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Financing the Firm and the Role of New Relationships with Financial–Intermediaries

By

Miriam Krausz

Department of Economics
Bar-Ilan University
Ramat Gan, 52900, Israel
Tel: 972-3-5317217
Fax: 972-3-5353180
Email: krauszm@netvision.net.il

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Abstract: In this paper characteristics of the banks faced by firms, such as the quality of screening and the cost of monitoring loans, are combined with the firm's own characteristics, to determine when a firm that needs new financing can benefit from a new relationship with a financial intermediary. The discussion focuses on the probability of loan approval as a factor that determines the expected benefit from a new relationship, versus the cost of a new relationship. Implications of the theoretic model are supported by empirical findings. The findings show that firms of high risk tend to form a new relationship with a financial intermediary when they need a loan. Newer relationships exist and are used for loan requests when the cost of forming and maintaining relationships is low. Competition in the banking market is among cost factors tested. The loan's attributes such as length, collateral and type are used to reflect risk and the bank's cost of monitoring the loan.

Key words: Financial Intermediaries, loans, small firms.

JEL Classification: G21

1. *Introduction*

This paper addresses the question why a firm with well-established relationships with financial intermediaries would establish a new relationship with another intermediary. The paper focuses on small firms, that need new financing and are not "young". The purpose of this study is to find the circumstances under which a new relationship is beneficial to such a firm.

Over the life span of a firm it may become beneficial to rejuvenate the firm's inventory of relationships with financial intermediaries. Such a case may arise when the firm needs a loan. Among the factors that can motivate such a step are the need to increase the probability of a loan approval, the need for greater bargaining power, the size and age of the firm and the need for diversified services. The importance of some of these factors depends on the structure of the banking market while others depend on the characteristics of the firm.

The model in this paper combines characteristics of the banks faced by the firm, such as the quality of screening and the cost of monitoring loans, with the firm's own characteristics, to determine when there is a benefit from a new relationship. Consequently, it links the decision to establish a new relationship to features of the banking market such as competition and the size of banks. In an empirical section of the paper we attempt to test as many of the implications the theoretic study as possible with the available data.

The findings in this paper show a relationship between characteristics of firms that required loans and the decision to establish a new relationship. The risk level of the

firm is measured by past delinquencies, denial of trade credit, the firm's own fear of loan denial and the firm's profit margin as well as age, size, length of loan and the type of collateral required for the loan. We find that riskier firms established new relationships closer to the loan request. Cost considerations include the firm's economies of scale and scope in maintaining relationships and the level of competition in the banking market. Firms that have lower costs are found to have established new relationships closer to the loan request. In the theoretic section we suggest that the quality of banks' screening processes and the cost of monitoring different types of loans are related to the probability of loan approval and may affect the decision to establish a new relationship. The theoretic model also makes a distinction between the case of adding a new bank and the case of switching to a new bank. Unfortunately, we are unable to make the same distinction in the empirical analysis. Also, it is not possible to match up firm data with bank data therefore we have not tested empirically results pertaining to bank characteristics.

The empirical study uses 1993 NSSBF data to examine the financial intermediary relationships of firms that had loan requests. The NSSBF encompasses small firms in the U.S. with up to 500 employees operating as of year-end 1992. It records their financing activities for the period of the survey, the financial institutions used by the firm, financial data of the firm and other attributes of the firm such as ownership and location. This study is based on a sub-group of small firms that are 10 years old at least so that they are all "middle-aged" or "old" with similar financing needs and opportunities (Berger and Udell, 1998). Included are those relationships with institutions that are considered most important to the firm, giving priority to institutions used by firms for financing needs.

The NSSBF has been widely used to study many aspects and questions related to small business lending. Cole, Goldberg and White (2000) find that there is a difference between small and large banks' loan approval processes. Large banks employ standard criteria while small banks rely more on the character of the borrower. The effect of consolidation on the share of small business lending has been widely researched including Berger, Saunders, Scalise and Udell (1998), Peek and Rosengren (1998), Strahan and Weston (1998), Jayarantne and Wolken (1999), and others. Other areas of research on small business lending include discrimination in small business lending, e.g. Cavalluzo and Cavalluzo (1998) and the effect of relationship banking on small business lending, for example Petersen and Rajan (1995) and Cole (1998).

This paper examines a question that is not exclusive to small firms. The issue is, however, discussed within the context of small firms because of the data which is available and also because to the best of my knowledge this issue has not been dealt with and can contribute to the study of this important group of borrowers.

The paper is planned as follows. The first part of section two describes a wide scope of circumstances under which a firm may decide to establish a new relationship with a financial intermediary. This section provides the motivation for the theoretic model which can be found in the second part of section two. The Empirical model is described in section three and its results are presented in section four. Section five concludes the paper.

2. *The Decision to Establish a New Relationship*

2.1. New Financial Intermediary Relationships

Firms that have existing relationships with financial intermediaries occasionally replace an existing relationship with a new one or add a new relationship to existing ones. What causes a firm to take such an action? Following is a description of several possible causes.

2.1.1) Age and size. As a firm grows larger and becomes more established it's financial needs grow and it may add a new relationship to an existing one. A larger firm can enjoy economies of scale in banking while a small firm may find it too costly to pay fees to several institutions and to maintain a costly relationship with more than one bank. A larger firm, with greater needs for financial services, can benefit from the competition between several institutions with which it has relationships choosing to work with the one that offers the lowest cost. In other words, the opportunity of lower prices outweighs the cost of multiple banking relationships. However, economies of scope in obtaining different services from financial services create a preference for one-stop banking and reduce the need to add relationships. Also, as a firm grows it may choose to move its financial relationship to a larger intermediary if the larger intermediary offers superior services. Furthermore, working with a large intermediary may signal a firm's favorable situation. This is particularly relevant in the case of large banks and firms that issue new equity.

2.1.2) Geographic diversification. Firms that have activities over a wide geographic area may find it convenient to maintain several banking relationships with banks that operate in different areas. Also, the firm may need the services of financial institutions that specialize in certain types of activities such as export/import services.

Petersen and Rajan (2000) find that the importance of distance between a firm and it's bank is diminishing. They attribute this finding to the advancements in technology.

2.1.3) Supply-side reasons for establishing new relationships. A firm may have been working with a bank that has closed down or that has been merged or acquired. Since the original bank no longer exists, a new relationship will be established.

Also, competition between financial institutions may cause a firm to be solicited by a financial institution. The firm may be offered good terms and decide to start using the services of the new institution either instead of or in addition to its existing relationship.

2.1.4) A firm may wish to establish a new relationship when it is planning a loan request.

Firms want to ensure that they will be able to secure a loan when financing is needed. Having a relationship with more than one bank reduces the risk of not being able to get any finance. This can include the possibility that firms choose different types of financing such as leasing instead of a loan. A firm will be able to increase the probability of getting a loan approved by a bank with which it has recently established a relationship only if relationship banking is not crucial to the bank's decisions. Traditional banking theory claims that small firms are typically involved in relationship banking, because of opaque information and that small banks are better suited for relationship banking than large banks (Stein, 2000).[1] Cole (1998) finds that a potential lender is more likely to extend credit to a firm with which it has a pre-existing relationship as a source of financial services, but finds that the length of this relationship is unimportant.

Thus, if relationship banking is indeed important then mature firms with existing relationships will be less likely to establish new relationships when they are in need of financing. If however, firms do establish new relationships at a time when financing is needed, then this could imply that relationship banking is not crucial and/or that there

are benefits to new relationships that offset costs. Since market structure may play a role in determining the importance of relationship banking, it could be an important factor in the decision to establish a new relationship.

Also, longer relationships are not always entirely beneficial to the firm. First, longer the relationship with a financial intermediary the more a firm may find itself "locked-in" by the intermediary. Second, if intermediaries offer favorable terms to new customers while charging old customers higher prices, then a firm may find it beneficial to establish a new relationship. Banks and other types of intermediaries may also be more inclined to lend to a firm that is a new customer as a means of capturing the customer. This effect may be stronger in less competitive markets because in such markets firms are more likely to become long term customers. A contrary view is that of Berger and Udell (1995) where findings show that borrowers with longer banking relationships pay lower interest rates and are less likely to pledge collateral.

Thus, benefits from a new relationships could include an increase in the probability of a loan approval, a reduction in the risk of not being able to finance projects and an opportunity to compare prices or even secure more favorable borrowing terms at a

[1] Peek and Rosengren (1998) find that larger banks tend to have a smaller portfolio share of small business loans. Berger, Saunders, Scalise and Udell (1998), find that small and medium sized mergers are associated with an increase in small business lending while larger bank mergers have the opposite effect. Conflicting results (Jayarantne and Wolken, 1999), show that in areas where there are fewer small banks the availability of bank credit for small firms is not constrained. Furthermore, Strahan and Weston (1998) find that consolidation among banking companies serves to increase bank lending to small firms.

new bank. The behavior of the firm with respect to new relationships will indicate how firms perceive the importance of these factors and whether they outweigh the costs of establishing new relationships. In the following section a theoretic model is developed to describe the effect of these factors on the decision of a firm to establish a new relationship with a financial intermediary when the firm needs a loan.

2.2.   *The Theoretic Model*

The following model of a firm's decision to establish a new relationship focuses on a small firm that requires new financing, as described in sub section *2.1.4* above. The distinction made in the following model between large and small firms can be generalized to any two types of borrowers.

Assume that a small firm has a project that it intends to finance with a loan. To describe the competitive banking market faced by the firm, assume a risk neutral representative bank that faces two types of borrowers, small firms and large firms. There are two types of large firms, the first type includes large firms that are good in the sense that they repay loans in full. The second type includes large firms that are bad in the sense that they default and pay the bank nothing. All good firms are identical and provide a gross return of r_L. Similarly, there are two types of small firms, good and bad. All good small firms are identical and repay loans while all bad small firms are identical and default. The gross return on good small firm loans is r_S. Denote by α_S the quality of the screening process that identifies the type of a small firm borrower. Namely, the bank uses a screening process such that when approving a loan to a firm it approves a loan for a good small firm with probability α_S and for a bad small firm with probability $1 - \alpha_S$. The assumption is that the probability, α_S,

that the bank makes the correct decision about a good small borrower (namely, approves a good small firm) is the same as the probability that the bank makes the correct decision about the bad small borrower (namely, rejects a bad firm), where $1 \geq \alpha_S > \frac{1}{2}$. We assume a corresponding screening quality for large firms equal to α_L.

The bank's resources are normalized to one and are divided between small borrowers and large borrowers such that S is lent to small borrowers and $(1-S)$ is lent to large borrowers. Thus, not all the firms, which are identified as good firms, are financed by the bank. The bank has a cost of monitoring loans as follows:

$$C = \frac{1}{2}\left(a_S S^2 + a_L (1-S)^2\right).$$

(1)

This is the cost of producing 1 unit of loans. We use the usual cost function where total costs are a function of the quantity produced of each type of loan (S and 1-S) and of the unit cost of producing each type of loan. The cost to the bank of producing loans is the cost of gathering information on the borrower and it depends on the technology used by the bank and on the availability of information.

The expected profit of the bank is: $\Pi^E = S\alpha_S r_S + (1-S)\alpha_L r_L - 1 - C$. The value of S that maximizes the expected profit is:

$$S^* = \frac{\alpha_S r_S - \alpha_L r_L + a_L}{a_S + a_L}.$$

(2)

An interior solution is ensured when:

$$a_L > \alpha_L r_L - \alpha_S r_S > -a_S.$$

(3)

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In other words, both types of loans are extended when the unit cost of producing one type of loan is greater than the marginal expected premium from that loan[2].

Equation (2) yields the following immediate results. When the cost of monitoring small loans is high and when the screening process of small loans is poor or the return on small loans is poor, then the share of small business lending is small. The share of small business lending will also be small when the gross return on large loans is high and when cost of monitoring large firms is low.

We now turn to the decision made by a small firm that is seeking a loan to finance its project. The small firm can decide whether to establish a new bank relationship for the purpose of creating a new source for loans. From the small firm's point of view, the probability of receiving a loan from a bank depends on several factors including, the firm's type (whether it is good or bad), the bank's supply of small firm loans, S^*, and the number of small firms seeking loans from the bank.

We focus on the case of a good small firm. There is a probability α_S that it will be identified as a good firm. The probability of falling within the S^* allocated to small firm loans is $\dfrac{S^*/n}{N}$, where n is the size of small firm loans and there are $2N$ firms of which N are good and N are bad firms [3]. Assuming $S^* \leq n \cdot N$ and denoting by P_g the

[2]A special case is when $a_L = a_S = a$. Then $s^* = \frac{1}{2} + \frac{\alpha_S r_S - \alpha_L r_L}{2a}$. $s^* > \frac{1}{2}$ if $\alpha_S r_S > \alpha_L r_L$. $s^* < \frac{1}{2}$ if $\alpha_S r_S < \alpha_L r_L$. $s^* = \frac{1}{2}$ if $\alpha_S r_S = \alpha_L r_L$.

[3]The total number of small firms, good and bad, is $2N$. This is a simplifying assumption that causes no loss of generality. The number of small firms that successfully pass the screening process is $\alpha N + (1-\alpha)N$

probability that a good small firm will get a loan approved is as follows:

$P_g = \alpha_S \dfrac{S^*}{n \cdot N}$, where the subscript g is used to denote a good firm. For a bad firm,

denoted by the subscript b, $P_b = (1 - \alpha_S)\dfrac{S^*}{n \cdot N}$, $P_b < P_g$.

Looking now at the behavior of a good small firm, assume that the firm faces two banks, the bank with which it has a well established relationship, bank i, and a bank with which it can establish a new relationship, bank j. Both banks behave in the same way. However, one bank differs from the other in the quality of its screening process, in the returns on loans and in the cost of monitoring small and large firms[4]. Assume that a good small firm has a return π on its project and that the project is financed entirely by the bank loan. The firm has a cost $TC(c_i)$ associated with a relationship with bank i. These are costs that arise from providing information and other costly activities associated with maintaining bank relationships and not from fees that generate income to the bank. Other costs could arise from the physical distance between the borrower and the bank. If the firm has economies of scope in banking activities (namely, a benefit from one-stop-banking), then each relationship with a financial institution is worth more to the firm than in the case where such economies of scope do not exist. When the firm has economies of scope in banking services then the marginal cost for the firm from adding a new service or activity to an existing bank relationship is lower than creating that service at a new bank relationship. When there are economies of scope firms will concentrate their activities in fewer banks rather than spreading the activities over a large number of banks. In such a case each

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[4] This could be the case in a market composed of small and large banks. (See, e.g., Cole, Goldberg and White (1999)).

bank relationship has greater value to the firm than in the case where no economies of scope exist. The cost of maintaining a bank relationship also depends on the efficiency of the firm in maintaining such relationships. If a firm has the means to deal efficiently with financial institutions it may enjoy economies of scale in banking relationships. Namely, the cost of maintaining multiple bank relationships is less than the sum of the cost individual bank relationships. Such firms will have a large number of relationships.

To summarize the above, the costs associated with a relationship with one bank is denoted by $TC(c_i)$ and the cost of relationships with the two banks is denoted $TC(c_i, c_j)$ such that these costs are affected by economies of scale and scope in the firm's bank relationship cost function.

The following definition is used: ***The benefit to a firm from a bank relationship is the expected return, namely the probability of obtaining a loan to finance a project multiplied by the net return on the project.***

Using this definition, the expected return to the good firm from a relationship with bank i is:

$$R_{g,i}^E = P_{g,i}(\pi - r_S) = \alpha_{S,i} \frac{S_i^*}{n \cdot N}(\pi - r_{S,i}).$$

(4)

The decision whether to establish a new relationship will depend on the increase in the probability of a loan approval relative to the increase in cost. The decision to

establish a new relationship is divided into two cases. First, where the firm adds a new relationship to an existing one. Second, where the firm decides to exchange an old relationship with a new one.

The firm will choose to establish more than one relationship when this sufficiently increases it's probability of receiving the loan such that the firm is compensated for the additional cost. Assume that the two banks mentioned above, bank i and bank j, share the same rate on loans.

Case a: Assuming that the firm benefits from its relationship with bank i, it will want to add bank j to bank i if:

$$P_{g,j}\left(1-P_{g,i}\right) > \frac{TC(c_i,c_j)-TC(c_i)}{(\pi-r_S)}. \tag{5}$$

The left-hand side of (5) reflects the benefit of a new relationship that arises from the increase in the probability of a loan approval, while the right-hand-side reflects the additional cost of a new bank relationship. The additional cost is greater for firms that have economies of scope in banking activities and is smaller for firms that have economies of scales in bank relationships. Firms that have economies of scope have a smaller $TC(c_i)$ after including the new loan than firms that do not nave economies of scope. Firms that have economies of scale have a smaller $TC(c_i,c_j)$ than firms that do not have economies of scale.

From (4) it follows that the effects of changes in $\alpha_{S,j}, a_{S,j}, \alpha_{S,i}, a_{S,i}$ and $\left(\alpha_{L,i}\cdot r_{L,i}\right)$ on the left hand side of this inequality are: $\dfrac{\partial P_{g,j}}{\partial \alpha_{S,j}}\left(1-P_{g,i}\right) > 0$, $\dfrac{\partial P_{g,j}}{\partial a_{S,j}}\left(1-P_{g,i}\right) < 0$,

$-\dfrac{\partial P_{g,i}}{\partial \alpha_{S,i}} P_{g,j} < 0$, $-\dfrac{\partial P_{g,i}}{\partial a_{S,i}} P_{g,j} > 0$, respectively. The firm will benefit more from the new

relationship if the quality of screening at bank j is greater or if the cost of small loans

for bank i is greater. The firm will benefit less from a new relationship if the quality

of the screening process at bank i is greater or if the cost of small loans for bank j is

greater.

Also, $-P_{g,j} \dfrac{\partial P_{g,i}}{\partial (\alpha_{L,i} \cdot r_{L,i})} > 0$. If the expected return on large loans at bank i is greater,

then the benefit from a new relationship with bank j is also greater.

Case b: The firm will transfer from bank i to bank j if it does not want to add bank j

but $P_{g,j} - P_{g,i} > \dfrac{TC(c_j) - TC(c_i)}{(\pi - r_S)}$.

The benefit from a relationship with bank j is greater than the benefit from a

relationship with bank i by a magnitude that is greater than the difference in costs

between the two banks.

The condition for switching to the new bank and not adding the new bank is:

$$P_{g,i}(1 - P_{g,j}) < \dfrac{TC(c_i, c_j) - TC(c_j)}{(\pi - r_s)}. \tag{6}$$

The effects of changes in $\alpha_{S,j}, a_{S,j}, \alpha_{S,i}, a_{S,i}$ on the left hand side of (6) are:

$-P_{g,i} \dfrac{\partial P_{g,j}}{\partial \alpha_{S,j}} < 0$, $\quad -P_{g,i} \dfrac{\partial P_{g,j}}{\partial a_{S,j}} > 0$, $\quad (1 - P_{g,j}) \dfrac{\partial P_{g,i}}{\partial \alpha_{S,i}} > 0$, $\quad (1 - P_{g,j}) \dfrac{\partial P_{g,i}}{\partial a_{S,i}} < 0$, respectively.

Firms that face a higher quality of screening at bank i benefit less from switching. A

higher quality of screening at bank j increases the benefit from switching. If bank i

has higher costs of small firm lending then switching is more beneficial while switching is less beneficial if bank j has higher costs of small firm lending.

The costs on the right hand side of (6) are affected by economies of scale and by economies of scope as in *case a*. Thus, firms that have economies of scale are less likely to switch banks than firms that do not have economies of scale. Also, firms that have economies of scope are more likely to switch bank instead of adding a new relationship than firms that do not have economies of scope.

The above analysis can be gathered into two general results and provides a set of hypotheses as follows:

Result 1: *For any level of costs, the greater the probability of a loan approval at the new bank and the smaller the probability of a loan approval at the existing bank the greater the benefit from a new relationship.*

Proof: The result follows immediately from the derivatives obtained from (5) and (6) above. Note, that the derivatives in (5) have the opposite sign to their counterparts in (6). However, at the same time, the inequality in (5) and (6) are also in opposite directions. Q.E.D.

This result yields the following hypotheses:

H-1.1: *Firms with poor borrowing records are more likely to benefit from a new relationship. (They are less likely to get loans from existing bank).*

H-1.2: *Older and larger firms are less likely to benefit from new relationships because (a) they are more likely to get a loan approved at their existing bank,*

assuming that these types of firms are less risky and (b) there is greater value to their longer, existing relationships.

H-1.3: *Firms that have greater profitability are less likely to benefit from new relationships. They are more likely to get a loan approved at their existing bank.*

H-1.4: *Small firms with relationships at banks that have low quality screening of small firms are more likely to establish a new relationship.*

H-1.5: *Small firms with relationships at banks that have high monitoring costs of small firms are more likely to establish a new relationship.*

H-1.6: *The likelihood of a small firm establishing a new relationship when in need of a loan, is related to the income banks earn on large borrowers.*

Result 2: *For any probabilities of loan approval, $\left(P_{g,i}, P_{g,j}\right)$, the greater the economies of scale the more likely the firm is to add a new relationship as opposed to exchanging an old one with a new one. The greater the economies of scope the less likely the firm is to add a new relationship.*

Proof: The right hand side of (5) measures the difference between the cost of one relationship and the cost of two relationships. From (5) it is clear that the smaller the right hand side, namely the lower the cost of adding a new relationship for a given level of screening qualities, the more likely that the inequality will hold. In (6) the inequality is more likely to hold the greater the difference in costs for any given level of screening qualities. Q.E.D

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This result yields the following hypotheses:

H-2.1 *Firms that have economies of scope in banking activities are less likely to benefit form a new relationship while firms that have economies of scale in bank*

relationships are more likely to benefit from a new relationship. Both of these cases apply to adding a relationship to an existing one.

H-2.2 *Firms that operate in a competitive banking industry are more likely to benefit from a new relationship, both in the case of adding a new relationship and in the case of switching relationships.*

Hypotheses H-1.1 - H-1.6 suggest that the benefit to a good firm from a relationship is greater at banks with higher quality screening processes and with lower costs of loan processing because such banks are more likely to approve good loans. Also, the probability of loan approval is greater for firms that are more likely to be considered "good" and for firms that create low monitoring costs. Low monitoring costs may exist for firms that have a long relationship or firms that have the types of loans or services that provide the bank with easy access to information such as lines of credit or compensating balances.

Result 2 relates to the cost aspect of new relationships and implies that if there are economies of scale we are not only more likely to observe a new relationship but also the new relationship will be added to the new one. If there are economies of scope then the firm is less likely to add a new relationship. However, if the firm wishes to request a loan from an institution with a new relationship, then it is more likely to switch relationships if it has economies of scope.

The following section contains an empirical test of some of these hypotheses. The National Survey of Small Business Finances (NSSBF) is particularly well suited for the purpose of testing the above model. Unfortunately, while there is a large amount

of data on small firm financing provided by the NSSBF, the available data does not permit the investigation of all the hypotheses mentioned above. More specifically, the survey does not provide the information required to test hypotheses **H-1.4** and **H-1.6**. All these hypotheses relate to the characteristics of the banks at which small firms carry out their financial activities. Also, it is impossible to tell from the data if firms have switched relationships or added new ones to existing relationships. Thus, we are able to provide only a partial indication of the empirical basis for the above results.

3.   *The Empirical Study*

Six hypotheses are put to test in this section including **H-1.1, H-1.2, H-1.3, H-2.1, H-2.2** and some indication of **H-1.5.** The 1993 NSSBF data, which provides information on the length of relationships with financial institutions, is used in the empirical test. We include relationships with the six most important institutions as identified in the NSSBF[5]. The types of institutions included are banks and non-banks. Non-banks include credit union, savings bank, savings and loan association, finance company, insurance company, brokerage company, leasing company and mortgage bank. Most firms, however, have fewer than six relationships. On average a firm uses just two financial institutions.

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[5] The NSSBF uses the following priority levels: (1) The primary institution. (2) Institution with checking/saving, loans and other services. (3) Institution with checking/saving and loans. (4) Institution with other services and loans. (5) Institution with loans only. (6) Institution with checking/saving and other services. (7) Institution with checking/saving. (8) Institution with other services.

We exclude all real estate firms and include all firms of age 10 and above. These are middle-aged and old firms that have similar types of financing needs and opportunities.

The total number of firms in the final sample equals 2509. The regression analysis includes a smaller number of firms due to missing values. The exact number is reported in each regression analysis. Because the data is a non-proportional stratified random sample all regressions and means are computed with SAS SURVEYREG and SURVEYMEANS using the weights provided by the NSSBF. *Table 1* describes the firms in the sample and their banking relationships.

Table 1-A description of the sample

Mean firm age *Standard deviation*	20.8 *0.3*
Mean firm assets *Standard deviation*	USD 540,200 *28,055*
Mean number of relationships with financial institutions *Standard Deviation*	1.9 *0.02*
Mean level of concentration of banking activities* *Standard deviation*	0.69 *0.007*
Mean age of the newest banking relationship *Standard deviation*	9.29 *0.23*
Mean age of newest relationship relative to firm age *Standard deviation*	0.47 *0.009*
Total number of firms that had a loan request	1129
Total number of firms that requested a loan from the bank with the newest relationship	421

- The highest level of concentration is equal to 1 (one).

We first identify for each firm the financial institution that is the firm's newest relationship. The dependent variable, *NEWEST*, records for how many years the firm has been conducting business with this financial institution. *NEWEST* therefore measures how recently the firm's newest relationship was established. The regression tests if firms with loan requests have a more recent *NEWEST,* and what type of firms with loan requests have a more recent *NEWEST.* There is a clear association between

the interpretation of *NEWEST* and the importance of relationship banking in borrowing decisions. While most of the literature focuses on the importance of the relationship to the bank, here we focus on the importance to the borrower. By focusing on the firm's newest relationship in connection with borrowing we are asking, for what type of firm is relationship banking not important, so much so that it would establish a new relationship when it needs a new loan? We also associate this decision with the firm's cost considerations.

In the empirical model we seek to address the question of whether small firms establish new relationships for the purpose of requesting a loan and to determine what characterizes firms that behave in this way. While it is not possible to determine why firms establish relationships, our test rests on an assumption of proximity in time. Specifically, if certain firms establish new relationships for the purpose of requesting a loan then those firms are more likely to have a relationship that was established closer to the loan request than firms that had loan requests but do not establish new relationships for the request.

The survey data provides information about loan requests within the three-year period of the survey and enables us to match the loan request with the institution at which the request was made. The survey provides information about the institution at which the loan request was made and specifically, the time at which the relationship was established. Thus, it is possible to examine those firms that requested loans from their newest relationship. The length of this relationship will indicate how close to the loan request it was established.

Two regressions are analyzed. The first regression explains *NEWEST* by the existence of a loan request, by the nature of the loan request, by the type of firm and by the type of banking market in which the firm operates. The second regression explains the variable named *T*, which is the age of the relationship of the bank at which the loan request was made, when this relationship is the firm's newest relationship. Thus, the regression focuses on firms that requested loans from their newest relationship bank. The regression tests whether the proximity to the loan request, of establishing a relationship which is later used for a loan request, can be explained by the nature of the loan, the type of firm and the banking market. The greater the proximity in time of establishing the relationship to requesting the loan, the more likely that the new relationship is related to the loan. The first regression tests for the dependence of new relationships on loan requests in a general population. It links the timing of the decision to establish a new relationship with a loan request. This is a test of the underlying assumption of the theoretic model concerning a link between the firm's need for a loan and new relationships. The second regression focuses on firms that have made the decision to request a loan from their newest relationship bank and explains under what conditions this is likely to be a relationship established for the purpose of the loan request. What is the likelihood that a new relationship was established for the loan request?

The independent variables used in the regression analysis are divided into three groups. The first group reflects the firm's characteristics, its risk level and its relationship costs. The second group reflects the characteristics of the loan request. The third group reflects the characteristics of the market for banking services. *Table 2* lists all variables and provides a short description of each one.

4.   *Empirical Results*

Table 3 and *Table 4* contain the results of the first and second regression respectively. The results show that high-risk firms that had loan requests had more recently established newest relationships. Risk is measured by the variable *Poor* which equals 1 when the firm has past delinquencies or has been denied credit in the past by financial institutions or trade credit. **Group 1** results include *Age,* which shows a positive relationship between the firm's age and the age of the newest relationship. Thus older firms are less likely to have a newly established relationship. Also, if the firm requested a loan from its newest bank then this bank relationship was established closer to the loan request by younger firms. *Size* is not related to how recently a firm established a new relationship. Firms of poor quality (Poor=1) that requested a loan have more recent new relationships. However, in the case of firms that requested the loan from the newest bank, this variable does not have explanatory power. For such firms we find that *FEAR,* i.e., firms that in the past feared loan denial, did have more recent new relationships. In the case of firms that requested their loan from the newest relationship, other measures of risk are the length of loan, which is negatively related to the age of the newest relationship as are *Collateral* and *Guarantee.* Thus, firms that needed longer loans and firms that are required to provide collateral or a guarantee to secure the loan are more likely to have requested their loan from a recently established relationship. Clearly, there is a causality problem here. Firms that are new to the bank and are given a loan are also required to supply more collateral because the bank has little information about these firms. However, in the case of firms that were required to maintain compensating balances the newest relationship, which is the bank where the loan was requested, is less recently established.

Firms that requested a line of credit have younger newest relationships. This result remains unchanged in the case of firms that made their loan request at their newest relationship bank. This result can be explained by our cost considerations. Loan commitments require the firm to continually supply information to the bank. Thus, the cost of monitoring such loans is lower than other types of loans and reduces costs at the new bank thereby increasing the probability of approving the loan to a small firm.

Profit is negatively related to the age of the newest firm, so that firms with higher profitability are more likely to have recently established relationships. However, in the case of firms that requested loans from their newest relationship, profitability does not explain the proximity of establishing the relationship to the loan request. This can be explained by the ability of very good firms to diversify their relationships in order to gain bargaining power and increase exposure to good deals. This is done by adding new relationships. However, these firms have a high probability of obtaining a loan at any bank and therefore can choose the bank from which they request a loan, purely on the basis of loan terms.

The firm's costs of maintaining banking relationships are measured by economies of scale and by economies of scope. Economies of scope are measured by the level of concentration of banking services. If n_k is the number of services at bank k, then

$$Scope = \sum_{k=1}^{n} \left(\frac{n_k}{\sum_{k=1}^{n} n_k} \right)^2$$

. Firms that have economies of scope will concentrate their banking activities in a small number of banks and will have a high value of *Scope*.

Such firms are found to have less recently established new relationship even when the newest relationship is the bank at which the loan request is made. Economies of scale are measured by the number of relationships maintained by the firm. Firms that have economies of scale in banking relationships will maintain a larger number of banking relationships. Such firms are found to have more recently established new relationships including firms that requested a loan from the bank with the newest relationship. The geographic diversification consideration is reflected in the result that shows that firms that have all operations in the same area, namely do not diversify geographically, have older newest relationships. While the sign is consistent with the expected results, this coefficient is not statistically different from zero.

Group 2 variables are related to the loan request. First, in the case of a general population of firms, those that had a loan request had less recently established relationships. However, if it is a poor quality firm that requested a loan, then the firm established a relationship closer to the loan request, namely it has a newer relationship than other firms. This implies that relationship lending is important in the case of less risky firms. It also implies that riskier firms may increase their chances of a loan approval by adding or switching to a new relationship, as suggested by the theoretic model. The type of loan and other features of the loan are discussed above in connection with the risk level of the firm.

Group 3 controls for market structure. *HHI* is a good measure of market structure. However, the use of just two levels in the survey, highly concentrated and not highly concentrated, may be the reason why it does not explain the age of the newest relationship. *MSA* does have explanatory power. MSA-s generally have a larger

number of banks, hence firms face greater competition in the banking market. The results show that firms in MSA-s had more recently established relationship than firms not located in an MSA. This result holds also for firms that requested a loan from their newest relationship.

The results are summarized according to their relevant hypotheses, as follows.

H-1.1 is confirmed by the results of the regressions. Firms with poor borrowing records that need a loan have more recently established relationships. Firms that feared denial requested a loan from a more recently established new relationship than firms that did not fear denial. The theoretic model explains this by the lower probability these firms have of receiving a loan from old, existing relationships.

H-1.2 is confirmed by the data. Older firms had less recently established relationships. The theoretic model explains this by a lower risk level of these firms. Also, older firms will have longer relationships with their old existing relationships than younger firms. Therefore, because of the value of relationship banking their existing relationship is very valuable and a new relationship is relatively less beneficial.

H-1.3 is not supported by the data. Firms with low profitability do not have more recently established new relationships. In this case the probability of loan approval is not an important factor in the firm's decision.

H-1.5 the data indirectly shows the effect of lower monitoring costs since it is found that firms that requested a line of credit established a relationship close to the loan request and used this relationship to request the line of credit.

H-2.1 is confirmed by the data. Firms that have economies of scope are less likely to have a new relationship established for a loan request.

H-2.2 is confirmed by the empirical results. Firms with economies of scale are more likely to establish a new relationship in proximity to requesting a loan.

5.   *Concluding Remarks*

In this paper it is suggested that the decision to add a new relationship with a financial intermediary to existing ones or the decision to switch to a new relationship, is related to a loan request. Results show that firms with poor borrowing records that requested a loan established a new relationship close to the loan request. The value of existing relationships is an important factor. Older firms have older relationships and firms that have economies of scope in maintaining relationships have older relationships. Even if firms requested the loan from the newest relationship bank, this relationship is not established close to the loan in the case of firms that have valuable old relationships. The opposite is found for firms that have economies of scale in maintaining relationships and for firms that operate in more competitive banking markets. The type of loan request is used to reflect monitoring costs. These costs are lower for firms that have lines of credit. Firms that requested lines of credit did have newer relationships established closer to the loan request.

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Table 2- A description of the regression variables

	Variable Name	*Description*	*Details*
Group 1	Age	Age of the firm	Age equals the log of the firm's age.
	Size	Firm's Assets	
	Poor	Firm quality as a borrower	Poor equals 1 if at least one of the following conditions exists: Denied a loan request, delinquent on at least three business obligations or trade credit denied. Otherwise poor equals zero.
	Profit	Profit margin.	Profit divided by total sales
	NumAll	Total number of relationships with financial institutions.	
	Scope	Level of concentration of services	Scope sums the square of the share of services at each bank. If Scope equals 1 then all services are concentrated in one bank. A smaller value of scope indicates less concentration.
	Local	Goegraphic diversification of activities.	Local equals 1 if all sites are in the same area as head office, the firm has sales only in the same area as head office and the firm does not export. Otherwise, Local equals zero.
Group 2	MRL	Did the firm have a loan request.	Mrl equals 1 if the firm requested a loan during the three years that preceded the survey, zero otherwise.
	MRLatNEW	Was the loan request at the newest relationship bank.	MRLatNEW equals 1 if the firm requested a loan from the bank with the newest relationship, zero otherwise.

	MRLlc	Was the loan request for a line of credit.	MRLlc equals 1 if the firm requested a line of credit and zero if the firm requested some other type of loan.
	LoanLength	The original maturity of the loan requested or length of credit commitment	
	CompBalance	Compensating balance required for loan requested.	CompBalance equals 1 if the firm was required to ho;d compensating balances, zero otherwise.
	Guarantee	Guarantee required for loan requested.	Guarantee equals 1 if the firm was required to provide a guarantee, zero otherwise.
	Collateral	Collateral required for loan requested.	Collateral equals 1 if the firm was required to provide collateral, zero otherwise.
Group 3	HHI	Competition in banking market faced by the firm.	Herfindahl-Hirschman index of bank deposits concentration. HHI equals 1 if highly concentrated and equals zero if not highly concentrated.
	InMSA	Is the firm located in an MSA	Measures competition, there are generally more banks in MSA.

Table 3-Results for Regression 1

Regression 1 evaluates $NEWEST = f(G_1, G_2, G_3)$, where NEWEST is the age of the newest bank relationship of the firm and G_i is a vector of variables in Group i, i=1,2,3. The regression uses SAS SURVEYREG with strata and weights as provided by the NSSBF. Observations include all firms of age 10 and above. The number of observations included in the regression analysis, after deleting observations with missing values, is 2160.

Variable	Coefficient (t-value)
Age	*6.8* (11.7)
Size	*0*
MRL*Poor	*-0.9* (-1.75)
Fear	-1.3 (-3.37)
Profit	*-0.045* (-1.09)
Scope	11 (11.14)
NumAll	*-1.2* (-5.57)
Local	*0.52* (1.41)
MRL	*0.98* (1.65)
MRLatNEW	*0.24* (0.44)
MRLlc	*-1.15* (-2.09)
HHI	*0.08* (0.22)
InMSA	*-1.67* (-3.46)

Number of observations: 2160. $R^2 = 0.41$

<u>*Table 4-Results for Regression 2*</u>

Regression 2 tests T=f$\left(Gr_1, Gr_2, Gr_3 \right)$, where T is the length of the relationship with the bank from which a loan was requested when this bank is the firm's newest relationship and Gr_i is a vector of variables from Group i, i=1,2,3. The regression uses SAS SURVEYREG with strata and weights as provided by the NSSBF. Observations include all firms of age 10 and above. The number of observations included in the regression analysis, after deleting observations with missing values is 383.

Variable	Coefficient (t-value)
Age	9.4 (6.63)
Size	0
Poor	-0.37 (-0.37)
Fear	-1.7 (-1.68)
Profit	0
Scope	13.38 (6.23)
NumAll	-1.18 (-2.12)
Local	0.95 (0.98)
MRLlc	-1.37 (-1.13)
LoanLength	-0.012 (-1.17)
CompBalance	2.6 (1.05)
Guarantee	-0.93 (-1.13)
Collateral	-1.23 (-1.31)
HHI	0.85 (0.98)
InMSA	*-2.4* (-2.66)

Number of Observations: 383. $R^2 = 0.52$

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