoing relationships to the borrowers, and thus eventually also enhance investment efficiency in the economy as a whole. The results, however, also suggest that small bank equity claims in borrowing firms do not have this impact. Rather, there is some evidence to indicate that firms in which a bank holds a very small equity claim are more financially constrained than the firms in which no bank holds equity are. Similarly, the results also suggest that firms in which a bank holds a fairly large equity claim are more financially constrained than the firms in which no bank holds equity are.

Previous empirical studies on relationship lending use small, mostly untraded firms for which the bank-borrower relationship is likely to be important. This study expands their scope by concentrating on large, listed corporations that have direct access to both domestic and international financial markets. Previous studies and conventional wisdom suggests that these firms are not expected to benefit from close banking relationships. The results from this study contradict these beliefs in that relationships seem to count for large listed firms as well.

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Appendices

Table 1. Definition of Variables

Variable	Definition of variable
Log (Total Assets)	Log of total book assets of the firm
Debt to assets	The ratio of debt to total book assets
Debt from financial institutions to assets	The ratio of debt from financial institutions to total book assets
Coverage ratio	The interest rate coverage ratio - Interest expenses/profits
Profit to assets	The ratio of profit before taxes to total book assets
Quick ratio	Current assets/current liabilities
Firm age	Firm age at the beginning of each year
Accounts payable to total debt	The ratio of accounts payable to total debt
Helsinki Stock Exchange listing dummy	A dummy variable, which takes the value of one if the firm, is listed at the Helsinki Stock Exchange as opposed to the OTC-list or the Stockbrokers list.
Largest owner bank's share of total votes	The percentage that the largest owner bank holds of total corporate voting power.
The largest owner bank's share of votes 0.01-4.99	A dummy variable for the largest owner bank's share of corporate voting power. Takes the value of one if it fall between 0.01 % and 4.99 %.
The largest owner bank's share of votes 5.00-9.99	A dummy variable for the largest owner bank's share of corporate voting power. Takes the value of one if it fall between 5.00 % and 9.99 %.
The largest owner bank's share of votes 10.00-19.99	A dummy variable for the largest owner bank's share of corporate voting power. Takes the value of one if it fall between 10.00 % and 19.99 %.
The largest owner bank's share of votes > 20.00	A dummy variable for the largest owner bank's share of corporate voting power. Takes the value of one if it exceeds 20.00 %.
Industry dummy for the retail industry	A dummy variable for the firms in the retail industry
Industry dummy for other service industries	A dummy variable for the firms in other service industries
Industry dummy for the steel industry	A dummy variable for the firms in the steel industry
Industry dummy for the forest industry	A dummy variable for the firms in the forest industry

Table 2. Descriptive Statistics

Variable	Mean	Std.dev.
Total Assets	3158.7	4214.6
Debt to assets	0.70	0.84
Debt from financial institutions to assets	0.19	0.22
Accounts payable to total assets	0.11	0.10
Accounts payable to sales	0.10	0.24
Days payables outstanding	78	81
Purchases to assets	0.57	0.77
Profit to assets	0.09	0.09
Quick ratio	1.42	1.00
Δ Sales / Assets, if positive.	0.37	2.82
Δ Sales / Assets, if negative.	-0.03	0.08
Current assets / Total Assets	0.74	1.05
Largest owner bank's share of total votes	5.32	11.89
Firm age	75.2	57.9

Table 3. Debt from financial institutions and bank equity claims

Estimated coefficients from regressing the debt from financial institutions to assets ratios against a set of relationship variables as well as firm specific control variables. The absolute values that have been used in developing the variables have been inflation adjusted using the Finnish consumer price index. The results have been corrected for heteroscedasticity.

Variable	1	2
Intercept	0.25***	0.27**
	(0.000)	(0.000)
Relationship characteristics		
Ln(1+age)	-0.04**	-0.03**
	(0.027)	(0.039)
Votes	-0.004**	
	(0.024)	
$(Votes)^2$	0.0007***	
	(0.006)	
Largest owner bank's equity stake 0.01-5.00%		-0.008
		(0.758)
Largest owner bank's equity stake 5.01-10.00%		-0.07***
		(0.000)
Largest owner bank's equity stake 10.01-20.00%		-0.05**
		(0.011)
Largest owner bank's equity stake >20.00		0.003
		(0.947)
Firm characteristics		
Ln(total assets)	0.02***	0.02***
	(0.006)	(0.007)
Profit to assets	-0.68***	-0.70***
	(0.000)	(0.000)
Quick ratio	-0.01	-0.01
	(0.228)	(0.195)
Industry dummies		
Retail	-0.08***	-0.07***
	(0.001)	(0.003)
Other services	-0.05**	-0.05***
	(0.021)	(0.003)
Steel	-0.02	-0.02
	(0.585)	(0.485)
Forest	0.03	0.03
	(0.547)	(0.525)
Year dummies		
Year 1985	0.02	0.01
	(0.449)	(0.586)
Year 1986	0.13	0.11
	(0.201)	(0.249)
Year 1987	0.02	0.01
	(0.326)	(0.554)
Year 1988	0.01	0.003
	(0.639)	(0.911)
Year 1989	0.005	-0.0008
	(0.802)	(0.969)
Year 1990	-0.002	-0.005
	(0.904)	(0.779)
Adjusted R^2	0.11	0.10
F	3.5	3.35
Probability	(0.000)	(0.000)
N	359	359

Table 4. Accounts payable and days payables outstanding ratios

Panel A: All firms

	Accounts payable/sales (%)				Days payables oustanding			
Industry	Mean	Median	Min	Max	Mean	Median	Min	Max
Retail	8.22	7.57	3.47	19.96	64	56	33	174
Other services	8.44	7.54	1.86	23.43	87	79	45	288
Steel	9.33	8.31	1.27	36.10	73	66	40	304
Forest	7.16	6.31	2.04	15.59	72	79	36	93
Manufacturing	8.61	8.01	1.09	25.87	68	64	9	203
Total	8.54	7.80	1.09	36.10	70	65	0	304

Panel B: Small firms

	Accounts payable /sales (%)				Days payables outstanding			
	Mean	Median	Min	Max	Mean	Median	Min	Max
Retail	8.12	8.45	3.92	13.84	72	60	33	174
Other services	8.77	7.97	1.86	22.66	91	81	15	288
Steel	8.15	7.42	1.27	17.40	86	69	40	304
Forest	7.98	7.52	5.33	11.53	74	78	55	89
Manufacturing	8.51	7.90	1.09	25.48	68	63	24	203
Total	8.48	7.90	1.09	25.48	72	67	0	304

Panel C: Large firms

	Accounts payable /sales (%)				Days payables outstanding			
	Mean	Median	Min	Max	Mean	Median	Min	Max
Retail	8.33	6.68	3.47	19.96	49	55	34	69
Other services	7.96	6.62	3.59	23.43	79	69	28	143
Steel	9.94	8.49	3.38	36.10	68	65	46	96
Forest	6.99	6.31	2.04	15.59	72	80	36	93
Manufacturing	8.72	8.10	1.82	25.87	67	65	9	138
Total	8.60	7.72	1.82	36.10	68	64	0	246

Table 5. Trade credit used by firms: by size, age, and the largest owner bank's equity stake.

Panel A: Trade credit used by firm size

Book value of		Accounts payable/sales (%)		Days payables outstanding	
Assets (million FIM)	Asset percentile	Mean	Standard deviation	Mean	Standard deviation
Less than 360	0-25	8.10	4.20	75	48
360-1500	25-50	7.60	4.50	69	40
1501-4500	50-75	7.80	4.80	74	75
Over 4500	75-100	7.70	3.67	71	28

Panel B: Trade credit used by firm age

		Accounts payable/sales (%)		Days payables outstanding	
Firm age	Asset percentile	Mean	Standard deviation	Mean	Standard deviation
Less than 36	0-25	8.00	4.36	84	88
36-70	25-50	7.50	4.12	68	39
71-95	50-75	8.20	5.26	70	31
Over 96	75-100	7.60	3.21	67	20

Panel C: Trade credit used by the largest owner bank's equity stake

Size of the Largest owner bank's equity stake (%)	Asset percentile	Accounts payable/sales (%)		Days payables outstanding	
		Mean	Standard deviation	Mean	Standard deviation
Less than 0.05	0-25	8.10	3.70	64	47
0.06-0.99	25-50	8.10	4.70	70	27
1.00-5.40	50-75	6.80	4.14	73	35
Over 5.40	75-100	7.80	3.36	80	78

Table 6. Trade credit and bank equity claims

Estimated coefficients from regressing the accounts receivable to total assets ratio in columns 1 and 2 and A dummy variable which takes the value of one if days payables outstanding (DPO) is above industry median in column 3. Pseudo R^2 is computed as 1-lnL(Ω)/lnL(ω), where lnL(Ω) is the value of the likelihood function evaluated at the maximum likelihood estimates and lnL(ω) is the maximum value of the likelihood function under the hypothesis that all independent variables equal zero. The absolute values that have been used in developing the variables have been inflation adjusted using the Finnish consumer price index. The results have been corrected for heteroscedasticity.

Variable	1	2	3
Intercept	-0.04 (0.114)	-0.03 (0.294)	-1.63 (0.004)***
Relationship characteristics			
Log (1+age)	-0.007 (0.130)	-0.006 (0.176)	0.23 (0.026)**
Largest bank owner's equity stake	-0.002 (0.000)***		
(Largest bank owner's equity stake)^2	0.00002 (0.002)***		
Largest owner bank's equity stake 0.01-5.00 %		0.002 (0.766)	0.33 (0.059)*
Largest owner bank's equity stake 5.01-10.00 %		-0.06 (0.000)***	-0.53 (0.083)*
Largest owner bank's equity stake 10.01-20.00%		-0.02 (0.034)**	0.54 (0.043)**
Largest owner bank's equity stake over 20 %		0.01 (0.274)	0.75 (0.047)**
Firm characteristics			
Purchases / assets	0.03 (0.047)**	0.04 (0.013)**	-0.48 (0.000)***
Δ Sales /assets if positive, zero otherwise	0.004 (0.004)***	0.003 (0.027)**	0.37 (0.328)
Δ Sales / assets if negative, zero otherwise	-0.03 (0.593)	-0.03 (0.644)	-0.48 (0.686)
Log (book value of assets)	0.006 (0.026)**	0.005 (0.060)*	-0.001 (0.814)
Current assets / assets	0.11 (0.000)***	0.09 (0.000)***	0.29 (0.218)
Profit to assets	0.06 (0.413)	0.06 (0.408)	3.01 (0.027)**
Firm listed at the HSE	0.006 (0.491)	0.008 (0.332)	-0.03 (0.843)

Table 6 continues...

Industry dummies			
Retail	0.16 (0.000)***	0.16 (0.000)***	
Other services	0.04 (0.000)***	0.04 (0.000)***	
Steel	-0.01 (0.073)*	-0.01 (0.120)	
Forest	0.02 (0.075)*	0.02 (0.070)*	
Year dummies			
Year 1985	0.04 (0.036)**	0.04 (0.026)**	-0.08 (0.840)
Year 1986	0.03 (0.031)**	0.03 (0.042)**	-0.09 (0.766)
Year 1987	0.02 (0.099)*	0.01 (0.199)	-0.11 (0.692)
Year 1988	0.02 (0.167)	0.01 (0.228)	0.37 (0.194)
Year 1989	0.008 (0.521)	0.004 (0.734)	0.02 (0.947)
Year 1990	0.004 (0.703)	0.001 (0.923)	0.40 (0.114)
Adjusted R^2	0.60	0.62	
Pseudo R^2			0.12
F	27.50	27.43	
χ^2			52.54
Probability	(0.000)	(0.000)	(0.000)
N	359	359	323

[i] E.g. Diamond (1984), Ramakrishnan and Thakor (1984), and Boyd and Prescott (1986).

[ii] This literature includes studies by, e.g., Mikkelson and Partch (1986), James (1987), Slovin, Sushka, and Hudson (1988), Lummer and McConnell (1989), and Hirschey, Slovin, and Zaima (1990).

[iii] Although not reported here I also run the regressions with two alternative dependent variables, that is, total debt to total assets, and debt from financial institutions to total debt. The results are qualitatively similar to the ones reported here.

[iv] The literature dealing with the decision to supply trade credit is fairly substantial. Mian and Smith (1992), and Frank and Maksimovic (2005) provide comprehensive reviews of this literature.

[v] This treatment of the change in sales variable is suggested in Petersen and Rajan (1997).

[vi] While investment opportunities are commonly perceived to decline with firm age, it could be argued that age proxies for investment opportunities. The positive relationship between firm age and above industry average payment periods does not however support this proposition.

[vii] A number of studies using Japanese data have investigated the role of bank equity claims indirectly, by using measures such as a relationship with a main bank (who usually hold some amount of equity in the firms) or the fact that the firm belongs to a group that centers around a specific bank (Keiretsu). While these studies have generally concluded that close bank-borrower relationships increase debt availability to the firm (measured by leverage), they have not used bank equity claims as a direct measure.