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The Effect of Relationship Lending on Loan Contract Terms

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This paper investigates the effect of relationship-lending on loan contract terms, especially on the interest rate, loan value, and collateral requirements. For this purpose, data on 4850 loans granted by a bank in 2016 is employed. Our estimations show a negative and significant relationship between the interest rate and quality and quantity of borrower-lender relationship. Furthermore, there has been a positive and significant relationship between loan volumes granted to the borrower and the scope of his/her relation with the bank. Finally, there has been a positive and insignificant relationship between customer relationship with the bank and pledged collateral. The relationship-lending, as a solution for asymmetry information problems, is a winner-winner game such that the lender saves on screening expenses and the borrower is financed at lower costs. Thus, deliberate regulation in support of relationship lending increases the welfare of both sides of the credit market.

Keywords: Bank, Borrower, Lender, Asymmetry Information, Relationship-Lending.
JEL Classification: E30, G20

1 Introduction

Bank financing often involves a long-term relationship that may help attenuate asymmetric information problems. Having sufficient information about borrowers is so crucial for lenders, especially for prudent ones, since they can prevent risks brought about by adverse selection and moral hazard. There are different ways in front of lenders for collecting information, one is investigating the borrowers' financial statements, and another can be credit rating. None of these is a satisfactory solution when borrowers are individuals or opaque institutions. Therefore, the key issue is a suitable way of collecting valuable information about opaque borrowers. An outstanding string in literature has tried to find an effective solution for this crucial issue. Based on their funding, making and expanding an effective-long-run relationship with borrowers can be a satisfactory solution.

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This relationship allows the lender to gather relevant information about the prospects and the creditworthiness of the borrower in the long run. The continuous contact between borrower and lender in the provision of various financial services can produce valuable input for the lender in making decisions on whether to extend credit, how to price loans, and whether to require collateral or attach other conditions to the loan. This solution, namely obtaining information by making long-run relationships, which helps lenders to finalize their decisions effectively, is named relationship-lending.

Relationship-lending has attracted the attention of many researchers in the last decades and, subsequently, has opened many questions in the researchers' minds. Would lenders grant more amount of loans to borrowers who have had more relationships with? What about the interest rate charged on the loans? Would the cost of financing be lesser for those borrowers who have had more connections with the bank? What about the amount of the collateral pledged on the borrowers' loans? Finally, who is the winner of the relationship-lending, lender or borrower? Or it is a winner-winner game? Answering these questions is the main aim of this study. Specifically, we would try to answer "what is the effect of relationship-lending on the contract terms of the loans, such as the amount of the loan, interest rate, and collateral pledged on the loans.

Although exploring this relationship has been the subject of many studies in other countries, the Iranian banking system has been forgotten in this string. Therefore, one of the advantages of this study is that it would examine this string of literature on the unexamined banking system of Iran. Another benefit comes from the proxy, which can be used for relationship-lending. Many different proxies have been considered in various studies in the literature. The length of the relationship by year and the volume of savings accounts are two of them. The proxy we used is the number of accounts each person has in the bank. This proxy can effectively reflex the quality and quantity of the relationship between the bank and its borrower.

The remainder of this paper is as follows. In section 2, we would introduce the literature review. The data description would be discussed in section 3. In the fourth section, we clarify the model by which the relationship-lending would be estimated. Section 5 would elucidate the results of the estimations. Conclusions have been explained in the final section.

2 Literature Review

Numerous papers have studied relationship lending. To make a proper matching with our study, we categorized the literature into two categories. The

first is those papers that have investigated the effect of the relationship lending on fund availability and quantity. The second category consists of those papers which have investigated the impact of relationship lending on the Prices and collateral

2.1 Fund Availability and Quantity

The first question to ask is on the direct impact of relationship banking: whether the existence of a relationship between the bank and the customer increases the availability and quantity of credit. The area of greatest concern is credit availability to small businesses and individuals. There is little concern for the availability of credit to large companies or wealthy individuals since these entities have a wide variety of potential credit sources. Small business borrowings are generally confined to local areas where monitoring can be done effectively, and thus, there is a more limited group of potential lenders.

Equilibrium models of bank lending include adverse selection and moral hazard problems that apply to small firms (see Stiglitz & Weiss, 1981). As mentioned above, large lending institutions can produce substantial bodies of information about borrowing firms that can be very helpful in the credit decision process (see, e.g., Diamond, 1984, 1991; Leland & Pyle, 1977). Because of scale economies and durability of information, a firm or individual having a longer and a stronger pre-existing relationship with its bank should have greater availability of funds and lower cost of funds.

There is a substantial theoretical literature supports the fact that financial intermediaries have a comparative advantage in the production of information about borrowers (see, e.g., Boyd & Prescott, 1986; Diamond, 1984, 1991; Ramakrishnan & Thakor, 1984). Moreover, the model of Boot and Thakor (1994) predicts that, as a relationship matures, interest rates decrease, and collateral requirements decline. Other models predict that interest rates will increase as the link lengthens since lenders subsidize the borrowers initially but will be reimbursed with higher rates later (see e.g., Greenbaum, Kanatas, & Venezia, 1989; Rajan, 1992; Sharpe, 1990; Wilson, 1993).

Empirical evidence on the effects of relationship banking is rather extensive. Recent evidence indicates that small banks lend proportionately more to small enterprises than do large banks (Berger, Goldberg, & White, 2001; Berger, Kashyap, & Scalise, 1995; Berger & Udell, 1996). Consequently, there is much interest in the behavior of small banks concerning small business loans or individuals.

To study the possible effects of relationship banking, recent studies have used the three surveys of small business lending co-sponsored and co-funded

by the Federal Reserve Board and the US Small Business Administration, the National Survey of Small Business Finances. Petersen and Rajan (1994) examine the value of lending relationships using the 1987 NSSBF, the earliest survey. They find that contact with an institutional lender increases the availability of financing to a small business. In a second paper using these data, Petersen and Rajan (1995) explore the effect of credit market competition on lending relationships. Because a lender is more assured of a continuing relationship with a small business borrower located in a more concentrated banking market, lenders tend to provide more credit in more focused markets.

Berger and Udell (1995) use the same data and analyze the importance of relationships between banks and borrowers in the extension of credit to small businesses. Berger and Udell (1996) use loan data drawn primarily from the Federal Reserve's Survey of the Terms of Bank Lending to Business. They test several hypotheses concerning the effect of relationship lending on the availability of credit to small businesses. They find that large banks issue fewer loans to small businesses than do small banks. Their empirical results support the hypothesis that large banks supply relatively less credit to small "relationship borrowers" but do not reduce credit to small "ratio borrowers" whose creditworthiness can be judged by examining their financial ratios. Cole (1998) examines the effect of relationships on the availability of credit by looking more carefully at the nature of the relationship. Using data from the 1993 NSSBF, he finds that lenders are more likely to extend credit if they have a pre-existing relationship with a borrower, consistent with the generation of private information from such links.

In summary, in the loan approval process and availability of funds, relationships appear to be so crucial for banks, especially when the borrower is a small business. Although individuals have not been yet the aim of the researchers, they can be viewed precisely like small businesses.

2.2 Prices and Collateral

Lenders charge higher rates to borrowers who are less likely to repay loans. Requiring collateral or guarantees can improve the terms of the loan for the borrower. Berger and Udell (1998) review the theoretical literature on collateral and guarantees and the empirical literature that was done prior to the availability of data on small business firms. Much of the literature deals with the use of collateral in mitigating information problems, the effects of collateral on the costs of other types of funding, the risk levels of borrowers pledging collateral, and the extent to which the pledging of collateral reduces

risk. Instead of reviewing this extensive literature, we concentrate on the recent empirical studies relating to small business lending since the final aim of this study is to investigate the behavior of the bank when the borrowers are individuals, not large corporations.

Several of the studies discussed above dealing with credit availability also examine the terms of the loans, such as prices and collateral. Petersen and Rajan (1994) find that relationships reduce the cost of borrowing slightly, but this effect is statistically insignificant. Petersen and Rajan (1995) find that the increased probability of continuing involvement in a more concentrated market leads to lower rates on small business loans. Berger and Udell (1995) show that lenders offer firms with longer relationships lower rates and are less likely to require collateral. Berger and Udell (1996) find that large banks charge lower loan rates and require less collateral than do small banks in general. Cole et al. (2004) find that collateralization has a positive effect on loan availability for banks, but that the results are statistically insignificant.

3 Data Description and Methodology

For estimations, we use 4850 specifications of the loan granted to individuals by a bank in Iran.[1] The bank is a private bank and active in all big cities of Iran. This bank has 750 active branches in Iran. Broad activity of this bank helps our estimations to be more truthful and can be a better proxy for society as a whole. The bank also offers different types of banking accounts. Indeed, our investigations show that this bank supplies services like all leading banks in the Iranian banking system. It, in turn, ensures that our estimations can be a good proxy of the banking system. The data consists of all loans (between 10-50000 Million Rial) granted to individuals by the bank in the year 1395 in three months of Farvardin, Ordibehesht, and Khordad. Although having loans given to entities could validate our estimations, having strong data has always been a serious problem in developing countries especially in Iran which has an opaque banking system. Thus, in this study, we have just the data granted to individuals. A detailed description of the data has been shown in Tables (1) and (2). Based on a categorization, variables can be divided into two categories: numeric variables and string variables. The description of the first category has been provided in Table (1) and the second one in Table (2).

Numeric variables consist of the loan value, loan rate, collateral value, duration, age, and a number of accounts. The loan value is the amount of the loan granted to each borrower by the bank and is one of the primary dependent

[1] We cannot disclose the name of the bank

variables in our study. Indeed, we are looking for a relation between the number of loans borrowers can obtain from a bank and the quality and quantity of relationships they have had with the bank. In other words, whether having more connection with the bank, opens the doors for borrowers to obtain more loans or not? As mentioned above, this variable ranged between 10 million Rial to 50 billion Rial. This range is justifiable because loans out of this range are either so low or so high that they cannot reflex the quality of relationship-lending. Banks, mainly, do not sensitively consider the credit of borrowers or even their already relationship, when loan value is lower than 10 million Rial.

On the other hand, borrowers who can obtain loans more than 50 billion Rial are, mainly, those who have special and personal relations with bank managers. So, it is not expectable that the relationship-lending be important in the process of getting loans by these borrowers.

Loan rate, as another contract term of the loans, is the main dependent variable in our study. We want to test whether making a relationship with a lender helps borrowers to obtain loans with fewer costs. The loan rate is the cost of funding for borrowers. Although the interest rate is, in the Iranian banking system, under strict regulations, banks can charge, mainly, different rates in a limited range. In our data, the minimum loan rate is 4 percent, and the maximum is 22 percent. Four percent of loans are mainly loans in Gharzolhassaneh contracts, an especial contract in the Iranian banking system. For other contracts, the range of loan rates is a flow between 18 and 22 percent. The loan rate, based on different arrangements, would be more discussed in the following.

Collateral value is the third variable which represents the contract terms of the loans and is, in our study, the third and last main dependent variable. By pledging collateral, lenders make sure that can cover their loss if borrowers would not repay their loan or outrage of the contract terms of the loans. Although collateral is mainly close to the amount of the loan, borrowers can negotiate with lenders for pledge less collateral for them. Here, during these negotiations, is the place where we can trace the effect of relationship-lending. Indeed, we want to find this place and discover its direct or indirect relation. Collateral pledged on loans is, in our data, a number between 6 million Rial to 73 billion Rial. Its range is more than the range of the amount of the loan.

Moreover, the minimum amount of collateral is less than the minimum amount of loan; this is a sign of the effect of negotiation and relationship-lending.

Duration is the time between granting loan and time which borrower has to repay the loan. Duration is a control variable which more likely can be

explained by relationship lending. Borrowers, mainly, try to lengthen the term to control for the presser of repayment. They also want to enjoy the effect of inflation on the real value of their loans. Indeed, by passing time, the loan borrower should pay less amount, especially in Iran's economy that has been faced with high inflation in past decades. In our data, duration ranged between 2 months and 96 months.

Borrower's Age is another numeric variable that can be used as a control variable in our estimations. Borrower's age is a determinative variable in the process of loans. Both so young and so old borrowers are not safe from the lenders' point of view, because they are not able to make adequate income. The borrowers' age ranged from 1 to 96 years.

A number of accounts are the most important variable in this study because it is the single proxy for the relationship between the lender and the borrower. In this paper, the number of each borrower's accounts in the bank has used as the proxy of the bank-borrower relationship. Since the multiplicity of the number of accounts pertains to relationship-driven accounts, this variable reflects the proper quantity and quality of the bank-borrower relationship. Indeed, it is not reasonable that people open an account without any relationship with the bank. There are three types of accounts in the Iranian banking system; current, medium-term savings accounts and long-term savings accounts. Each person can open just one current account in each branch of the bank and an unlimited number of other two types. Since two last types involve borrowers in a longer and more qualifier relationship than the first type, they are called more relationship-driven accounts. If opening a banking account was free, borrowers had the incentive to open many accounts. In this situation, the number of accounts could not be a good proxy for the quality and quantity of the relationship. However, the fact is that opening an account in banks has some cost for borrowers. Thus, they will open an account just when they need a serious banking service. Not only would be the number of accounts, in this situation, a valid proxy for relationship-lending, but it is also the best one because it is exactly reflexing the relationship of two sides.

In the literature, the length of the relationship by years has used as a proxy for relationship-lending. We think in the Iranian banking system, the length of relationship lending is not a valid proxy, though its data is not available for us. The number of account borrowers held in the bank ranged from 1 to 25 accounts. We argue there is a direct relation between the quality and quantity of relationship between lender and borrower and the number of account borrowers have held on the bank. In other words, the more account borrower has had in the bank; the more qualified the relationship has had with the bank.

Table 1
Data Description, String variables

Variable	Max	Min	S.d	Mean	Unit
Amount of Loan	50000	10	758	165	Million Rial
Loan Rate	22	4	3.91	19	Percent
Collateral	73000	6	1568	599	Million Rial
Duration	96	2	8.12	34	Moon
Borrower's Age	92	1	12.6	43	Year
Number of Accounts	25	0	1.83	1.28	Number

In this table, the data related to numeric variables have been described. Max, Min, Mean, and s.d are explained. The number of all of the variables is 4850.

String variables consist of loan type, month, collateral type, and loan contract type. Loans can be divided, based on categorizations, into two essential categories: Duty and Non-duty loans. Because of the dominance of the government and public entities sometimes, In the Iranian banking system, banks have to grant a loan to a particular borrower, regardless of the bank preferences. These loans that would be enforced to the banks are named duty loans. Other mortgages, in which banks evaluate the risk of the borrower and make decisions endogenously, are called non-duty loans. It is indisputable that the contract terms of these two categories can be different. In other words, contract terms of one type can be induced by an external factor and another not. This difference shows that the presence of this variable is necessary. Less than 1 percent of the loans in our data are duty loans.

The month is the second string control variable. As mentioned above, loans granted to borrowers in three months: Farvardin, Ordibehesht, and Khordad, in the year 1395. The presence of the month variable can control the potential effects of time changes. Although there was no new regulation in these three months which change the contract terms, the presence of time-variable validates the estimations more.

Collateral type is the third-string control variable used in estimations. There are three types of collateral, namely immovable assets, promissory notes, and deposit. Each of these collaterals has different characteristics. These differences, in turn, lead to various risks. So that, the less liquid would be collateral, the riskier would be it's correspond loan. For example, the deposit is entirely liquid, whereas immovable assets are not. So the presence of the variable collateral type helps us to control the risk of the loans, which change the contract terms of the loans. Less than 1 percent of the loans have secured with immovable assets, 21 percent of the loans have been secured by

a deposit, and the others (78 percent) have been secured with promissory notes.

The loan contract type is the third important string variable. This variable controls the different types of contracts between borrowers and lenders. Based on the law, each loan should be paid in one particular contract type, which has special terms. Loan contracts can be divided into six different categories such as Forosh Aghsati, Gharzollhasaneh, Joalleh, Morabeheh, Mosharekate Madani, and Mozarebeh with approximately %28, %6, %29, %34, %2, %1 of the total loans in the data, respectively. The loan rate in all the Gharzollhasaneh loans is 4 percent because of the regulation in the Iranian banking system. The average amount of the loan granted in this category is 54 million Rial, which is considerably less than the other types. The average amount of the loan in Mosharekate Madani contracts is more than others and equal to 921 million Rial. The presence of the contract types in the model controls the effect of strict regulations and leads to more accuracy.

Based on another categorization, the variables can be divided into two categories. The first is borrower-characteristic variables, those variables in the model which represent a characteristic of the borrower. The age of the borrower and the number of accounts borrower has in the bank are borrower-characteristic variables. Loan-characteristic variables, as the second category, consist of those variables which represent one or some of the characteristics of the loans. Other variables such as Loan value, Loan rate and Duration are loan-characteristic variables. This categorization helps us have a more specified results in the next parts.

Table 2
Data Description, String variables

Variable	Category	Percent	abundance	MPC	MAL	MLR
Loan Type	non-duty	99.38	4820	3.46	166	19.14
	Duty	0.62	32	2.3	61	4
Month	Farvardin	2.6	126	3.1	157.4	15.5
	Ordibrhrsht	14.12	685	3.37	245	17.5
	Khordad	83.2	4049	3.48	152	19.4
Collateral Type	Immovable Asset	0.33	16	5.3	1344	20.25
	promissory notes	78.49	3807	3.5	147	18.75
	Deposit	21.18	1027	3.1	214	20
Loan Contract	Forosh Aghsati	28.47	1381	3.4	138	19.5
	Gharzolhasaneh	5.63	273	2.4	54	4
	Joalleh	28.45	1380	3.4	163	20
	Morabeheh	34.19	1658	3.5	158	20
	Mosharekat Madani	2.08	101	4.5	921	21.9
	Mozarebeh	1.18	57	5.9	280	22

In this table, the data related to string variables have been described. Max, Min, Mean, and s.d are explained. .MPC= Mean of Proportional CollateralMAL= Mean of the Amount of Loan. MLR= Mean of Interest Rate

3.1 Methodology

In this paper, we examine the effect of relationship lending on contract terms of the loans with the help of three different simple regressions: one for Amount of Loan, another for Loan Rate, and final for Collateral. The first regression estimates the effect of relationship-lending on the interest rate, as the most important term of the loans' contract. Rate is the cost of the loans for borrowers. Thus, they always try to negotiate with the bank's officer for obtaining lower rates. The officer journeys back and investigates the borrower's credit experience. The more borrower have had credit, the less risky would be for the bank to increase the interest rate. The bank, based on a plethora of variables, one of them can be the quality and quantity of relationship has had with the borrower, finalize its decision. Yet, there are many other variables, as control variables in our study, affect the bank's choices when they want to determine the loan rate. Table 3 has listed all control variables for each of the regressions. All control variables have individually been explained before except proportional collateral. Since the strong correlation (%92) between the amount of loan and collateral, we

decided to make a new variable. This variable is the ratio of collateral pledged on each loan to the amount of that loan and for a summary, its name is proportional collateral. The second and third regressions, based on table 3, estimate the effect of relationship-lending on the amount of loan and collateral pledged on loans, respectively.

Table۳
Regression Models Introduction

Model	Dependent Variable	Independent Variables
Model 1	Loan Rate	Number of Accounts, Age, Duration, Proportional Collateral, Moon dummy, Loan Type Dummy, Loan Contract Dummy, Collateral Type Dummy
Model 2	Amount of Loan	Number of Accounts, Age, Duration, Moon dummy, Loan Type Dummy, Loan Contract Dummy, Collateral Type Dummy
Model 3	Proportional Collateral	Number of Accounts, Age, Duration, Moon dummy, Loan Type Dummy, Loan Contract Dummy, Collateral Type Dummy

In this table, the regression models explain three contract terms of the loans, along with their dependent and control variables have introduced. The model estimates the effect of relationship lending on the loan rate, the second on the amount of the loan, and third on collateral pledged on each loan.

4 Estimations and Results

Based on the reviewed literature and described data, relationship-lending can help banks to control default risk. So, during the relationship with the borrower, banks can collect valuable information about the creditworthy and responsibility of the borrower. In current times, when borrowers come back to banks for new loans, the bank's officer makes his decision confidently with the help of that information collected during the relationship. Thus, through the process of determining contract terms of the loan, the officer can use this information and make a decision about the interest rate, amount of loan, and collateral pledged. Although the literature has shown that in the theoretical atmosphere and practical one (for many countries), there is an expected relation between relationship lending and contract terms of the loans, in the Iranian banking system, this relation has not yet tested. In what followed, we examine this relationship practically.

4.1 Loan Rate Estimation

The first model tests the effect of relationship lending on the Loan rate with the help of a simple OLS regression. Loan rate has been regressed on both relation-characteristic and loan-characteristic variables. Borrower-characteristics variables consist of borrower's age and a number of accounts and loan-characteristic variables consist of proportional collateral, duration, month, loan type, collateral type and loan contract type. The result for loan rate estimation has shown in Table 4. Based on the loan contract type and age of the borrower, we estimate the effect of a number of accounts on the loan rate in 5 regressions. Regression 1, based on Table 4, consists of all the data and variables. No variable has deleted in this regression. The number of accounts each borrower has in the bank, as the first variable in Table 4, represents the relationship lending. As was expected, the coefficient of the number of accounts is negative and significant at the 1 percent level. The coefficient is around 0.01. Thus, we can conclude that, with 99 percent confidence, there is a negative relation between the number of accounts each borrower has in the bank and the rate has charged on his or her loan. So, one more account in the bank opens the doors for the borrower to obtain a loan with a rate of around 0.01 percent lower. The significance of this relationship would be more determined when we compare the borrower who has 1 account in the bank and the other who has 25 accounts. The relationship lending has let the second borrower obtain his loan with less cost of about 0.25 percent. It is so important in large numbers.

Indeed, the officer, who decides the loan rate, should necessarily control default risk because this risk brings about some costs for the bank through moral hazard and adverse selection channels. Relationship lending can help the officer to see these channels with more open eyes because, during the already relationship, the officer has collected some valuable information about the creditability of the borrower. The borrowers who have had the first experience, pass hardly through the process of loan taking. On the other hand, the borrower who has toke some loans subsequently has some open accounts in the bank that have been tested by the bank sometimes ago. Thus, he or she has a cost advantage for the bank. Indeed, in this situation, the bank is not subject to the cost of collecting information. This cost advantage has opened the hands of the officer to grant a loan to the borrower with a lower rate.

Borrower's age is the second variable, which represents the borrower characteristics. Based on the literature, older borrowers had been obtained the loan with a lower interest rate. Surprisingly, the result in this paper is opposing. The coefficient of borrower's age has been 0.001; that is, one more

year old helps the borrower to obtain a loan with 0.001 percent less cost. What is the reason behind the difference between the result in our study with the literature? The point comes back to the type of borrowers. In the literature, in all the papers which concluded the negative relationship between the loan rate and borrower's age, borrowers were entities.

Conversely, in our study, all the borrowers are individuals. It is undeniable that when we talk about entities, the age represents the creditworthy of the borrower. The more age borrower has, the more it has creditworthy, and finally, finding a negative relationship between age and loan rate is expected.

Conversely, when we are talking about individuals, the relationship is a bit vague. Indeed, an individual's income after a threshold of age, for example, after retirement, would be decreased. It, in turn, is sufficient to banks find older borrowers less creditworthy. Notably, in our data that the average borrower's age is a bit high, 43 years. Besides, the correlation between age and the number of accounts is not so significant, around – 0.035. This insignificant correlation shows that the borrower with more age has not necessarily more accounts.

The first variable that represents the loan characteristics is proportional collateral. The coefficient of the proportional collateral is positive, small, and insignificant. Although this coefficient is not significant even at a 90 percent level, its positivity shows a direct relationship between the loan rate and proportional collateral. That is, loans that proportionally pledged more collateral, have higher interest rate also, while is insignificant. The coefficient of duration is positive but insignificant. The coefficient for collateral types of deposit and promissory notes is negative and insignificant. It, in turn, shows that the rate on loan secured by these types of collateral on average less than other loans secured by immovable assets. Indeed, the judicial process of the acquisition of immovable assets is a bit tough for banks. It is probable that because of these tough processes, banks have to pledge a higher rate on loans secured by immovable assets.

Another essential variable representing loan characteristics is loan types based on duty and non-duty loans. The coefficient of duty loans rather than non-duty loans is about – 16 percent and significant even at the 99 percent level. This high coefficient was totally expected because of the control of the government on the Iranian banking system and the nature of the duty loans. Indeed, the bank's officer hands are not so open for these loans, because of the duty that the government imposes for these loans. More than 90 percent of these loans issued with a 4 percent rate. The last crucial loan-characteristic variable is contract types of loans. The coefficients of all kinds of contracts

are significant. It shows that the contract type is an important variable and explains the loan rate significantly. As it was expected, the coefficient of Gharzolhassaneh loans is the lowest, and Mozarebeh is the most economical. The loan rate for these contracts is fixed, 4 percent for the first and 22 percent for the second one.

In regression 2, Table 4, we deleted all loans included in those contracts whose interest rate is fixed. The number of Gharzolhassaneh loans was 273, and Mozzarebeh was 57. Removing these loans opens the doors for us to estimate the effect of relationship-lending on loan rates with mire accuracy. Indeed, when in a contract, the interest rate is fixed, the officers' assessing of the borrower's background is not so important and the decision is imposed and independent of the quality of the relationship. Fortunately, the coefficient after deleting these loans is also significant and even higher, around – 0.012. That is, in loans that the officer can choose different loan rates, one more account in bank helps the borrower to obtain loans with 0.01 percent lower interest rate. This, in turn, shows that relationship lending in Iranian banking system totally works. This indicates that relationship-lending is a winner-winner game. Both the lender and the borrower make a profit. Lender saves the money he had to pay as the cost of collecting information about the borrower. The borrower, on the other hand, can obtain loans at a lower rate.

In columns 3 to 5 of Table 4, we regressed the loan rate, based on the borrower's age, in 3 categories "less than 30 years", "between 31 to 41 years," and "more than 41 years", respectively. The reason behind this categorization is the nonlinear relation between the borrower's age and his or her creditworthiness. It seems very young, and very old borrowers would be more risky for banks than those borrowers who are close to average. Therefore, the bank's officer is more distrustful when he wants to determine their loan rate. The results confirm this analyze. After categorization, although the coefficient for all three categories is negative, it is significant just for the second category, namely borrowers between 31 to 41 years old, those who are neither so old nor so young. The coefficient of the number of accounts for this category is more than 0.02, which is even more than the coefficient in the original regression. It shows that for borrowers of these ages, having 50 more accounts in the bank enables the borrower to obtain a loan with a 1 percent lower rate. It also shows that for other borrowers, the relationship lending does not work. In other words, regardless of their relationship with the bank, borrowers out of this age range obtain loans independence of their relationship with the bank.

4.2 Loan availability estimation

The second relevant contract term of the loan is the amount of loan granted to the borrower. Based on the literature, this variable can also be explained by relationship-lending. In most of the theoretical papers in the literature, there has been a direct relation between relationship-lending and the amount of the loan granted to the borrower. So, borrowers with more relationship could obtain more amount of loan from the bank. This relationship, however, in the Iranian banking system has been undetermined. In this part of the paper, we want to clarify the type and significance of this relationship with the help of a simple OLS model. In this model, we also use the categorization of loan and relation characteristic variables. The results have been shown in Table 5. In regression 1 we have come all the data and variables into the estimation. As it can be shown, the coefficient of the number of accounts is significantly positive and equal to 5.992. It shows that by opening one more account in the bank, the borrower has this chance to obtain 6 million Rial more loans.

Indeed, although in the Iranian banking system, the interest rate is subject to strict regulations, the amount of the loan is more flexible and less regulated. Therefore the effect of the relationship banking can be reflexed in the amount of the loan. During the loan-taking process, many of the borrowers make negotiation with the bank's officer to obtain more loans, because of the high inflation rate in Iran economy, borrowers always like to get loan more than their needs. During this process, the officer has to consider many qualifications for granting more loans.

In this table, the effect of relationship-lending has estimated on the loan rate. The first regression consists of all data and variables. Since the loan rate was fixed, 330 loans of Gharzolhasaneh and Mozarebeh contracts have been deleted. The regressions 3 to 5 have been sorted based on the borrower's age: "younger than 31", "32-41," and "older than 41", respectively.

Table 4
OLS for Estimating the Loan Rate

Variables			Reg1	Reg2	Reg3	Reg4	Reg5
Borrower Characteristic	Number of Accounts		0.00978*** (0.003)	0.0116*** (0.00337)	-0.0105 (0.00943)	0.0206*** (0.006)	-0.001 (0.003)
	Age		0.00105**	0.00112**	-	-	-
Loan Characteristics	Proporional Collateral		0.00129 (0.00148)	0.00149 (0.00160)	0.00389 (0.00917)	0.000756 (0.00195)	0.00173 (0.00221)
	Duration		0.000122 (0.000966)	3.26e-05 (0.00112)	0.000120 (0.00371)	0.000794 (0.00188)	-2.80e-05 (0.000985)
	Month	Ordibehesht	-0.330*** (0.0363)	-0.413*** (0.0423)	0.261** (0.119)	0.380*** (0.0693)	0.330*** (0.0395)
		Khordad	-0.200*** (0.0343)	-0.264*** (0.0400)	0.233*** (0.0552)	0.144*** (0.0302)	0.0886*** (0.0165)
	Collateral	Promissory notes	-0.0624 (0.0934)	-0.0665 (0.0996)	-0.0672 (0.389)	-0.140 (0.167)	0.0130 (0.0987)
		Deposit	-0.0345 (0.0939)	-0.0385 (0.100)	0.0125 (0.390)	-0.0961 (0.169)	0.0297 (0.0991)
	Duty		(0.0939) (0.0742)	-15.91*** (0.0780)	15.84*** (0.247)	-15.86*** (0.147)	-15.95*** (0.0790)
	Contract Type	Gharzolhasaneh	-15.89*** (0.0262)	-	15.79*** (0.0838)	-15.86*** (0.0478)	-15.95*** (0.0299)
		Joaleh	0.0743*** (0.0143)	0.0736*** (0.0148)	0.146*** (0.0531)	0.0891*** (0.0282)	0.0441*** (0.0145)
		Morabeheh	0.0730*** (0.0138)	0.0711*** (0.0142)	0.140*** (0.0482)	0.0789*** (0.0260)	0.0463*** (0.0146)
		Mosharekat Madani	2.001*** (0.0468)	2.003*** (0.0503)	1.985*** (0.163)	1.896*** (0.0978)	2.060*** (0.0472)
		Mozarebeh	2.067*** (0.0571)	-	2.127*** (0.229)	2.091*** (0.109)	2.034*** (0.0585)
R^2			۰/۹۹۱	0.924	0.986	0.991	0.994

The results of our estimation show that those people who have more banking accounts in the bank have more chances to attract the officer's attention and obtain more loans. In order to show the economical significance of this relationship, comparing the person who have one account and who have 25 accounts in the bank answers. Based on the results, the second one can obtain a loan, on average, around 150 million Rial more than the second one. For more accuracy, we regressed the LOG of the amount of the loan on the variables in the last column of Table 5. The coefficient of the number of accounts in this regression is around 0.04 and significant even at a 99 percent level. It shows that having one more account in the bank lets the borrower obtain a 4 more percent amount of loan. Borrower's age is the second variable which represents the borrower's characteristics. Based on the literature, we expect that older borrowers obtain more loans from the bank. While the borrowers in our study are all individuals, the result is similar to the literature, but the coefficient is insignificant in our study. This insignificance, as was explained before, can be rooted in the difference between the nature of the age for borrowers who are individuals and entities.

The first variable representing the loan's characteristics is the duration of the loan. The coefficient for this variable is positive but insignificant. As it was totally expected, the amount of the loan for those loans secured with immovable assets is significantly higher than the rest. The volume of duty loans is significantly lower than non-duty loans.

Like our estimation for interest rate, we have to estimate the amount of the loan based on the loan contracts, because in some contracts the amount of the loan officer can grant is not highly flexible. For instance, the volume of loans in Gharzolhassaneh contracts is significantly lower than other contracts. Whereas flexibility, in general, is considerably more when the officer wants to determine the amount of the loan rather than when he wants to charge an interest rate. In the second to fifth columns, we estimate the effect of relationship lending on the loan accessibility based on the loan contracts, Foroshe Aghsati, Joalleh, Morabeheh, and Gharzolhassaneh, respectively. As can be seen, for Morabeheh and Gharzolhasaneh contracts, the coefficient of the number of the accounts is positive and significant even at a 99 percent level. The coefficient of Morabeheh contracts is 20.27.

4.3 Collateral Estimation

The third relevant contract term of the loan is the amount of collateral pledged on the loans. Indeed, banks to control the moral hazard risk secure the loans by pledging collateral. In our study, the bank guarantees its loans by three

types of collateral, Immovable Assets, promissory notes, and Deposit. Like loan rates, collateral is also a cost factor in the process of loan taking. Thus, the borrower always, ceteris paribus, would try to pledge less collateral on his loan.

On the other hand, for controlling the default risk, the bank prefers to pledge more collateral. So, the amount of collateral is negotiable. Here is the place where the relationship-lending would be shown up. To estimate the effect of relationship lending on the collateral pledged by banks on loans, we use of simple OLS model. The results can be shown in Table 6. In regression 1, we used all variables to estimate the effect of relationship lending on the collateral.

Based on Table 6, the coefficient of the number of accounts is positive but significant just at the 90 percent level. This coefficient is about 0.03 units. It shows that we can conclude that, with 90 percent confidence, having one more account in the bank brings about a 0.03 unit higher ratio of collateral to the amount of loan (proportional collateral). The borrower's age coefficient although is not significant, as the interest rate estimation, is positive. The duration's coefficient is significantly negative, around - 0,02. It shows that the proportional collateral for loans with longer terms is smaller. One month reducing the length of the loan rises the proportional collateral around 0.02 units. In other words, if the borrower wants to reduce the term, he or she has to pledge proportionally more collateral. Although this is, at first glance, unexpected, when we see the officer's behavior generally, it would be rational and expected. The officer grant more amount of loans with a lower rate to those borrowers who have had more relationship with the bank, but the officer have to secure this generous offer with more collateral.

Table 5
OLS for Estimating Amount of the Loan

Variables			Reg1	Reg2	Reg3	Reg4	Reg5	Reg6
Borrower Characteristic	Number of Accounts		5.992*** (1.770)	4.232** (1.911)	4.680* (2.652)	20.27*** (3.754)	1.980*** (0.623)	0.0388*** (0.00513)
	Age		0.257 (0.252)	0.321 (0.266)	0.0582 (0.441)	-0.00157 (0.334)	0.211 (0.139)	(0.00513) (0.000731)
Loan Characteristics	Duration		0.533 (0.561)	2.013*** (0.651)	-1.290 (0.981)	-0.717 (0.831)	2.516*** (0.160)	0.00842*** (0.00163)
	Month	Ordibehesht*	-8.158 (21.11)	40.03* (22.90)	40.19 (45.67)	-80.28*** (29.16)	-10.63* (5.838)	0.0391 (0.0578)
		Khorda[d*]	-23.35 (19.96)	11.38 (22.03)	54.62 (43.27)	-110.0*** (26.91)	-10.41* (5.531)	-0.0190 (0.0578)
	Collateral Type	promissory notes	1,183*** (54.30)	1,332*** (47.33)	-317.2 (197.0)	-1,202*** (68.86)	-	-2.161*** (0.157)
		Deposit	1,115*** (54.57)	1,323*** (47.81)	-243.7 (197.3)	-1,149*** (69.08)	-	-2.036*** (0.158)
	Duty		-87** (43.15)	136.8***(29)	-	-	-	-0.93*** (0.125)
	Contract Type	Gharzolhasaneh	82.44*** (15)	-	-	-	-	-0.96*** (0.044)
		Joaleh	26.88*** (8.318)	-	-	-	-	0.196*** (0.0241)
		Morabeheh	24.96*** (8.003)	-	-	-	-	0.159*** (0.0232)
		Mosharekat Madani	289*** (27.3)	-	-	-	-	0.89*** (0.08)
		Mozarebeh	137*** (33)	-	-	-	-	0.88*** (0.09)
Number of data			4,849	1,381	1,380	1,658	273	4,849

In this table, the effect of relationship-lending has estimated the amount of loan. The first regression consists of all data and variables. The regressions 2 to 5, have been sorted based on the loan contracts, Foroshe Aghsati, Joalleh, Morabeheh, Gharzolhasaneh, respectively. Regression 6 is like the regression1 except for used LOG of the amount of the loan rather than the amount of the loan.

*Ordibehesht is the second month of the Solar Hijri calendar between 20th April and 20th May. Khordad is the third month of the Solar Hijri calendar between 21st May and 20th June.

The month has no significant effect on the proportional collateral. Based on Table 6, the proportional collateral is on average higher for loans that have

been secured by immovable assets, as it can be completely expected. Indeed, these loans have more default risk for banks, because they are less liquid. It also shows that the officer controls the default risk of the loans when he or she wants to determine the collateral, not when he wants to determine the interest rate.

In regressions 2 and 3, we estimated the effect of relationship lending on the collateral based on the types of collateral. This categorization helps us to see the impact of relationship lending more accurate. In the regression2 loans secured by deposit and in the regression3 loans secured by promissory notes have been estimated. As can be seen, the number of account's coefficient is positive in both but is significant just in the first one, at a 95 percent level. It means that the effect of relationship lending on the collateral is more prominent for more secured loans (loans secured by deposit). The duration's coefficient for the first is yet negative but for the second positive. It shows that the proportional collateral for those loans that have been secured by promissory notes would be increased if their duration also increases.

In the fourth regression, we added the amount of the loan as another independent variable on the right side of the regression; the reason behind that is to control the parallel effect of the loan volume. As can be seen, the coefficient has not changed significantly.

Table 6
OLS for Estimating the Pledged Collateral

Variables			Reg1	Reg2	Reg3	Reg4
Borrower Characteristic	Number of Accounts		0.0337* (0.0180)	0.268** (0.130)	0.00951 (0.00877)	0.0345* (0.0180)
	Age		0.00103 (0.00256)	0.00282 (0.00937)	0.000593 (0.00140)	0.001 (0.00256)
Loan Characteristics	Amount of Loan		-	-	-	-4.99e-06
	Duration		-0.0233*** (0.00570)	0.0668*** (0.0166)	0.00721** (0.00351)	-0.0264*** (0.00535)
	Month	Ordibehesht*	-0.00555 (0.214)	-0.00927 (0.851)	-0.0953 (0.114)	0.015 (0.214)
		Khordad*	-0.0449 (0.202)	-0.0290 (0.798)	-0.0596 (0.108)	-0.009 (0.201)
	Collateral Type	promissory notes	-1.495*** (0.551)	-	-	-1.503*** (0.553)
		Deposit	-2.089*** (0.554)	-	-	-2.103*** (0.556)
	Duty		-0.695 (0.438)	-	-1.519*** (0.214)	-1.078*** (0.147)
	Contract Type	Gharzolhasaneh	-1.115*** (0.154)	-1.372 (4.138)	-1.293*** (0.0746)	-15.86*** (0.153)
		Joaleh	-0.0329 (0.0844)	0.158 (0.328)	-0.144*** (0.0452)	-0.0212 (0.0841)
		Morabeheh	-0.0945 (0.0812)	-0.515 (0.334)	-0.0353 (0.0429)	-0.0823 (0.0809)
		Mosharekat Madani	0.383 (0.276)	-0.606 (0.894)	0.678*** (0.162)	0.314 (0.274)
		Mozarebeh	1.834*** (0.337)	5.030***(1.095)	0.647*** (0.197)	1.758*** (0.333)
Number of data			4,849	1,027	3,806	4,849

In this table, the effect of relationship-lending has estimated on the pledged collateral on loan. The first regression consists of all data and variables. In the regressions, 2 variables collateral type and loan type have been deleted and just loans secured with deposit have regressed. In the third regression, the collateral type has been deleted and only loans secured with promissory notes have been regressed. In the fourth regression, the variable amount of the loan has been added to the right side.

*Ordibehesht is the second month of the Solar Hijri calendar between 20th April and 20th May. Khordad is the third month of the Solar Hijri calendar between 21st May and 20th June.

5 Conclusion

Based on the theoretical and practical literature of relationship lending, lenders can, by making a strong relationship with the borrower day by day, control the risks like adverse selection and moral hazard. Indeed, banks during this relationship collect valuable information about the financial situation and creditworthy of the borrower. Thus, the bank has more chances to determine contract terms of the loans like loan rate effectively, loan volume, and collateral pledged on loan. Our results about the effect of relationship-lending on these contract terms of the loans are as follows:

The relationship-lending is a winner-winner game. Both the lender and the borrower make a profit in this successful game. Lender saves the cost of collecting information about the borrower because the bank or its officer is the only lender in the market who has such personal information about morality and financial situation of the borrower. Having this information is a considerable advantage for the bank. Indeed, the bank no longer needs to spend time and money on collecting this valuable information. The game is also profitable for the player who plays on the other side, namely the borrower. The process of obtaining a loan is significantly less costly for the borrower in an atmosphere in which relationship lending exists. The reason behind this claim is that the lender reflexes some part of its cost advantages on the contract terms of loans like loan rare, loan volume and collateral pledged on loans.

Our estimations show that in the Iranian banking system, under robust interest rate regulation, there has been a significant negative relationship between relationship lending and the rate induced on loans by loans. So that, on more banking account in the bank, the number of accounts is a proxy for relationship lending, lets the lender obtain a loan with around 0.01 percent lesser rate. Indeed, borrowers who have more banking account in the bank have more chance to be financed inexpensively, by negotiating with the bank officer who more likely knows the borrower for some time.

The results also show that the lender reflexes some more prominent part of its cost advantage on the amount of the loan, rather than loan rate, may because the officer's hands are more open when he wants to determine the amount of the loan. Our estimations show that one more banking account brings about 6 million Rial more loans for the borrower. It is significant both economically and statically.

The effect of relationship lending on the amount of the collateral pledged on each loan has been more interesting. The result shows that the number of accounts has had just in a 90 percent confidence level, a significant effect on the amount of the pledged collateral. More interesting was the positive

relationship. Therefore, the borrower who has had more accounts has to pledge proportionally more collateral on his or her loan. Why? Although this relation is, in first glance, totally unexpected, when we see the officer's behavior generally it would be rational and expected. Indeed, the officer grants more amount of loans with a smaller rate to those borrowers who have had more relationships with the bank, but the officer has to secure this generous offer with more collateral.

This study suggests a critical policy recommendation. Nowadays, the moral hazard and adverse selection have imposed many risks to the lenders, especially banks. On the other hand, firms need to be financed inexpensively. This matching between lender and borrower is more important in Iran's economy; because both the nun-performing loans are high and firms need to be effectively financed. One efficient solution for making this matching is relationship-lending. Relationship-lending opens the doors for both lender and borrower to make a strong relationship, which is a winner-winner game. Thus, central banks can, by regulations, open the doors on the relationship-lending in the banking system.

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