

An Analysis of Transaction Costs of Obtaining Credits in Rural Iran

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ABSTRACT

Household data are used in this study to assess the transaction costs of obtaining credit from formal and semiformal institutions in rural Iran. A survey was employed to gather the data needed to determine the transaction costs that must be borne by the borrower in each step of the credit procurement process. Data were collected from a random sample of 459 households, including 272 borrower households. OLS regression and *F*-test (in view of the authors, OLS is not regression but a method of estimating a regression. *F*-test is not an econometric method but perhaps a statistical one and still it is a key statistics toll of either ANOVA or a regression. So these cannot be employed to investigate something. On the other hand, regressions have been estimated below, and surely one should be able to assign names of them) were employed to analyse the transaction cost factors affecting the procurement of credit facilities. Similar to many financial institutions operating in other developing countries, access to a loan in Iran imposes high transaction costs upon mostly poor rural households. The results reveal that the transaction costs of receiving a loan are on the average equivalent to nine percent of the total loan size. Formal and semiformal institutions impose significantly different costs upon the rural loan applicants. Results reveal that contractual form, loan size, how far the borrower being away from the financial centre along with other borrower peculiarities are important determinants of transactions' costs.

Keywords: Agricultural credits, Iran, Islamic contracts, Transaction costs.

INTRODUCTION

Credit is an important policy instrument that can facilitate the use of modern technologies leading to increase in production especially in developing countries (Mittendorf, 1986; Balisacan, 1993). Credits are also important for modernization of small-scale agriculture, as well as commercialization being introduced into the rural economy. In 1960s, 1970s, and 1980s, credit programs at heavily subsidized

interest rates were common in developing countries. In the course of subsequent reviews and analyses it was realized that many of these subsidized programs were not effective enough and low interest rates as well as credit availability did not provide sufficient opportunities for an individual's long lasting success (Mittendorf, 1986; Khalilly and Meyer, 1993; Southwold, 1991; Jabati and Heidhues, 1995). In 1975, a report was published by the World Bank dealing with agricultural credit, which stated that Transaction Costs (TCs) were unduly

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significant for many transactions involving credits in developing countries. The study, which included 41 credit programs in 32 developing countries and in 11 countries of south and south East Asia, found that transaction costs for these programs were high, sometimes even higher than the interest costs (Graham *et al.*, 1993). Given these high transaction costs, it is apparent that credit programs, focusing only on credit provision and interest rates, may be inadequate for meeting the financial needs of small farmers in developing countries (Llanto, 2004).

Since credit is not an instantaneous contract like a spot market transaction, the contractual parties and especially the lender face adverse selection as well as moral hazardous problems (Datta, 2003), that impose transaction costs upon them. According to Adams (1994), transaction costs in the financial markets include all the explicit as well as implicit costs participants incur in financial transactions. Borrower transaction costs mainly involve various charges imposed by lenders beyond payments as interest (Untalan and Cuevas, 1989; Masuko and Marufu, 2003). The cost of lending and borrowing strongly determines whether the financial institutions can effectively engage in rural finance and whether the rural population can successfully get access to the formal capital market (Adams and Vogel, 1986, Adams *et al.*, 1984, World Bank, 1990). Therefore, credit program viability depends on the determinants and consequences of the transaction costs of each institution, and the ability of practitioners to assess such costs prior to their incurrence (Bhatt, and Tang, 1997).

There are several empirical studies that have considered lending and borrowing costs of transaction in developing countries (Saito and Villaneuva, 1981; Ladman, 1984; Egaitso, 1988; Graham *et al.*, 1993; Adams, 1994; Rojas and Rojas, 1997; Angelini *et al.*, 1998; Cuevas, 1998). Some of these research works have assessed the transaction costs, while others have focused on the

effects of these costs on lenders and borrowers. Researchers have presented evidence that many lenders impose high transaction costs on their borrowers (see Nehman (1971) for Brazil, Adams and Nehman (1979) for several countries and Olomola (1999) for Nigeria). Other empirical studies have recounted the concerns of farmers regarding the borrowing transaction costs in developing countries (Izumida, 1993; Yedra, 1993; Roman, 1994; Zeller, 1994). The majority of empirical studies are in agreement that the relatively heavy transaction costs inhibit the access to credit by the small farmers (Adams and Nehman, 1979; Saito and Villaneuva, 1981, Liedholm, 1985, Gamin, 1994). A lack of credit availability, as a result of high transaction costs, has been reported in some empirical studies in agricultural sector in Iran (Khaledi, 2005; Hosseini and Khaledi, 2004; Hosseini *et al.*, 2005). Despite several empirical studies on transaction costs, there is little data available on transaction costs in Islamic financial markets of their unique contracts.

Similar to many other countries, rural households in Iran have to procure their needed credit from formal, informal and semiformal intermediaries. The most important formal lending institutions in Iran are public banks, which operate as based on Islamic banking principles as of 1983. The essence of Islamic Banking Law implemented in 1983 was to replace the conventional banking practices as regards fixed-interest contracts with the Islamic Principle of Equity Participation. The law defined new operational procedures for paying depositors an "expected profit" on bank facilities. The Islamic banks in Iran grant credit to their clients based on a number of different forms of Islamic contracts. These contracts can be divided into three categories, of: profit and loss sharing; fees based, and usury free services.

Prior to the early 1970s, the largest informal financial system in urban Iran was based on merchants' using an informal credit system. Since 1980s the market for informal

financial intermediaries has grown. A number of financial units operate as charities and provide small sums of credit to the needy and are organized as Qard-al-Hassanah Funds (QHF). QHFs are semiformal institutions that have developed since the Iranian Revolution in 1979. They offer loans for various purposes, and charge no interests (Jalali-Naini, 2002). Rural Cooperatives (RCs) form another semiformal category of institutions that provides credits to farmers. RCs network in Iran includes 2,941 cooperatives with 4,500,868 members in 56,252 villages. These cooperatives are sub branches of 27 Provincial Unions. RCs are multifunctional institutes, with roles in production, commerce, extension, as well as finance. These roles are in accordance with the Iranian government's goals and policies to enhance the agricultural sector and to protect rural population of the country. The granting of loans to cooperative members is one of the duties of these cooperatives. The sources of RCs' funds include cooperative members' deposits as well as Agricultural Banks' with the RCs operating as bank representatives.

This study is intended to provide an in depth analysis of the transaction costs incurred by farmers when obtaining credit from formal and semiformal institutions, in Iran. A survey was carried out to gather the data needed to compute the transaction costs borne by the borrower in each step of the credit receiving process. The data included the cost to procure the needed documents or to prepare for visits to a financial institution to forward an application in the first place, to incur trip costs to check if the credit is ready, to receive the credit disbursement, to prepare for the visits from the bank, and as

well to incur costs in making trips for repayments. To do this, four measures of transaction costs are calculated. These costs for several types of institutions of differing types of contracts and for varying sums of credit are compared. Utilizing additional household data, the factors influencing individual rural household transaction costs are also economically examined.

MATERIALS AND METHODS

Data Source

Cross-sectional data from rural households in Iran were gathered to analyze transaction costs in the financial market. The data were collected by interviewing 459 randomly-selected farmers and completing the corresponding questionnaires in four provinces (Mazandaran, Lorestan, East-azarbajejan and Khorasan). Of the total 459 selected households, the borrower information concerning 272 households (fifty-nine percent of the total sample) was used to analyze the transaction costs of obtaining credit facilities. Although the sampling was conducted in 2005, the information about the financial transactions pertained to the three years ahead of that date. As shown in Table 1, seventy-nine percent of the borrowers obtained credits from formal institutions between 2002 and 2005. Agricultural Bank of Iran (ABI) had an important role in financing rural households. Forty-five percent of the total number of borrowers received their credits from ABI. Twenty-one percent borrowed from semiformal institutions. Borrowers were asked about the process of applying,

Table 1. Credit sources for the sample.

Borrowers	Number	Percent of total sample
From formal institutions (Iranian banks)	216	79
From ABI	123	45
From semiformal institutions (QHFs and RCs)	56	21
Total	272	100

Source: 2005 Survey Results (Hosseini *et al.*, 2005).



obtaining and repayment of the credit during the aforementioned three years.

Assessment of Transaction Costs

Transaction costs include all the costs other than interest rate costs that are incurred by borrowers in the course of obtaining the credit. Total credit costs can be considered as the sum of the financial costs (interest payment) plus the transaction costs. Therefore, the total cost of obtaining credit is:

$$TCC = IC + TC \quad (1)$$

where TCC is the total credit costs, IC stands for the interest cost, and TC is the transaction costs. Borrowers are to visit the banks a number of times to apply, negotiate, withdraw the credit and finally to make the repayments. Some of these visits may call for waiting in line for long hours as well as traveling long distances. Lost working hours may be quite an important component. The lost work is viewed as an opportunity lost cost. In addition, borrowers must pay for the trips to banks, meals and others. Applicants must pay for the application forms to be completed by the intermediaries, prepare photocopies of documents, pictures, personal documents, pay as well for the application fees, and so on. Office costs form another part of the costs in applying for credit from banks. Another aspect worth

noting is the credit repayment guarantee or mortgage. A guarantee or security for credit repayment is normally a pre-condition set by banks before issuing credit to their clients. In Iran this usually involves somebody to assure the lender that the borrower can repay the credit or that the valuation of land holdings and capital items offered as security are worth more than or equal to the loan granted. In some cases, the borrower becomes obliged to offer gifts or bribes to either receive his/her credit or to receive it more promptly. Credit banks may impose further costs on borrowers as they control and monitor the farmer's debt.

To assess the transaction costs, the sources were identified and classified and then the cost of meeting each one of the requirements imposed by the banks for each type of contract was determined. The transaction costs were classified into seven categories according to the kind of expenditure needed to be made to meet requirements. These categories are summarized in Table 2.

The transaction costs can be expressed in relative terms (as a percentage of the loan sum or as a percentage of the interest rate) and as a percentage rate comparable to an annual interest rate. The latter approach is often preferred, because it incorporates the temporal pattern of the transaction costs (Rojas and Rojas, 1997).

An internal rate of return methodology was employed in this study to evaluate the

Table 2. Classification of transaction costs.

Type of costs	Definition
Traveling costs	Costs incurred by borrowers in calling at (visiting) the banks.
Opportunity costs	Total cost of the time spent in processing the credit.
Paperwork costs	Cost of completing the forms (charged by intermediaries), including: photocopies of documents, getting pictures, obtaining personal documents, application fees and others.
Office (legal) costs	Legal fees paid to law firms, attorneys, and public offices.
Guarantee and collateral costs	Costs incurred for securing the loan before (mortgaging) the credit being issued.
Expert and controlling (supervision) costs	Costs imposed on borrowers for the control and monitoring (supervision) of their credit by experts.
Other costs	Other costs incurred in the process of obtaining credit.
Transaction costs	A summation of the above, would be the total costs of fulfilling the requirements for obtaining a credit loan.

percentage rate of transaction costs. Following an evaluation of net loan sum (N_c) as a difference between contracted loan size and transaction costs, the total rate of return (R_{total}) was found out, employing an internal rate of return methodology based on the equation below,

$$N_c = \sum_{t=1}^n \left[\frac{a_t}{(1 + R_{total})^t} \right] \quad (2)$$

where a_t is an amortized repayment made in period t , t is time (1, 2, ..., n) and n is the number of months or years agreed to in the contract. From Equation (2), it is possible to determine the total cost of credit, expressed as a percentage rate (R_t). As R_{total} includes the contracted interest rate (R) plus the transaction costs as a percentage rate (R_c), it is possible to calculate R_c . Thus, the effective rate of interest from the transaction costs is affected not only by the transaction costs but also by the terms of the contracts and interest costs for the credit. Following a calculation of the aggregate transaction costs, it is possible to specify the share of each category in the total transaction costs.

In this paper, four Measures of Transaction Costs (TCMs) are evaluated. These measures are total Transaction Costs per loan (TC), ratio of total Transaction Costs to Loan size (TCL), ratio of total Transaction Costs to Interest costs (TCI), and TC as an interest rate equivalent (TCR). In the course of the above discussions the methods of calculating TC and TCR were elaborated. Following a calculation of TC, it would be possible to easily find TCL and TCI.

Econometric Estimation of Transaction Costs

Following an evaluation of transaction costs, it is possible to assess the factors affecting these costs. In this section transaction costs regressions are employed to specify the relationship between the transaction cost measures (both the total

Transaction Costs to Loan size, TCL and the total Transaction Costs to Interest costs, TCI) and various other explanatory variables. This relationship can be summarized as follows:

$$TCM_i = f(Z_i) \quad (3)$$

Where TCM_i is the Transaction Costs Measure for i th transaction and Z_i is a matrix of explanatory variables that affect the measures. The linear model was employed to specify the relationship between transaction costs and each of these variables in the transaction costs regressions.

The first explanatory variable included, was the size of loan obtained. Loan size may affect the transaction costs either directly or indirectly depending on the system of credit administration. The borrower being for from or near to the lending institution, which is the second factor considered, is expected to vary directly with the transaction costs as it pushes up travel and time involved costs. Borrower's characteristics were also considered throughout the study. Age, level of education and an assets' index are some of the borrower's characteristics included in the model. The borrower's age is looked at as an indicator of borrowing experience. It is assumed that the experienced borrowers are likely to face fewer hurdles in negotiations and in receiving loans. Therefore, age is considered as a possible determinant of the transaction costs. One would expect that the transaction costs are inversely related to age. In addition, one could expect the borrowers with a higher level of education to incur lower levels of transaction costs in the process of their credit being granted. The effect of assets/property index on the transaction costs is not predictable. On the one hand, people with higher assets/property benefit from better social conditions and it is expected that they incur lower transaction costs. On the other, these people were usually applicants of loans of higher sizes (Musharaka contracts) expected to call for higher transaction costs. Another borrower



measure applied was an information index (measured as borrowers' information). It is expected that information index be varied with the transaction costs in an inverse manner. The borrowers who benefit from being more informed of financial services may have to incur lower transaction costs.

The contracts signed between 2002 and 2005 were considered in the study. It was intended to see the effect of time on transaction costs. The term "received year" of loan was included as an index of time. The borrowers were asked about the financial transactions they had made during the former three years prior to the study. The institutions had been trying to lower the transaction costs during this period and therefore one would expect a negative coefficient for this variable item. The final factor appearing in the regressions is contractual forms. There are different modes of contracts agreed between borrowers and lenders. In the basic regression, contractual forms are divided into two groups: the contracts specific to farmers vs. the other contracts. The farmer specific contracts are those that were traditionally granted to farmers including Salaf, Muzara'ah and Musaqat.

RESULTS AND DISCUSSION

In this section, the aggregated and detailed transaction costs of borrowing, incurred by the rural households are in the first place presented. Then, the results of econometric estimations are done so.

Average Transaction Costs Incurred by Borrowers

Table 3 presents the averages across all the 272 borrowers, for various indicators of transaction costs. The first 10 items give a detailed analysis of the transaction characteristics being dealt with between lenders and borrowers. Findings show that the contracted loan size (15.76 M. Rials) is at a lower level than the applied loan size (20.45 M. Rials). That is, borrowers did not receive as much credit as they applied for. Following submission of applications, people who had been accepted as loan receiving individuals had to wait for 3.8 months to receive their share of loan. Results show borrowers visited the lending institutions 4.9 times on the average with each visit taking about 2.9 hours. The borrowers had to travel about a distance

Table 3. Transaction characteristics (traits), and borrower costs.

<i>Transaction Characteristics</i>	<i>Average</i>
Application fee (M.Rials)	20.45
Contracted amount (M. Rials)	15.76
Waiting time (Months)	3.8
Interest rate charged (Percent yr ⁻¹)	12.80
Term of contract (Months)	14.47
Number of visits to the financial institution	4.9
Distance from the financial institution (km)	12.7
Time spent for each visit (Hour)	2.9
Traveling (back and forth trips) costs per visit (Rials)	17060
Paperwork costs (Rials)	47840
Office (legality) cost (Rials)	15900
Guarantee, collateral (mortgage) costs (Rials)	191430
Expert and supervising costs (Rials)	27310
Other costs (Rials)	24950
Total transaction costs (Rials)	800657
Transaction costs/ loan size (%)	9
Transaction costs/ interest costs (%)	95
Rate of transaction costs (Percent yr ⁻¹)	12.82

12.7 kilometers to the lending institutions. The term of contract was 14.76 months, on the average.

The last four items in Table 3 summarize the overall Transaction Cost Measures (TCMs). Notably, the average total transaction cost was 800657 Rials, which was equivalent to 12.82 percent of the annual financed fund. The average interest rate for all the borrowers was 12.80 percent. The transaction costs led to a rise of 12.82 percentage points which along with the interest rate, doubled the effective cost of obtaining credits. The ratio of transaction costs to total loan size is 9 percent and the ratio of transaction costs to total interest cost is 95 percent. The results indicate that the financial institutions impose significant transaction costs on their clients.

Table 4 reports the average costs corresponding to each category of transaction. The averages are taken over all the 272 borrowers. The requirements associated with the opportunity cost of time accounted for the largest transaction cost (267,163 Rials or 4.28 percent of the total credit annually ceded), representing 33 percent of the total transaction costs. Following, in order of importance, are the traveling and security costs amounting to respectively 28 and 24 percent of the total transaction costs.

Transaction Costs and Type of Institutions

In Table 5 characteristics of transactions for formal (Banks) and semiformal lending

institutions (RCs and QHFs) are presented and compared. This information is used to calculate the average transaction costs per unit of formal/semiformal credit. The last four items show the Transaction Cost Measures (TCMs) for each type of institution.

The results indicate that, in all cases, the funds finally received were lower in amount than the funds applied for. The average time needed by the Islamic banks was more than those needed by RCs and QHFs. On the average, the rural households needed 2.9 hours for each call, but the time needed for each visit was 3.3 hours for formal institutions. The time needed for farmers to call at the semiformal institutions was 2.75 hours for QHFs while 1.75 hours for RCs. Therefore, traveling costs for farmers who had to visit formal lending institutions were higher than for those who had to visit semiformal institutions. Formal banks needed three times the travel time of QHFs and two times the travel time of RCs. This was the case even though farmers were physically closer on the average to Banks. They spent more time in each visit likely because of their more stringent security requirements and documentation. All other cost components listed in table 5 were also higher for formal lending institutions. At least some of the difference could be due to differences in credit sums. Loans offered by QHFs and RCs were of a significantly lower level than those by the Banks. This could be due to credit sums limits set at the semiformal institutions. What is astonishing

Table 4. Components of the transaction costs.

Components	Average Costs (Rials)	Ratio to total transaction costs (Percent)	Annual % of credit obtained
Traveling (back and forth trips) costs	228813	28	3.66
Opportunity (lost time) costs	267163	33	4.28
Paperwork costs	47840	6	0.77
Office (legality) costs	15897	2	0.25
Collateral or mortgage costs	191434	24	3.07
Expert and supervising costs	27316	3	0.44
Other costs	22195	3	0.36
Total transaction costs	800657	100	12.82

**Table 5.** Transactions costs vs. type of institutions.

Transaction characteristics (Traits)	Type of Institutions		
	Banks	QHF's	RCs
Application fee (M.Rials)	24.30	6.14	1.66
Contracted amount (M. Rials)	18.58	5.51	1.08
Waiting time (Months)	3.90	3.08	4.4
Interest rate charged (Percent yr ⁻¹)	14.76	5.93	5.0
Term of contract (Months)	15.15	14.11	5.86
Number of financial institution visits	5.60	2.4	1.5
Distance to the financial institution (km)	11.70	21.43	9.78
Time taken in each visit (Hour)	3.03	2.75	1.75
Traveling cost per visit (Rials)	19770	6610	8130
Paperwork costs (Rials)	55502	21780	2660
Office (legality) cost (Rials)	19856	420	0
Guarantee, collateral (mortgage) cost (Rials)	240370	1,380	0
Expert and supervision costs (Rials)	33376	0	6660
Other costs (Rials)	24161	22770	0
Total transaction costs (Rials) ^{n*}	921361	440865	97325
Transaction costs/ loan size (%) [*]	9	13	8
Transaction costs/ interest cost (%) [*]	77	1.43	2.57
Rate of transaction costs (Percent yr ⁻¹) ^{n*}	13.8	9.01	10.54

* and n*; Denote significant and non-significant differences between the contractual forms at 10% and lower, respectively.

[*F*-Statistics=1.44, 2.40, 8.97, and 0.46; equivalent *P*-Values= 0.24, 0.09, 0.00, 0.63 for TCMs, respectively].

is that the lower interest costs did not seem to cause costly congestion or bureaucracy at the QHF's and RCs.

Table 5 also presents TCMs for each type of lending institution. The average transaction costs differ according to the kind of intermediary. The average transaction costs of receiving a loan from formal institutions (921,361 Rials) are about twice those when receiving loans from QHF's (440,865 Rials) and about ten times those when receiving from RCs (97,325 Rials). The *F*-test was employed to compare transaction costs among different institutions. Transaction costs/loan size and transaction costs/interest cost across institutions were significantly different at a confidence level of 1%. Borrowing transaction costs, percentage wise, tended to be higher for formal institutions.

Many factors explain these differences in transaction costs. The clients of formal institutions face higher traveling costs, because they need to make more frequent

trips to meet their application formalities as compared with the semiformal institutions' clients. Moreover administrative processes in the formal institutions are more complicated. While percentage of transaction costs for banks are higher than those for QHF's, the ratios of transaction costs to credit and interest cost are lower. This is due to larger sums of credit supplied by banks and higher interest rates in comparison with semiformal institutions.

Transaction Costs and Credit Size

Table 6 presents the TCMs based on credit size. The borrowers were divided into four groups based on the received loan size. The average interest rate and the term of contract increased with credit size. While the time in each visit for the loan was the same among the smallest and largest loan sizes, the number of visits to the financial institution needed for the bigger size loans was about

Table 6. Transactions costs and credit size.

Transaction characteristics (Traits)	Credit size			
	Equal to or less than 5 M.Rials	Between 5 and 10 M.Rials	Between 10 and 30 M.Rials	More than 30 M.Rials
Application fee (M.Rials)	3.94	11.16	25.78	39.37
Contracted amount (M. Rials)	2.78	8.61	20.04	94.29
Waiting time (Months)	3.62	4.09	3.76	3.85
Interest rate charged (Percent yr ⁻¹)	12.20	14.60	14.60	16.30
Term of contract (Months)	10.76	13.66	19.23	25.37
Number of financial institution visits	3.45	5.32	5.89	9.25
Distance to the financial institutions (km)	9.49	12.75	11.41	7.88
Time taken in each visit (Hour)	2.69	3.06	3.32	2.61
Traveling (back and forth trips) cost per visit (Rials)	16400	31910	19320	12420
Paperwork cost (Rials)	39490	29560	89420	162080
Office (legalities) costs (Rials)	3440	3130	16290	187500
Guarantee, collateral (mortgage) costs (Rials)	41670	16250	64520	3000000
Expert and controlling (supervision) cost (Rials)	7290	4690	38710	360000
Other costs (Rials)	12510	17730	35810	0
Total transaction costs (Rials)*	390090	681920	702830	4189560
Transaction costs/ loan size (%)*	13	8	4	3
Transaction costs/ interest cost (%)*	159	56	31	18
Rate of transaction costs (Percent yr ⁻¹)*	19.28	9.97	5.38	3.48

* Denotes significant differences between the contractual forms at 10% and lower.

[*F*-Statistics=12.00, 10.24, 12.08, and 4.57; equivalent *P*-Values= 0.00, 0.00, 0.00, 0.00 for TCMs, respectively].

three times (9.25) as many as the visits needed to be made for the smaller size loans (3.45). There was a positive relationship observed between loan size and cost components.

TCMs for borrowers with different loan sizes are presented in the last four information items in Table 6. *F*-test was employed to compare transaction cost among these cohorts. The transaction cost measures were significantly different. The average transaction costs for loans equal to or less than 5 M.Rials was 390,090 Rials. For loans over 30 M.Rials the cost was 4,189,560 Rials (more than ten times the smallest group). While the average transaction costs for a bigger loan are higher than those for a smaller one, the average cost per unit of loan lent was lower for bigger size loans. The average transaction costs, the ratio of transaction costs to total loan size, were 13 and 3 for the smallest and the biggest loan groups respectively. The transaction costs as percentage rates varied

between 3.48 (for loans over 30 M.Rials) to 19.28 (for loans equal to or less than 5 M.Rials). There is an indirect relationship between the rate of transaction costs and the loan size. Although the interest rates for the smaller loans are lower, the actual effective interest rates were higher, following an imposition of the effect of transaction costs. The ratio of transaction costs to total interest cost varies from about 18 percent for the larger loans to 159 percent for smaller ones. This high ratio is due to the high average transaction costs and the low interest rates as regards the low quantity loans.

Econometric Estimations

The definition and mean statistic of the explanatory variables used in the econometric models are listed in Table 7. The variables are borrower and transaction specific.

**Table 7.** Means of the variables used in the models.

Variable definition	Means for total borrowers (n= 272)
Amount of credit (M. Rials)	20.45
Distance to lending institutions (km)	10.54
Distance to Sub Province Centre (km)	23.77
Information about financial services (Number of services)	1.11
Membership in financial institutions (Yes= 1; No= 0)	0.52
Having savings accounts (Yes= 1; No= 0)	0.18
Type of contract (Specific to farmers=1; Others= 0)	0.36
Interest rate (Percent)	0.13
Received year of credit	2.40
Main job (Agriculture=1; Other= 0)	0.61
Age (Years)	48.63
Education level (High school graduate and higher=1; Other= 0)	0.18
Family size	4.17
Assets index	0.46

The estimated relationships between the transaction cost measures and the explanatory variables are presented in Table 8. Two models were applied to investigate the factors affecting the transaction costs. In Model 1 the dependent variable is the total transaction cost while for Model 2 the dependent variable is the ratio of transaction costs to loan size. The Ordinary Least Square technique was employed to estimate

the coefficients of the models. Table 8 summarizes the estimation results of the models. In Model 1, the transaction costs' regression benefits from a relatively good fit, with adjusted *R*-squared value equal to 32 percent. The *F*-Statistic is statistically significant for the regression.

As shown in Table 8, the distance from an applicant's household to the lending institution has a positive and significant

Table 8. OLS estimation of transaction costs regression.

Variables definition	Model 1		Model 2	
	Coefficient	<i>t</i> -static	Coefficient	<i>t</i> -static
Distance to lending institutions (km)	2570	2.44	0.002	3.13
Amount of credit (Rials)	0.03	9.25	0.000	-2.18
Information about financial services (Number of services)	-16789	-1.67	--	--
Membership in financial institutions (Yes= 1; No= 0)	--	--	-0.009	-0.62
Having savings accounts (Yes= 1; No= 0)	-41340	-1.32	-0.014	-0.75
Type of contract (Specific to farmers= 1; Others= 0)	-70141	-2.57	-0.033	-2.08
Interest rate (Percent)	451150	2.12	0.013	0.11
Received year	-21156	-1.32	-0.004	-0.43
Assets index	125870	2.15	-0.010	-0.30
Education level (High school graduate and Higher=1; Other= 0)	-54458	-1.64	-0.022	-1.13
Age (years)	-1848	-1.96	-0.001	-1.91
Constant	87041	1.23	0.160	3.89
Number of observations	272		272	
<i>R</i> ²	0.32		0.10	
Adjusted <i>R</i> ²	0.29		0.07	
<i>F</i> -Statistic	15.49		19.15	

effect on transaction costs in the model. There are many studies confirming the fact that the farther the borrower and the lender are away from each other the more the transaction costs would be (Adams and Nehman, 1978; Llanto, 2004; and Olomola, 1999). The loan size has positive and significant effects on the transition costs in the model. That is, farmers must incur more transaction costs to obtain bigger size loans. As expected, there is a significant and reverse relationship between total transaction costs and a farmer's age as well as education level. The asset holding index bears a positive and significant effect on transaction costs. This means that the transaction costs for wealthier people in rural areas are higher. Information about financial services as measured through information index has a reverse and significant relationship with the transaction costs of obtaining credit from the financial institutions.

As predicted, contractual forms affect the borrowing transaction costs. Contracts that are specific to farmers were associated with lower transaction costs. This means that financial institutions are interested in using the diminished transaction costs as a tool for encouraging farmers towards obtaining the special credits. A worth mentioning result was the positive relationship between interest rate and the total transaction costs, meaning that for credit facilities with higher interest rates, borrowers had to pay more transaction costs per unit of credit. The coefficient of the variable "received year" which is an index of financial success in lowering transaction costs in the previously mentioned three-year period has a reverse, but insignificant effect on the transaction costs of each unit of credit. That is, the financial institutions in Iran have not been successful in decreasing transaction costs of borrowing credit during the former three years.

In Model 2, the ratio of transaction costs to loan size was regressed on the explanatory variables. In other words, the dependent variable in this model is the transaction costs

per unit of credit received. As results indicated by the transaction costs regressions suffer from a relatively poor fit, with an R -squared value of 11 percent. Nonetheless, the all F -statistic is statistically significant. The low R^2 is due to several institutional variables that could not be included in this model.

Most results in the model 2 are similar to those in Model 1. Some variables, especially borrower's characteristics, except age, are not significant here although they were so in Model 1. The relationship between the transaction costs and the loan size is a reverse and significant in the regression. While increasing the loan size increased the total transaction costs per credit (whole credit), it decreases the transaction costs per unit of loan received. This implies that the small borrowers pay more total costs per unit fund borrowed.

CONCLUSIONS

These empirical results highlight the importance of taking transaction costs into account in financial markets. The financing of rural households at low or no interest rates for special activities can become expensive once the transaction costs are taken into account.

Looking at all borrowers, the opportunity cost of time used to negotiate and the repay the loan was the most important part of borrowing transaction costs followed by back and forth trips and security costs, respectively. These opportunity, traveling (back and forth trips) and security costs have a significant influence on the transaction costs of having access to Iranian credits. These three items compose more than 80 percent of the total transaction costs required to borrow money from Iranian rural financial institutions. It was also concluded that the average transaction costs vary significantly between formal vs. semiformal institutions; among different



contractual forms; and as well, among different loan sums. Results show formal institutions imposing more transaction costs on rural households than the semiformal institutions even though these charity promoting semiformal institutions tend to be more prone to congestion. From a transaction cost perspective, semiformal institutions could operate more efficiently in financing rural households than the formal ones.

The econometric analysis of the transaction costs implying that the cost of credit is much higher for the borrowers who generally borrow smaller sums of credits. The average transaction costs per loan size is positively affected by the loan size. Borrowers who received larger loans incurred lower transaction costs per unit of borrowed money. The distance from the borrower's household to the lending institution exerts a positive significant effect on the transaction costs. This highlights the importance of the expansion of the networks of the financial institutions as well as extension activities in lowering transaction costs. As expected, the borrowers benefiting from a higher education and being of an older age would help lower transaction costs. The information rural people had about financial services was in a reverse relationship with the borrowing transaction costs. Therefore, being informed of financial contracts could be quite helpful in lowering the borrowing transaction costs in rural Iran.

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تجزیه و تحلیل هزینه‌های مبادله دسترسی به اعتبارات در مناطق روستایی ایران

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چکیده

این مطالعه داده‌های سطح خانوار را برای اندازه‌گیری هزینه‌های مبادله دسترسی به اعتبارات نهادهای رسمی و نیمه‌رسمی برای مناطق روستایی ایران بکار می‌برد. به منظور جمع‌آوری داده‌های مورد نیاز برای محاسبه هزینه‌های مبادله در هر یک از مراحل دسترسی به وام، از پرسشنامه استفاده گردید. داده‌ها



از یک نمونه تصادفی از ۴۵۹ خانوار، که شامل ۲۷۲ وام‌گیرنده بودند جمع گردید. رگرسیون OLS و آزمون F برای تحلیل هزینه‌های مبادله دسترسی به تسهیلات اعتباری بکار برده شد. همانند بسیاری از نهادهای مالی در دیگر کشورهای در حال توسعه، دسترسی به اعتبارات در ایران منجر به تحمیل هزینه‌های بالایی به خانوارهای روستایی در ایران می‌شود. نتایج نشان می‌دهد که هزینه‌های مبادله دریافت اعتبارات به طور متوسط ۹ درصد کل اعتبارات را شکل می‌دهد. نهادهای رسمی و غیررسمی به طور معنی‌داری هزینه‌های متفاوتی را به وام‌گیرندگان روستایی تحمیل می‌کنند. نتایج نشان داد که نوع قرارداد، مقدار اعتبار، فاصله وام‌گیرندگان از مراکز مالی و ویژگیهای وام‌گیرندگان عوامل تعیین‌کننده مهم هزینه‌های مبادله هستند.