A Survey of Lendıng Relatıonshıp Between SMEs and Banks

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Abstract- **The aim of this study is to examine the lending relationships between banks and SMEs. Numerous authors have investigated the importance of banking relationships in lending to small businesses. A major issue is the relative difficulty in obtaining meaningful information and accurately assessing the credit worthiness of such borrowers. For this reason, many authors have examined the influence of this relationship on various aspects of line of credits made in different countries but up to date no studies has been conducted in lending relationship of SMEs with banks in Turkey. This may be because of the data insufficiency of SMEs. This research aims to fill that gap by looking at the determinants of SME lending conditions by using the survey results of SMEs.The factors that affect the dependent variables (the interest rate and the credit line volume) is tested by using the ordinary least squares (OLS) regression analysis. The data is obtained by the questionnaires conducted by 204 SMEs. The results for credit interest rate reveals that age, financial distress, duration of relationship, recent ownership change and location significantly affect the interest rate given by the most actively worked bank. The empirical results suggest that close and long-lasting relationship is desirable for firms. Firms with long-lasting bank relationships fare better than other enterprises in terms of interest rates, and credit availability.**

Keywords- **Lending relationship, SME, banking sector, OLS, Survey**

I. LİTERATURE REVİEW

The capacity for Small and Medium sized Enterprises (SMEs) to fulfil their potential in an economy depends on the availability of finance. Finance in general and credit in particular is especially important for SMEs, since they are unable to finance themselves through retained earnings or equity financing. Despite the fact that financing is a major factor for growth of SMEs, a number of studies and government enquiries have mentioned that SMEs face problems when accessing to bank finance, due to a market failure in credit markets. Although, a considerable number of research papers and consultancy reports have mentioned that the access to finance has been a major problem in the SME sector, a survey of the literature dealing with this area indicates there is a significant gap in knowledge of the determinants of access to finance by the SMEs in developing countries. According to finance theorists' difficulty in access to credit (referred to as credit rationing) exists due to adverse selection, moral hazard and contract enforcement problems.

The adverse selection and moral hazard theory of credit markets originated with the paper by Stiglitz and Weiss (1981) in which they explained why the interest rate could not equate the supply and demand in the credit market. Mushinski (1999) argued that credit market imperfections in developing countries derive not only from moral hazard and adverse selection problems but also from costly monitoring and contract enforcement. In contrast, countries characterised by well functioning legal systems, the problems are not as pronounced as in those where the mechanisms for enforcement of contracts, property verification and ownership are weak. Hence, the main reason for the contract enforcement problem is the poor development of property rights. Although this argument is not specifically drawn at SMEs, these problems are more associated with SMEs than large companies.

There are few studies undertaken which investigated the determinants of bank credit and most of these studies are limited to one category of determinants and do not give an overall picture of determinants of access to credit. For example, several studies build upon human capital theory have looked at education, age, work experience and social background of the owner when accessing credit from banks [6], [19]. There are few other studies which investigated the firm characteristics such as size, age of the business, legal status and financial characteristics such as profit, fixed assets base etc. In this study we aim to test firm characteristics, ownership characteristics, relationship characteristics and bank characteristics together.

While Fischer (1990) presented a theoretical model illuminating the advantages of close lending relationships, he also provided some evidence that this model may not provide a good depiction of contemporary banking practices in Germany. Summarizing the results from 34 interviews with large banks and firms, Fischer suggested that commitment mechanisms have only little importance for bank finance in Germany.

Petersen and Rajan (1994) used data from a detailed survey administered by the US Small Business Administration (SBA). They analyzed the financing of about 3400 US enterprises with fewer than 500 employees. The survey data included information on loan conditions (interest rates, maturity, collateral) and on other sources of funds such as

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trade credit, equity finance, leasing contracts, etc. They found that the extent of trade credit usage is negatively related to the age of the enterprise and the duration of existing lending relationships.

Berger and Udell (1995), using the same dataset as Petersen and Rajan (1994), concentrated on collateral requirements and interest rates for lines of credit (L/Cs). These authors argued that a study of L/Cs should be particularly revealing, since relationships are more likely to matter in this context than for mortgages or other types of loans.

Petersen and Rajan (1995) in another study wanted to provide a framework of how important the extent of competition in credit markets is for the determination of the value of lending relationships. From their test results, they concluded that creditors smooth loan interest rates over the life cycle of the firm in a concentrated market, charging a lower rate when young and a higher one when old.

Berger, et al, (2001) dealt with the general concern that the consolidating M&As of the banking industry might result in higher loan interest rates for small business borrowers by examining two different effects of bank size and banking market concentration on the pricing of credit lines. The main finding of this paper is that banking market concentration is important to bank loan pricing and appears to affect prices more than bank size.

Vickery (2007) examined fixed-rate and variable-rate (or adjustable-rate, floating-rate) commercial loan contracts to study how small firms adjust their exposure to interest rate risk by using SSBF data sets (1988, 1993, and 1998) and time-series data of STBL (Survey of Terms of Business Lending). The main conclusions in this paper were as follows; 1) fixed-rate loans are most popular among smaller firms, younger firms, firms switching from their primary lender, and firms with low cash flows or high investment opportunities because these firms tend to be facing financial constraints, 2) fixed-rate loans are less prevalent in sectors in which industry outputs co-vary positively with the interest rate because, in these industries (eg. coal mining, petroleum refining, and oil and gas extraction), firms have a natural hedge against shifts in short-term interest rates, 3) commercial banks are more likely to offer an adjustable rate loan than other types of lenders because banks are exposed more to rising interest rates than other lenders.

Taken together, these studies provide fairly strong support that the quality of lending relationships improves the availability of bank loans and in the case of interest rates in the US as studied by Berger and Udell also affect price conditions significantly. Moreover, it seems that enhanced competition between financial institutions (as measured by the number of institutions the firm borrows from) will lead to a reduction in the availability of loans. However, this result is not supported by the interview data described in Edwards and Fischer (1994) for the case of the German banking system. Finally, the empirical studies agree on the role of firm age and firm size. Relatively small firms and relatively young firms may have greater difficulties in obtaining funds than their larger and older counterparts. One would expect that this finding should not vary across countries, while the incidence and impact of long-term lending relationships need not be similar.

As mentioned before there were no empirical evidence for Turkey for the determinants of lending conditions for SMEs.

II. EMPİRİCAL RESEARCH

The aim of this study is to analyze the lending relationship between the SMEs and the banks and to determine which factors are affecting the lending conditions.

The data used in this study is obtained from a questionnaire answered by 204 SMEs whose number of employees are between 10 and 250 and whose annual sales are below 25.000.000 TL in accordance with the KOSGEB definition of SME.

The sample firms are selected from the ISO member companies which are incorporations or limited companies in İstanbul, Bursa, Tekirdag and Kocaeli region. From the 3000 firms in the target population group in the region, 500 firms were selected with the method of stratified random sampling. 275 firms accepted to answer the questionnaire but because of the missing data and extreme values in the answers 204 questionnaires were used in the analysis.

The surveys were conducted by a professional research company through face-to-face interviews. The interviewers and supervisors were given a full day of training by the research team, and the important points to be considered were explained thoroughly. The survey was conducted during February - June 2011.

In addition to firm characteristics (firm size, firm age, legal form, financial information) and contract terms (interest rate, credit line), the questionnaire inquired about firm management/owner characteristics. Moreover, a variety of questions related to the nature of the relationship between small and medium-sized firms and banks were included. Most questions were open-ended since the main objective of the questionnaire was to obtain the firm data from SMEs which is not available as a secondary data.

The secondary data about the bank characteristics are taken from the Banks Association of Turkey website. Some frequency distributions of general information about the sample and about the answers of the questionnaire are given below.

Table I Sectoral Breakdown of the Sample Firms

Sector	Number of SMEs	Percentage
Service	69	33.82%
Manufacturing	135	66.18%
Total	204	100.00%

Sixty-nine firms which constitutes the 33.82% of the sample SMEs are in service sector and 135 SMEs which constitutes the 66.18% of the sample firms are in manufacturing sector.

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Table II Type of the Credit the SMEs are Using Most

Type of the Loan	Number of SMEs	Percentage
Revolving Loan	51	25.00%
Spot Loan	86	42.16%
Discount Loan	38	18.63%
Project Loan	3	1.47%
Other	26	12.75%
Total	204	100.00%

SMEs mostly prefer to use spot loan which the interest rate is fixed for a certain time of the period and the firm pays back the credit and the interest back at the end of the term. 86 companies (42.16%) use spot credit whereas 51 companies (25%) prefer to use revolving credit.

Table III Type of the Collateral for the SMEs' Credit

Collateral	Number of SMEs	Percentage
Without any collateral	28	13.73%
With guarantee	36	17.65%
With mortgage	62	30.39%
With Cheque	78	38.24%
Total	204	100.00%

Most SMEs (38.24%) use cash loans against cheque and against mortgage (30.39%). 28 SMEs (13.73%) use cash loans without any collateral whereas 36 companies (17.65%) use loans against personal guarantee.

Table IV Frequency of Interaction with Bank

Frequency of Interaction	Number of SMEs	Percentage
Everyday	149	73.04%
Once a two or three days	26	12.75%
Once a week	19	9.31%
Once a 15 days	3	1.47%
Once a month	5	2.45%
Less than once a month	2	0.98%
Total	204	100.00%

149 SMEs (73.04%) contact with their most actively worked bank everyday and 26 companies (12.75%) interact with the bank once a two or three days. Only 2 companies (0.98%) contact with the bank they are working most actively less than once a month.

III. METHODOLOGY

In this study the empirical test is concerned with the determinants of lending conditions of SMEs. OLS regression analysis is used to test the following model.

$$Lend_Cond._i = \beta_0 + \sum_{k=1}^{K} \beta_k BankCha._i^k + \sum_{l=1}^{L} \beta_l FirmCha._i^l + \sum_{m=1}^{M} \beta_m Rel.Cha._i^m + \sum_{n=1}^{N} \beta_n Own.Cha._i^n + \beta_5 X_i + e_i$$

where,

Lend_Cond.$_i$ is the measure of lending conditions for firm i. This dependent variable is measured by two proxies namely interest rate and credit line availability.

Bank Cha.$_i$ is the measure of bank characteristics that firm i is working with

Firm Cha$_i$ is the measure of firm characteristicsfor firm i

Rel. Cha. $_i$ is the measure of bank-firm relationship characteristics for firm i

Own. Cha. $_i$ is the measure of management and ownership structure for firm i

Xi is the set of control variables

β is a vector of parameters to be estimated

ei is the error term

Two different models are used to test two different dependent variables.First dependent variable to test the lending condition is the loan interest rate (INTEREST) taken from the bank the firm is working most actively. The reference day is 31 December 2010. Other dependent variable is the credit line volume (CRLINE) of the firm in the most actively worked bank. The descriptive statistics for the dependent variables are given in Table 5.

Table V Descriptive Statistics for Dependent Variables

Variable Name	Mean	Standard Deviation	N
CRLINE	2,057,661.29	1,266,289.51	204
INTEREST	9.57	1.23	204

The mean value of the credit line volume is 2,057,661.29 TL and the mean value of the interest rate for the loans used by the SMEs in Turkey is 9.57 as of 31 December 2010. In the regression analysis natural logaritm of credit line volume variable is used.

In the literature lending conditions are generally measured by credit interest rate, credit line availability and the collateral and expressed as function of firm characteristics, ownership characteristics and relationship characteristics. In this study characteristics of the bank which the firm works most actively is also included as an explanatory variable.

The first group of independent variables is firm characteristics, and includes variables such as the firm's financial and non-financial information.

Firm age (AGE) is the first independent variable in firm characteristics group. Firm's age is taken as the natural logaritm because log transformation is expected to enhance the linear relationship between the dependent variable and age. Age is defined as natural logaritm of 2011 minus the start-up year taken from the questionnaire. A number of studies have found that there is a correlation between firm age and access to credit. (Petersen and Rajan ,1994; Berger and Udell, 1995) Being in the business for many years suggests that the firms are at least competitive on average. Information required by the lenders to evaluate and process applications is readily available because these businesses have an established reputation or track record. The expected sign is negative for interest rate and positive for credit line volume.

Second independent variable is the firm size (FSIZE) defined as the natural logaritm of total assets. Natural logaritm is taken for the same reason as age. Firm size is one of the most important variables in literature related to lending

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relationship. This is true for both developed and developing countries. Numerous studies have discussed that small and medium enterprises are financially more constrained than large firms. For example, Calomiris & Hubbard (1990) noted that when the company is smaller, the restrictions on credit are greater.

Another independent variable in firm characteristic group is financial distress (DISTRESS) defined as a dummy variable. Three questions are asked to the firm in the questionnaire related to financial distress and if the company answered yes to at least one of the questions, the firm is taken as financially distressed. The expected sign for financial distress is positive for interest rate and negative for credit line volume.

Legal form (LEGALF) indicating whether the firm is limited company or incorporation is another firm characteristic variable. The expected signs of coefficients on legal form variable is not obvious since in the literature the effect of legal form is insignificant (Harhoff and Korting, 1998)

The financial information of the firm is measured by ROA (net profit/total assets), Profit Margin (PM) (Net profit/Sales), leverage (LEV) (Total debt/total assets) and asset tangibility (AT) (tangible assets/total assets) in this study. Johnsen and McMahon (2005) stated that other factors held constant, firms with more intangible assets need to borrow less, compared with firms with more tangible assets, because of collateral factor. Bennett and Donnelly (1993), used plant and machinery divided by total assets as a proxy for the securability of assets. SMEs have fewer collateralisable assets than large firms. A positive association between asset tangibility and credit line volume, and negative association between asset tangibility and interest rate is expected. The same results are expected for also ROA and profit margin. But the reverse is expected for leverage.

The second group is owner characteristics variables. These four variables are all dummy variables first one indicating whether the company is family-owned (FAMILY). Second one indicates whether at least one owner is a foreigner (FOREIGN), and the other one states whether the company is owner-managed (OWNMAN). The last variable in this group indicates whether there is an ownership change in last 5 years (OWNCH).

The third group of variables is relationship variables. The variables in this group are duration of relationship (DURATION) with bank and the company, number of financial institutions the company borrows from (LENDERS) and the mutual trust(TRUST) dummy variable indicating whether there is a mutual trust between the company and the bank. Two questions asked to measure the mutual trust in the questionnaire. First question directly asks whether there is a mutual trust or not and the second questions ask for a rating over 5 for mutual trust between bank and the company. There is a mutual trust if the rating is over 3 and answer to the first question is yes. Empirical studies of small business lending are often consistent with the importance of strong relationships. Stronger relationships, measured in various ways described above, are empirically associated with lower loan interest rates [1], [12], [9]; and higher credit availability [7], [10], [13].

The last group of independent variables are bank characteristic variables. The variables related to the bank that the company is working most actively are size of the bank(BSIZE), ownership structure of the bank (BANKOWN) and bank restructuring (MNA) indicating whether the bank had an M&A in last 5 years. The descriptive statistics for the independent variables are given in Table 6.

The average age of the SMEs in the sample is 20.38 and the average of total assets of the companies is 18,439,861.73 TL. In the analysis the natural logaritm of the age and firm size is used. SMEs are working with the bank which they are working most actively for 9.88 years on average and the borrow from 3.85 banks on average. The mean value of the Bank Assets is 72.321 million TL and the natural logaritm of the bank size is used in the regression.

The control variables tested in this study are industry dummies and location stating whether the company operates in İstanbul or not.

Also the interaction terms between the binary variable financial distress and all relationship variables namely duration of relationship, number of lenders and mutual trust are included. In the literature Fischer (1990) suggests that firms with close lending relationships should fare better in times of distress.

Table VI Descriptive Statistics for Independent Variables

Variable Name	Mean	Standard Deviation	N
AGE	20.38	1.25	204
FSIZE	18,439,861.73	7,679,244.67	204
DISTRESS	.1807		204
LEGALF	.4167		204
ROA	0.0756	0.04483	204
PM	0.1445	.09567	204
LEV	.4064	.41324	204
AT	.3493	.47577	204
DURATION	9.8855	5.27821	204
LENDERS	3.8554	2.72867	204
TRUST	.8458		204
FAMILY	.7771		204
FOREIGN	.0723		204
OWNMAN	.8398		204
OWNCH	.2771		204
BANKMNA	.6747		204
BANKOWN	.8253		204
BANKSIZE	72,321,000,000.00	37,163,657,886.10	204
LOC	.7157		204

IV. FİNDİNGS

The results of the ordinary least squares (OLS) regression analysis are presented in this section.

The regression results for interest rate and credit line volume dependent variables are given in Table 7 and Table 8, respectively.

The results for credit interest rate reveals that age, financial distress, duration of relationship, recent ownership change and location significantly affect the interest rate given

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by the most actively worked bank. Age consistent with our expectation has a negative sign. Older firms can use credit with lower interest rates. The results of the regression for credit line volume dependent variable reveals that there is no relationship between the age of the firm and credit line volume. Possible reason for this could be that the average age of the firm in this survey is 21 years and prior research indicated that more mature firms are less likely to use debt than younger ones [8].

Financial distress is a significant determinant of credit interest rate. Firms which have experienced financial distress in last five years face higher interest rate for the credits. Other firm-specific variables like firm size or legal form have no significant influence on loan pricing.

Consistent with Berger and Udell (1995), the results indicates that duration of the lending relationship affects loan interest rates negatively. Contrary to the Petersen and Rajan (1994) results, we find no effect of the number of lenders and mutual trust on interest rates.

Another significant independent variable for loan interest rate dependent variable is recent ownership change. Firms whose shares of 20% or more have been transfered in last 5 years faces with higher interest rates. Also firms operating outside İstanbul use credit with higher interest rates.

Table VII OLS Regression Results for Loan Interest Rate as Dependent Variable

Dependent variable: interest rate			
	Coefficients	t	Sig.
(Constant)		9.539	***
AGE	-0.185	-2.134	**
FSIZE	-0.120	-1.338	
DISTRESS	0.228	2.950	***
LEGALF	-0.097	-1.164	
ROA	-0.084	-1.083	
PM	-0.049	-0.605	
LEV	0.000	0.003	
AT	-0.085	-1.078	
DURATION	-0.155	-1.785	*
LENDERS	-0.065	-0.718	
TRUST	-0.028	-0.352	
FAMILY	0.067	0.825	
FOREIGN	-0.065	-0.800	
OWNMAN	-0.060	-0.744	
OWNCH	0.149	1.932	*
BMNA	-0.014	-0.114	
BANKOWN	-0.034	-0.268	
BANKSIZE	-0.014	-0.132	
LOC	-0.157	-2.008	**
R square	0.358		
Adjusted R Square	0.298		
F value	2.159***		

*,**,*** Significance at the10%, 5% and 1% level, respectively.

As expected, firm size affects the credit line volume. Larger firms tend to have higher credit limits to use. Also incorporations compared to limited companies have higher credit lines. However contrary to interest rate results firm age and financial distress coefficients are not significant for credit line volume.

Number of lenders is positively significant for credit line volume in the most actively worked bank. The companies borrowing from more banks have more credit limits in the bank they work most actively.

Last significant variable for credit line volume model is the presence of foreign shareholder. Company having foreign shareholder have more limits.

The interaction effect coefficients between the distress variable and all relationship variables are insignificant.

Table VIII OLS Regression Results for Credit Line Volume as Dependent Variable

Dependent variable: credit line			
	Coefficients	t	Sig.
(Constant)		.455	
AGE	.114	1.520	
FSIZE	.338	4.345	***
DISTRESS	-.049	-.737	
LEGALF	.166	2.331	**
ROA	-.048	-.721	
PM	.049	.700	
LEV	-.084	-1.264	
AT	.053	.789	
DURATION	.080	1.076	
LENDERS	.161	2.041	**
TRUST	.015	.212	
FAMILY	-.106	-1.526	
FOREIGN	.123	1.766	*
OWNMAN	.051	.725	
OWNCH	.016	.245	
BANKMNA	.062	.574	
BANKOWN	-.153	-1.410	
BANKSIZE	.095	1.054	
LOC	-.090	-1.341	
R square	0.454		
Adjusted R Square	0.416		
F value	5.140***		

*,**,*** Significance at the10%, 5% and 1% level, respectively.

V. CONCLUSİON AND LİMİTATİONS

In this study by using the questionnaire conducted with 204 SMEs in Turkey, the lending relationship between the SMEs and the banks are examined by using ordinary least squares regression. The results reveal that firm age and firm size are the most important determinants of lending conditions. Also strong relationship variables increase the access to credit.

Our empirical results suggest that close and long-lasting relationship is desirable for firms. Firms with long-lasting bank relationships fare beter than other enterprises in terms of interest rates, and credit availability.

This empirical study can be improved by increasing the sample size and by testing different relationship variables. Since according to our knowledge this study is the first research on lending relationship between banks and SMEs in Turkey there is much to improve. The main limitation of this

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study is there is no secondary dat fort he SMEs and the companies are not very eager to share their records. If data is obtained, time series analysis can also be conducted for lending relationship.

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