

Smallholders' Access to Rural Credit: Evidence from Pakistan

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Summary

This paper presents an analysis of smallholders' access to rural credit and the cost of borrowing using survey data from Pakistan. Rural credit in Pakistan comes from formal and various informal sources. The tenure status, family labor, literacy status, off-farm income, value of non-fixed assets and infrastructure quality are found to be the most important variables in determining access to formal credit. On the other hand, the total operated area, family labor, literacy status and off-farm income are found to be the most important factors in determining the credit status of the smallholders from informal sources. The results show that the cost of borrowing from formal sources falls as the size of holding increases. The analysis confirms the importance of informal credit, especially to the smallest of the smallholders and tenant cultivators.

Introduction

This paper consists of an empirical analysis of rural credit markets in Pakistan and attempts to assess a) to what extent is smallholders' access to formal and informal credit limited and what are the factors contributing to this, if any; and b) what do smallholders do to obtain credit, what sources do they utilize and at what cost? The data is based on a survey of smallholders carried out in two villages of district Peshawar. The total number of smallholders interviewed and included in the analysis is 105. For the purpose of the analysis, the government's smallholder category has been further divided into five sub-groups.¹ The division is based on the idea that

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¹ In the Land Reform Ordinance 1972, smallholders are defined as operational holdings up to 12.5 acres in North West Frontier Province and Punjab, 16 acres in Sindh and 32 acres in Baluchistan. Smallholders are all those farmers operating up to 12.5 acres

within this category, the smallholders operating up to 5 acres of land have the least access to formal credit. Secondly, the smallholders who are close to the upper limit have a better endowment of resources. The information obtained through the survey interview includes socio-economic characteristics of the household, farm size, income, and tenure and credit transactions. Logistic regression analysis has been used to determine the factors contributing to smallholders' access to rural credit. The paper is organized into nine sections including introduction and conclusions. Section 2 is the literature review and Section 3 describes rural credit markets in Pakistan. Section 4 discusses the socio-economic characteristics of smallholders included in the sample. Section 5 describes the distribution of credit and Section 6, factors determining access to credit. Cost of formal and informal borrowing is discussed in Section 7 and 8 respectively.

2. Literature Review

Rural credit markets consist of formal and various segments of informal sector credit. Economists have long recognized the diversity of such markets and differences in loan contracts (Yadav et al., 1992; Nishbet, 1973; Long, 1968; and Bottomley, 1963). It is well established in the literature that large farmers have better access to formal sources, due to collateral requirements (Heltberg, 1998; Swaminathan, 1991; and Binswanger & Sillers, 1983), moral hazard (Virmani, 1981 and Keeton, 1979), patronage and corruption (Ladman & Tinnermeir, 1981) or high borrowing costs (Sarap, 1990). The majority of rural poor not only have limited access to formal sources but their access to informal sources, other than friends/relatives and landlords, is also highly restricted. Informal credit markets are characterized by the personalized nature of contracts (Tsai, 2004 and Basu, 1997)²; inter-linkages (Laurence et al., 1999; Bell & Srinivasan, 1989; Mitra, 1983; and Braveman & Stiglitz, 1982) and heterogeneous borrowers (Basu, 1987 and Braveman & Guasch, 1984) and lenders (Floro & Yotopoulos, 1991 and Ray & Gupta, 1989). The inter-linkage of credit with labor is an important feature of these loan contracts (Yadav et al., 1992; Swaminathan, 1991; and Sarap, 1990) and in many cases informal lenders also select borrowers for quantity rationing (Zeller, 1994). It has been argued that very few landlords advance loans to anyone other than their own tenants (Basu, 1997). Other researchers have acknowledged that informal lenders are more effective in backward areas (Murshid, 1992), can lend money to small borrowers in greater amounts and

irrespective of their ownership title to the land operated. The smallholders were sampled according to the actual proportions in the true population.

² "The rural credit market operates on the basis of personalized relationship, which means that anyone who is prepared to pay the interest rate and meet the collateral requirement, is not likely to receive loan automatically from all lenders." [Basu, 1997:268].

at lower costs than formal institutions (Ghate, 1992; Adams & Fitchett, 1992; Meyer & Nagarajan, 1991; and Aleem, 1990), enhance trust; and also fill the vacuum left by formal credit (Floro & Yotopoulos, 1991).

3. Rural Credit Markets in Pakistan

Rural credit in Pakistan comes from two sources – formal and informal. The main sources of formal credit are the Zarai Taraqiati Bank Limited (35 percent), the Federal Bank for Cooperatives (4 percent), commercial banks (49 percent) and domestic private banks (12 percent) (Government of Pakistan, 2007:21). The formal lending institutions are regulated by the State Bank of Pakistan that provides counter finance to the Agricultural Development Bank of Pakistan and the Federal Bank for Cooperatives, and agricultural refinance to commercial banks. The informal sector is highly heterogeneous in terms of the relationship between borrowers and lenders and can be grouped into two types. Friends and relatives as a group provide the bulk of credit in rural areas (61 percent of total credit disbursed) while all the rest (landlords, shopkeepers, merchants) provide 30 percent with the share of professional money lenders being 2.12 percent (PIDE/SBP, 1984:164). Informal lenders have limited loan portfolios and operate within narrow areas of influence (SBP, 2003). These formal and informal sources provide credit services that differ from each other in terms of duration and amount of loan, its use, interest rate and transaction costs. In Pakistan, more than 90 percent of smallholders obtain credit from informal sources (Government of Pakistan, 1985).

4. Socio-Economic Characteristics of Sample Smallholders

Descriptive statistics of the sampled smallholders [non-borrowers (28), informal borrowers (36) and formal borrowers (41)] are reported in Table-1.³ There is variation in the values of socio economic variables but no statistically significant differences are found between informal borrowers and non-borrowers in terms of farm size, tenure status, family size and composition, area devoted to crops and cropping intensity.⁴ They only differ significantly in literacy status and off-farm income. There is a higher rate of literacy in the informal borrowers group, while on average non-borrowers have higher off-farm income. This supports the idea that income from other sources reduces the need for borrowing both for consumption and production purposes (Yazdani & Gunjal, 1998). On

³ There are a few smallholders borrowing from both, formal and informal, sources. In the analysis, all of them are included in the group of formal borrowers.

⁴ The farmers in the study area were cultivating either sugarcane or wheat and maize.

average a formal borrower operates a 33 percent larger farm than an informal borrower. The literacy rate is also higher among the formal borrowers. In terms of tenure status, the difference is very high. In the formal borrowers group only 2 percent are tenants, while for informal borrowers, 63 percent are tenants.

Considering all three groups, formal borrowers on average operate on a larger farm size and most of them are owners (98%). The ownership title to land is the single most important determinant of formal credit status, as the percentage of tenants is very high in the informal (63%) and non-borrower (54%) groups. The table shows a higher literacy rate for borrowers - both formal and informal - than non-borrowers. Other considerable differences exist between the three groups in terms of off-farm income. On average all three groups are using the same cash intensive techniques, but both formal and informal borrowers have greater need for credit than non-borrowers due to their low off-farm income. However, due to their tenure status, informal borrowers, unlike formal borrowers, are not able to secure loans from formal sources and are left to borrow from informal sources.

Table-1: Socio-Economic Characteristics of Sample Smallholders

| Variables | Non Borrower n=28 | Informal Borrower n=36 | Formal Borrower n=41 | Significance ^(a) Test Statistic | | |
|------------------------------|-------------------------|------------------------------|----------------------------|--|----------|----------|
| | | | | (1) | (2) | (3) |
| Farm Size(acres) | 5.51 (2.88) | 5.16 (3.33) | 6.88 (2.8) | 0.45 | -2.42*** | -2.06*** |
| Tenure Status | | | | | | |
| Tenant (%) | 54 | 63 | 2 | 0.69 | 57.25*** | 48.29*** |
| Family Structure | | | | | | |
| Size | 11.68 (4.58) | 11.08 (4.69) | 0.51 (5.9) | -0.61 | -0.22 | |
| Adult (no.) | 5.32 (2.59) | 6.03 (3.39) | 5.54 (2.24) | -0.94 | 0.74 | -0.49 |
| Adult Males (no.) | 2.82 (1.47) | 3.02 (1.81) | 2.95 (1.27) | -0.50 | 0.21 | 0.47 |
| Adult Females (no.) | 2.5 (1.3) | 3.00 (1.81) | 2.59 (1.17) | -1.28 | 1.18 | -0.45 |
| Head of the Household | | | | | | |
| Age | 48.57 (8.39) | 45.72 (9.66) | 46.59 (8.77) | 1.24 | 0.53 | 1.01 |
| Literate (%) | 7 | 31 | 51 | 15.16*** | 4.88*** | 33.38*** |
| Off-Farm Income (Rs) | 1861 (2263) | 764 (1510) | 715 (1406) | 2.18** | -0.15 | 2.26*** |
| Wheat Area (acres) | 2.14 (1.32) | 1.99 (1.24) | 2.09 (1.16) | 0.45 | -0.33 | 0.12 |
| Sugarcane Area (acres) | 3.13 (2.03) | 3.24 (2.43) | 3.52 (1.87) | 0.03 | -0.75 | -0.91 |
| Cropping Intensity (%) | 190 (50) | 193 (41) | 173 (59) | -0.24 | 1.72*** | 1.28 |

(a) For all variables in percentages the Chi-square test has been used, for mean estimates the t-test statistic is presented:

- (1) For non-borrowers and informal borrowers
- (2) For informal borrowers and formal borrowers
- (3) For non-borrowers and formal borrowers

***, **: Significant at 1 & 5 percent level

Figures in parentheses are Standard Deviations

Source: Field Survey

5. Distribution of Formal and Informal Credit

The proportion of formal loans to total borrowing according to the size of holding is given in Table-2. Out of 105 smallholders, 39 percent had borrowed from formal credit institutions. The proportion of

smallholders' borrowing was as low as 19 percent in the smallest farm-size group. The table shows that the proportion of smallholders borrowing from formal institutions increases as the size of the holding increases. It is highest among the last two groups. Sarap (1990) describes this as the minimal percentage requirement of smallholders met by formal credit sources in India.⁵ The table also shows the percentage of formal loans to total loans borrowed. This indicates a high dependence of smallholders on informal credit sources (column 4). For the first group, only about 11 percent of credit used is obtained from formal institutions, with 89 percent obtained from informal sources. The proportion of formal credit to total credit obtained increases with the size of holding up to 7.5 acres, and then falls. Column 7 shows formal credit per acre of the total area. The number tends to increase as the size of land holdings increases and then falls for the largest farm-size operators. This corresponds with Yadav et al's (1992) findings that formal sector borrowing per unit of cultivated area initially increases and then decreases with farm size in Nepal.

Table-2: Proportion of Formal Loans to Total Loan Borrowed

| Size of Holding Area | Percentage of House-Holds in the Group | Percentage of Farmers of Borrowing Formal Loan | Percentage of Formal Loan to Total Loan Borrowed | Percentage Received by Group to Total F.C. | Percentage of Area Owned to Total Area | Credit per Acre of Total Area (in Rs.) |
|----------------------|--|--|--|--|--|--|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Up to 2.50 | 15.24 | 18.75 | 10.69 | 2.76 | 4.78 | 470.59 |
| 2.51-5.00 | 33.33 | 31.43 | 46.05 | 14.47 | 21.82 | 541.44 |
| 5.01-7.50 | 24.76 | 42.31 | 76.98 | 29.63 | 27.73 | 872.46 |
| 7.51-10.00 | 13.33 | 64.29 | 42.42 | 29.72 | 19.16 | 1237.70 |
| 10.01-12.50 | 13.33 | 50.00 | 52.42 | 23.43 | 26.05 | 734.57 |
| Total | 100.00 | 39.05 | 47.52 | 100.00 | 100.00 | 816.72 |

Source: Field Survey

Column 6 gives the proportion of area owned to the total area. It shows that inequality in the distribution of formal credit mirrors the inequality in the ownership of land. The very small and marginal smallholders had less access to formal credit institutions than the relatively better off farmers. This supports Khan's (1984) findings that in 1979-80 the

⁵ "Of the total amount only 1.19 percent was borrowed by small farmers (operating up to 2.5 acres) while their share in total sample was 24 percent. On the contrary large farmers (more than 10 acres) constitute 12 percent of the total sample, but getting 44.38 percent of the loans," [Sarap, 1990:287].

ratio of small farms to total farm holding was 68 percent while the proportion of borrowers in this group was about 18 percent.

The proportion of formal credit received to total formal credit for each group is given in column 5. The values indicate very unequal access for different farm-size groups. It shows greater access for the operators of large farms than smaller farms. Of the total amount borrowed, only 2.76 percent had been borrowed by the farm households operating up to 2.5 acres of land, while this size group accounts for 15.24 percent of the total sample of farm households. The share increases for the second smallest farm-size group to 14.47 percent with 33.33 percent of farm households in that group. In absolute numbers the share of the third group of mid-size smallholders is also quite large (29.7 percent). In relative terms, this group is obtaining less credit as compared to the last two groups. As a proportion the third group in the total sample of farm households is 24.76, while for the two largest groups this proportion is 13.33 each, and they are getting 29.72 and 23.43 percent of the total formal loans respectively.

The proportion of informal loans to the total loans borrowed, according to size of holdings is given in Table-3. Of 105 sample smallholders, 34.28 percent had borrowed from informal credit sources in the reference year. The percentage of borrowing is highest among the smallest land holders (62.5 percent), and lowest among the mid-size small holders of 5-7.5 acres (15.39 percent). The conditions are exactly opposite for borrowing from formal credit sources, where the smallest farm size group has the lowest value and the group of mid-size smallholders has the highest value. This suggests that there is an identifiable gap in formal credit allocation that is filled by informal credit. The table shows a decreasing trend in the percentage of borrowers from informal sources as the size of holding increases. The reason can be that larger farmers have a better chance of getting loans from formal sources. The amount borrowed from informal credit sources does not depend on the acreage. Thus credit per acre is found to be the highest for the smallest landholder, whereas, it is lowest for the mid-size farm size group, showing no clear trend with the size of holding.

Table-3: Proportion of Informal Loans to Total Loan Borrowed

| Size of Holding Area | Percentage of Farmers Borrowing Informal Loan | Percentage of Informal Loan to Total Loan Borrowed | Credit per Acre of Total Area (in Rs.) | Average Amount of Loan (in Rs.) | Number of Loans Received by the Group to Total Informal Loans | Amount of Credit Received by the Group to Total Informal Loans |
|----------------------|---|--|--|---------------------------------|---|--|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Up to 2.50 | 62.50 | 89.31 | 3917.43 | 9750 | 29.27 | 20.85 |
| 2.51-5.00 | 37.14 | 53.95 | 638.96 | 5740 | 36.59 | 15.34 |
| 5.01-7.50 | 15.39 | 23.02 | 274.83 | 11250 | 9.76 | 8.02 |
| 7.51-10.00 | 35.71 | 57.58 | 1702.66 | 41000 | 12.20 | 36.54 |
| 10.01-12.50 | 28.57 | 47.58 | 653.06 | 21600 | 12.20 | 19.25 |
| Total | 34.28 | 52.48 | 1012.98 | 13685 | 100.00 | 100.00 |

Source: Field Survey

Similarly the average amount of informal loans shows no clear trend. However, it is very low for the smallholders operating up to five acres of land compared with those operating more than five acres. The percentage of informal borrowing to the total loans borrowed is also very unequal across different farm-size groups. Of the total amount of loans borrowed, 52.48 percent is borrowed from informal sources. The percentage is highest among the operators of the smallest farms (89.31), a figure that is close to the 90 percent estimated for Pakistan (Government of Pakistan, 1985). However, for other groups of sample smallholders, the percentage varies between 23 and 58 percent, which is quite low as compared to the overall estimates for Pakistan.

The percentage distribution of amount and number of informal loans is also given in Table-3 (column 6 & 7). The number of loans received by each group (as a percentage of total informal loans) shows that more than 65 percent of the loans are obtained by the smallholders operating up to 5 acres of land. However, when the *loan amount* received by the smallholders operating up to 5 acres of land to the total informal credit is considered, the conditions are opposite. Only about one-third of the total amount borrowed from informal sources is going to these smallholders. The smallholders operating more than 5 acres are receiving 35 percent of informal loans in number but their share in the total amount lent is 65

percent. Therefore, from informal sources also smallholders operating more than 5 acres are getting a larger share of total lending.⁶

Two types of access ratios are calculated as follows:

Ratio 1 = $\frac{\text{Proportion of loans (\#) received by the group to total loans}}{\text{Proportion of smallholders in that group to the total sample}}$

Ratio 2 = $\frac{\text{Proportion of credit (amount) received by group to total credit}}{\text{Proportion of area operated by the group to total area operated}}$

For these ratios, any number greater than one shows greater than average access, any number less than one shows less than average access, and one means equal access. The interpretation of these ratios is different for formal and informal credit sources, as different factors contribute to the credit status of smallholders in these two cases. For formal credit sources, the ratios mainly show that access depends on smallholders' willingness to apply for credit based on his needs mainly for production purposes, plus lenders' decisions to advance credit based on certain characteristics of the potential borrower. In the case of informal credit, the need can be for production or consumption, and the decision to lend depends on the personalised nature of the contract, as informal credit is mostly provided by friends and relatives. If informal credit is considered to be used for bridging the gap between the need and supply of credit from formal institutions, then in a way these ratios explain the extent of credit needs satisfied by informal credit sources for the different farm-size groups.⁷

Access ratios are given in Table-4. For formal credit the value of Ratio 1 is 0.48 for the smallest farm size group, and it increases as the size of holding increases. This ratio reaches a maximum of 1.65 for the second largest farm size group, showing greater access.⁸ In the same way Ratio 2 is

⁶ There is a common saying in local language that, "even friends and relatives give loans to those who have a chance of good harvest." Zeller (1994:1904) finds that the informal lender's decision to approve a loan request is based on the wealth of the applicant's household.

⁷ This can be called the residual function of informal credit. Informal credit fills the large vacuum arising due to unfulfilled demand of less qualified loans by the formal sector. Similar observations have been made by Floro & Yotopoulos (1991) in case of the Philippines.

⁸ Based on secondary data, Malik et al (1989) calculated Ratio 1 for Pakistan as well as for all four provinces. They find negligible access to formal sources for smallholders in all the cases.

lowest for the smallest farm size group and increases as the size of holding rises, it is also the highest for the second largest farm size group.

Table-4: Access Ratios

| Size of Holding (Area) | Ratio 1 | | Ratio 2 | |
|---------------------------|---------|----------|---------|----------|
| | Formal | Informal | Formal | Informal |
| Up to 2.50 | 0.48 | 1.92 | 0.58 | 4.56 |
| 2.51-5.00 | 0.80 | 1.10 | 0.66 | 0.70 |
| 5.01-7.50 | 1.08 | 0.39 | 1.07 | 0.29 |
| 7.51-10.00 | 1.65 | 0.91 | 1.52 | 1.86 |
| 10.01-12.50 | 1.28 | 0.91 | 0.90 | 0.74 |

Source: Field Survey

It is interesting to note that for farms above 5 acres the ratio is greater than one, while for the rest it is less than one. It can be assumed that somewhere in between 5 and 7.5 acre this is equal to one. If we divide the sample smallholders in two groups, one with smallholders operating up to 5 acres of land (group A) and the other with operational holdings greater than five acres (group B), the table shows that group A has less than average access to formal credit while group B has more than average access to these sources. Therefore, due to farmers' inaccessibility to formal credit they have to borrow from informal sources.

For informal credit, Ratio 1 is highest for the smallest farm operators and lowest for the mid-size smallholders of 5-7.5 acres. However, the main difference is that for smallholders operating up to 5 acres of land, this ratio is greater than one while for the rest it is less than one. In the same way Ratio 2 is highest for the smallest farm-sizes and lowest for the group of mid-size smallholders. This implies that credit needs of the smallest smallholders are mainly satisfied by informal sources (Tsai, 2004)⁹.

6. Determinants of Access to Rural Credit

The use or non-use of credit can be explained with the help of smallholders' characteristics. It is hypothesized that borrowing depends on

⁹ Tsai (2004) concludes that the enduring popularity of informal credit is due to: a) formal sources being unable to meet demand for grassroots credit (availability and access); b) informal sources possessing better knowledge about local actors and conditions (comparative advantage); and c) formal and informal markets serving different segments of rural society.

total operated area, tenure status¹⁰, family labor, literacy status and age of the head of household, value of non-fixed assets, off-farm income, and a village dummy variable. These characteristics are important in two ways, a) they can influence the household demand for credit; and b) potential lenders are likely to base their assessment of borrower's credit worthiness on these characteristics. It is very difficult to completely separate the variables affecting demand or access because at both stages, decision making is based on almost similar considerations. Therefore, certain variables included in this regression are more related to smallholders' demand for rather than access to credit, including age, value of non-fixed assets and off-farm income.

For the logistic regression equations estimated here, the value of the dummy dependent variable equals one if a smallholder has borrowed in the reference year and equals zero if it has not. Independent variables include family labor, which is expected to have a positive effect. In the same way, total area operated is expected to be positively related to the access to credit. Formal credit is advanced on the basis of land ownership and generally bank officers expect that a large land holding will yield a large output, enabling the loan to be repaid by the borrower quite easily. Literacy status can also influence farmers' access to formal credit institutions, and this effect is expected to be positive, because literate farmers are assumed to have better technical know how and information about the market and other facilities provided by the government. Secondly, they have a better understanding of bureaucratic procedures involved in the application, acquisition and repayment of loans.

On the demand side, age of the head of the household is expected to have a negative effect, as comparatively young farmers are expected to be more active in their farm activities. High off-farm income is assumed to reduce demand for credit and can be used to purchase cash inputs for production and/or even out consumption at times of need. Similarly, the value of non-fixed assets (i.e. livestock) is expected to have a negative effect. The ownership of a bullock will reduce the demand for credit needed for a tractor, while cows and buffaloes are sources of additional cash income. The regional dummy equals one if the farm household belongs to a village with better infrastructure facilities and a commercial bank branch.

¹⁰ Tenure status is expected to be negatively related to credit, as formal lenders insist on collateral, particularly ownership rights to land. Thus, tenants have less chance of getting credit than owner cultivators. Tenure status is excluded from the analysis because out of 41 borrowers only one happens to be a tenant. Due to this strong effect other variables in the equation were giving unexpectedly large coefficients.

Table-5: Determinants of Access: Dummy Dependent Variable 1, if Smallholder is a Borrower; 0, Otherwise

| Explanatory Variables | Estimated-Coefficient (n = 105) | Wald Statistic | Exponential Values |
|--------------------------|------------------------------------|-------------------|-----------------------|
| Total Operated Area | 0.2111 | 4.68** | 1.2351 |
| Family Labor | 0.2299 | 0.91 | 1.2585 |
| Lit-Status (1=Literate) | 2.9885 | 11.40*** | 19.8564 |
| Age | 0.0147 | 0.25 | 1.0148 |
| Off-Farm Income | 0.0003 | 2.24 | 0.9997 |
| Non-Fixed Assets | -0.0005 | 5.24** | 1.0000 |
| Village (1=Better) | 2.8267 | 10.1*** | 16.8888 |
| Intercept | -4.5213 | 5.94*** | ----- |
| Log Likely-hood Ratio | 96.049 | ----- | ----- |
| Model Chi-Square | 44.433** | ----- | ----- |
| Degree of Freedom | 7 | ----- | ----- |
| Goodness-of-Fit | 94.098 | ----- | ----- |
| % of Correct Predictions | | | |
| • Overall | 76.19 | ----- | ----- |
| • Borrowers | 63.41 | ----- | ----- |

***, **, *: Significant at 1, 5 and 10 percent, respectively.

The results of the logistic regression are presented in Table-5 for all borrowers. As shown in the table, all variables, except age head of the household, have the expected relationship with credit. Total operated area has a positive and significant effect, indicating that an increase of one unit in operated area increases the chance of borrowing by a factor of 1.235 (exponential value). Literacy status can increase the probability of being a borrower by a factor of 20. Similarly, the chances of borrowing for the smallholders living in a village with better infrastructure increase by a factor of 1.17. Family labor, age head of the household, off-farm income and value of non-fixed assets have almost one to one effect on the probability of being a borrower.¹¹

Table-6 presents the results of the logistic regressions for formal and informal borrowers. For formal borrowers, all variables have the expected relationship with credit. Literacy status and the value of non-fixed assets are

¹¹ The exponential values of these variables can be raised by 1000 to account for a change of Rs. 1000 in the value of these variables.

significant at the 1 percent level, with all the rest at the 5 percent level. Family labor has a positive effect. The chance of formal borrowing can significantly increase by a factor of 3.34, if the family has one additional male member. The coefficient for operated area is found to be positive but statistically insignificant, indicating that increase of one unit in operated area increases the chance of formal borrowing by a factor of 1.17. In the case of formal credit, literacy status of the head of the household has the most pronounced effect, indicating that being literate can increase the probability of being a formal borrower by a factor of about 65. Similarly, for farmers living in a village with better infrastructure facilities, the chance of being a borrower increases by a factor of about 12.75.¹² The age of the head of the household, non-fixed assets and off-farm income have a negative relationship with formal credit. One unit change in off-farm income and value of non-fixed assets can slightly reduce the probability of being a formal borrower, as exponential values are close to one.

Table-6: Determinants of Access: Dummy Dependent Variable 1, if Smallholder is a Formal OR Informal Borrower; 0, Otherwise

| Explanatory Variables | Est-Coeffs (n = 69) | Wald Statistic | Exponential Values | Est-Coeffs (n = 69) | Wald Statistic | Exponential Values |
|--------------------------|------------------------|-------------------|-----------------------|------------------------|-------------------|-----------------------|
| Total Operated Area | 0.1533 | 0.779 | 1.1656 | -0.2388 | 2.747* | 1.2732 |
| Family Labor | 1.2063 | 4.951** | 3.3412 | 0.6024 | 3.747** | 1.8344 |
| Lit-Status (1=Literate) | 4.1768 | 11.07*** | 65.1547 | 1.7728 | 3.928** | 5.8873 |
| Age | -0.0207 | 0.175 | 0.9795 | -0.0442 | 1.442 | 0.9275 |
| Off-Farm Income | -0.0007 | 4.317** | 0.9993 | -0.0005 | 4.144** | 0.9995 |
| Non-Fixed Assets | -0.0001 | 8.200*** | 0.9999 | -0.0004 | 1.823 | 0.9996 |
| Village (1=Better) | 2.5456 | 5.888** | 12.7515 | ----- | ----- | ----- |
| Intercept | -2.3702 | 0.796 | ----- | 3.07 | 2.376 | ----- |
| Log Likely-hood Ratio | 47.485** | ----- | ----- | 69.838*** | ----- | ----- |
| Model Chi-Square | 45.706*** | ----- | ----- | 17.883*** | ----- | ----- |
| Degree of Freedom | 7 | ----- | ----- | 6 | ----- | ----- |
| Goodness-of-Fit | 46.102*** | ----- | ----- | 64.103*** | ----- | ----- |
| % of Correct Predictions | | | | | | |
| • Overall | 81.16 | ----- | ----- | 68.75 | ----- | ----- |
| • Borrowers | 85.37 | ----- | ----- | 75.00 | ----- | ----- |

***, **, *: Significant at 1, 5 and 10 percent, respectively.

¹² Murshid (1992) shows that informal sources are important in backward areas making up to 98 percent of total loans advanced whereas their share is 67 percent in developed areas.

The logistic regression results for informal borrowing are also reported in Table-6. The dummy dependent variable takes a value of one if the smallholder has borrowed from informal sources, and zero otherwise. The total operated area, age of head of the household, value of non-fixed assets and off-farm income, all have a negative relationship with informal borrowing. Only family labor and literacy status are positively related to informal borrowing. The results indicate that the larger the operational holdings, the greater is the chance of getting loans from formal sources and lower the dependence on informal sources, especially when smallholder has ownership title to land. Therefore, informal borrowing decreases as the size of holding increases. A unit increase in the total operated area will reduce the chance of informal borrowing by a factor of 1.27. However, smallholders with higher values of off-farm income or non-fixed assets can satisfy their cash needs from their own resources and are less inclined to borrow, not only from informal sources but also from formal credit sources. An increase in the values of off-farm income and non-fixed assets will reduce the chance of borrowing only slightly since the odds-ratio is close to one.¹³

The literacy status and age have the same impact on formal and informal borrowing. For a literate smallholder, the chance of informal borrowing increases by a factor of 5.89. For age, there can be two possible explanations for the negative relationship, a) if borrowing is for production, comparatively young smallholders are more active in their farm activities; and b) if it is for consumption, at times of need young smallholders have less in the form of accumulated wealth, thus they are more dependent on borrowing. Family labor has a positive effect on borrowing. On the demand side, there are few off-farm income opportunities in the rural areas; thus for large households, more inputs are required for effective utilization of available labor. If the household is not able to get credit from formal sources, informal sources are utilized. On the supply side, whether the loan is borrowed from friends and relatives or a landlord, more workers in the family means a greater chance of getting a loan. From the lender's perspective, there are more earning hands and thus a better chance of

¹³ Nisbet (1973:3) compares formal and informal credit markets, "On the basis of five characteristics (farm size, tenure type, education, mechanisation and gross output), over 60 percent of institutional borrowers are identified as land owners, controlling more than five hectares of land, having more than seven years of education, working farms that utilise modern machinery and equipment and producing a gross output of more than \$650 a year.... [while] over 60 percent of informal borrowers are identified as landless farmers, operating farms of less than five hectares, having less than six years of education, exploiting their farms with only hand tools... and showing a gross output less than \$650 a year."

receiving repayment. For landlords, this means greater availability of labor at times of need. Another possible explanation can be that large families have more members, and as informal borrowing is mainly for consumption, large families require more consumption credit (Yadav et al., 1992).¹⁴ Therefore, an additional family member will increase the probability of borrowing by a factor of 1.83.

On the whole the regression results are significant with a high prediction rate, and high values for log likelihood ratio and goodness-of-fit statistics. We can also reject the joint hypothesis that all coefficients statistically equal to zero. Considering the influence on smallholders' access to formal credit, family labor, literacy status, off-farm income, value of non-fixed assets and village are found to be the important variables. The total operated area, family labor, off-farm income and literacy status are found to be the important factors in determining the credit status of the smallholder regarding informal sources. Whereas in case of all borrowers, literacy status, operating area, value of non fixed assets and village are found to be important variables.

7. Cost of Formal Credit

In Pakistan, a potential borrower is required to submit a formal application for a loan.¹⁵ According to regulations all farmers, owners or tenants (with large or small farms) can apply for formal credit. The guarantee of two persons is required (SBP, 2003). In most cases the farmer will be able to obtain the loan, but it is a lengthy procedure, starting from the application stage, to the sanctioning and receipt of funds. The effective cost of borrowing from the point of view of borrowers is the real cost consisting of interest plus other transaction charges.¹⁶ The

¹⁴ Yadav et al (1992) find family size as the main determinant for informal credit and farm size and irrigation as the main determinants for formal credit.

¹⁵ The application should be well supported by the relevant papers, including a certificate from the land revenue department about smallholders' title to the operating land, total area operated and the number of parcels. The applicant has to supply a photograph and photocopies of a number of other relevant documents. A number of visits to the bank and land revenue office are required to get the relevant documents and in addition to normal charges, sometimes special payments are made for work to be done quickly.

¹⁶ Transaction costs include application fee; cost of photograph, stamps, paper and photocopying; cost of obtaining copy of record from land revenue department; visits to the bank and transport charges per visit; number of visits to the land revenue office and transport charges per visit; and cost of food and special payments to officials of the bank or revenue department.

opportunity time cost is also included, when calculating transaction costs.¹⁷ After the loan has been sanctioned it takes a few days to get the loan.¹⁸

The distribution of formal credit according to time taken and size of holding is given in Table-7. There are variations but no statistically significant difference has been found in the time taken to get the loan. However, days taken to get the loan sanctioned, as well as the days between sanction and receipt, show a gradual decrease as the size of holding increases. The gap between the smallest and largest farm size groups varies between 4 to 8 days. However, the Chi-Square test found this difference to be statistically insignificant.

Table-7: Time Taken from Date of Application to Receipt of Credit

| Size of Holding (Area) | Days Taken to Get Loan Sanctioned | Days Between Sanction and Receipt | Total Days from Application to Getting Loan |
|------------------------|-----------------------------------|-----------------------------------|---|
| Up to 2.50 | 30.00 | 21.67 | 51.67 |
| 2.51-5.00 | 27.27 | 21.82 | 49.09 |
| 5.01-7.50 | 28.64 | 17.73 | 46.36 |
| 7.51-10.00 | 29.44 | 16.11 | 45.56 |
| 10.01-12.50 | 25.71 | 17.43 | 43.14 |
| Unweighted Average | 28.05 | 18.71 | 46.76 |
| Chi-Square Statistic | 0.48 | 1.45 | 0.92 |

Source: Field Survey

Transaction costs according to the size of holding are presented in Table-8. The average transaction cost increases as the size of holding increases. However, as a proportion of the amount of loan it falls as size of the land holding increases. For the first two groups (the two smallest farm sizes), it is about 10 percent while for the last three groups it is about 4.5

¹⁷ It is considered as equivalent to one day's wage labor and calculated at the wage rate prevailing at the time when the smallholder was applying, acquiring and repaying the loan. If the bank's branch is situated in the village, then visiting the bank can be a matter of hours only, but if a smallholder has to travel or to wait for his turn then the whole day is required to do the job. The numbers of visits to the bank vary between two and four. The average visits to the revenue department also show a similar pattern.

¹⁸ As the loan is given in kind, the smallholders try to get their choice variety of fertilizer rather than taking lower quality. For this they have to visit the fertilizer depot many times.

percent. Sarap (1990) considers borrowing costs as one of the main determinants of smallholders' inaccessibility to formal credit.

Table-8: Cost of Borrowing from Formal Credit Institutions

| Size of Holding (Areas) | Average Amount of Loan (Rs.) | Interest Charges Per Year (Rs.) | Average Transaction Cost (Rs.) | Average Cost of Loan (Rs.) | Average Transaction Cost as Percentage of Average Amount of Loan | Total Cost as %age of Average Amount of Loan |
|-------------------------|------------------------------|---------------------------------|--------------------------------|----------------------------|--|--|
| Up to 2.50 | 4666.67 | 426.67 | 538.33 | 965.00 | 11.54 | 20.68 |
| 2.51-5.00 | 6681.82 | 655.45 | 592.73 | 1195.45 | 8.87 | 17.89 |
| 5.01-7.50 | 13681.82 | 1734.55 | 650.00 | 2004.55 | 4.75 | 14.65 |
| 7.51-10.00 | 16777.78 | 1741.11 | 664.44 | 2272.22 | 3.96 | 13.54 |
| 10.01-12.50 | 17000.00 | 1940.00 | 737.14 | 2437.14 | 4.34 | 14.34 |
| Total | 12390.24 | 1385.85 | 644.51 | 1844.02 | 5.20 | 14.88 |

Source: Field Survey

The effective rate of interest (the nominal rate of interest plus the transaction cost) is about 21 percent for the smallest landholders group and then gradually decreases as the size of the farm increases, reaching about 14 percent for the largest farm-size group. The nominal interest charged by formal credit institutions was 8 percent in the reference year. The effective rate of interest paid by the smallholders is more than double the nominal rate, the rate being highest for the smallest of the smallholders.

8. Cost of Informal Credit

Usury is forbidden in Islam. In an Islamic society like Pakistan, it is very difficult to get information about the rate of interest paid on informal loans. People avoid discussing interest based lending and 'Sood Khore'¹⁹ is a common abuse.²⁰ Before independence, the majority of professional money lenders were Hindus and the rates charged by them used to be very high (Government of Pakistan, 1957). After independence, the Hindus migrated to India and there was a large gap to be filled by other sources. One cannot claim that interest based lending is not taking place in Pakistan.²¹ However,

¹⁹ One who takes interest on the amount lent.

²⁰ Yazdani (2005) stated that small farmers prefer taking out loans from Islamic Credit System in Iran due to risk sharing and religious acceptability.

²¹ "Among the Kenya samples, the reported use of moneylender funds was very low which appeared to be a reflection of the stigmatized nature of money lending and the

it is a fact that it is not taking place openly, and wherever it is done, professional money lenders charge very high interest rates.²²

There are two main sources of informal borrowing in the study area, namely friends and relatives, and landlords. No interest is charged on the loans from friends and relatives as these loans are based on good will and reciprocity of transactions. However, the borrowers admit that since they are obliged to lenders, they cannot oppose them in family and community decisions. For small tenant households at the time of need friends and relatives may also be going through the same financial difficulties. Thus the only way left is to borrow from someone who is financially well-off, knows the borrower and can trust him for money, such as the landlord. In our sample, all landlords were providing credit to their own tenants, working under sharecropping tenancy. Out of 9 tenants borrowing from landlords, 8 have operational holdings up to 5 acres. Thus ownership status and operated area can be the most important reasons for interlinked borrowing.²³

The relationship between informal borrowing and tenure status is found to be very strong. As presented in Table-9, out of 105 sample borrowers 42 are tenants and only one of them is getting a loan from formal credit sources whereas the total number of borrowers from formal sources is 41. Thus only 2 percent of tenants are borrowing from formal sources and out of the total formal borrowers only 2 percent happen to be tenants. The percentage of tenants is highest in the smallest farm size group, and reduces as the size of holding increases. In the largest farm size group, most of the tenants have rented-in the land while in other four farm size groups the majority of tenants are sharecroppers. Considering tenants as a percentage of informal borrowers, in total 72 percent of informal borrowers are tenants while in groups 3 and 5 (the mid-size and largest farm size smallholders), all informal borrowers are tenants. In other groups the percentage varies from 20 to 92 percent. Out of 36 informal borrowers only 9 borrow from landlords (25 percent). In total, there are 26 informal borrowers who are

absence of moneylenders in particular areas (the sensitive nature of money lending may well imply that more people had actually used this form of finance than were willing to admit to it)." [Buckley, 1997:1084].

²² It was found during the field survey that there is a professional money lender, who lives in the tribal area and charges 200 percent interest on loans. Villagers, who are really desperate, use this source. However, none of the respondents admitted that they ever used this source of credit.

²³ Various types of interlinked credit transactions have been discussed in the literature. Firstly, linking credit with input, output or both, and secondly linking credit with labor services, tenancy or both. The former can be the case of a shopkeeper lender or a landlord lender, while latter is the case when only a landlord can be a lender.

tenants, and out of these 35 percent borrow from landlords, and more than 80 percent of them operate land up to 5 acres. This shows that farmers who do not own land and operate small holdings are more inclined to rely on the informal credit sources, particularly credit from landlords.

Table-9: Informal Credit and Tenure Status

| Size of Holding (Acres) | Total Tenants in the Sample | | Total Informal Borrowers | | Tenant/Informal Borrowers | | Tenants Borrowing from Landlords | |
|-------------------------|-----------------------------|-------|--------------------------|-------|---------------------------|--------|----------------------------------|-------|
| | No. | % | No. | % | No. | % | No. | % |
| Up to 2.50 | 8 | 50.00 | 10 | 62.50 | 5 | 50.00 | 4 | 40.00 |
| 2.51-5.00 | 17 | 48.57 | 13 | 37.14 | 12 | 92.00 | 4 | 31.77 |
| 5.01-7.50 | 10 | 38.46 | 4 | 15.39 | 4 | 100.00 | 1 | 25.00 |
| 7.51-10.00 | 1 | 7.14 | 5 | 35.71 | 1 | 20.00 | - | --- |
| 10.01-12.50 | 6 | 42.86 | 4 | 28.57 | 4 | 100.00 | - | --- |
| Total | 42 | 40.00 | 36 | 34.28 | 26 | 72.00 | 9 | 25.00 |

Source: Field Survey

The borrowing from landlords is for two purposes, production and consumption. In the case of consumption it is for social and religious ceremonies or emergencies.²⁴ There is no definite date for the loan to be repaid but the most probable time is that of harvest, when in almost all the cases repayment is done in terms of output. The borrowing for production purposes is for inputs, mainly fertilizers. In the sharecropping arrangement, fertilizer expenditure is equally divided between a tenant and a landlord. However in most of the cases, the tenant has no cash to purchase fertilizer. Therefore, the landlord provides cash for this input and at the time of harvest before dividing the output, a pre-determined amount is given to the landlord as repayment for fertilizer.

There are only three cases in the sample when tenants have been borrowing from landlords for production purposes. In the first case the landlord borrowed from the bank and provided fertilizer to the tenant as a loan. In the second case, a loan was provided to the tenant as cash from the landlord's own funds and in the third case loan was provided in the form of fertilizer by the landlord. In all three cases the fertilizer was used for sugarcane production and it was agreed that one trolley of sugarcane will be

²⁴ In Pathan families the main expenditure is incurred on the son's marriage because he/his family has to give clothes and gold jewellery to the bride according to demands of her family. In certain tribes some cash payment is also made to the bride's family.

given to the landlord as repayment prior to the distribution of output. The expenditure on fertilizer amounts to (Rs 2000-3000), less than half the price of one trolley of sugarcane (Rs 5500-6000). Thus in a way the tenants were paying 100 percent more than what they received as a loan.

Thus, the main advantage that landlords have as lenders is repayment in terms of produce.²⁵ In the study area, both landlords and tenants sell their produce to the sugar mill. Secondly, landlords more willingly provide credit when a tenant asks for a production loan than a consumption loan.²⁶ This results in higher production and high crop income for the landlord, as total production is equally divided between the landlord and tenant under sharecropping tenancy. Thirdly, whether the loan is for production or consumption, landlords feel important if tenants or any other villager ask them for loan. If their own tenant asks someone else for a loan they may take it personally.²⁷ Fourthly, landlords also take part in politics and it is good for them to have good relations with tenants. In this way their votes are secured in the village. Basu (1997) has defined this as 'political power' which landlords as a group enjoy over the entire village community. Another advantage that landlords have from extending credit is free labor, both on-farm and domestic. There is no direct agreement for labor services but landlords can ask tenants any time for work, even at the times they are fully occupied with their own work.²⁸ It reduces the costs of hiring labor for landlords at peak times. The tenants' children often work full time as servants for landlords without any cash payments, only food and clothing. Their future well being is considered by their parents as the landlord's responsibility.

²⁵ There is a difference between output-linked credit and the conditions observed in the study area. Output-linked loans are when farmers settle their loan obligations in terms of the sale of output and shopkeepers/traders are the principle lenders.

²⁶ According to a landlord interviewed, 'They [tenants] have no interest in farming. They never asked for money for seeds or fertilizer, every time they have a new excuse for borrowing, like my child is ill, some one in the family is getting married, etc.'

²⁷ This reveals two interesting phenomena: a) borrowers' access to loans is tied to one particular lender and b) borrowers cannot shop around for loans (Basu, 1997).

²⁸ Some of the tenant smallholders argued that free labor has nothing to do with borrowing. According to them, '...if we do not have any extra benefit [credit] even then we can not refuse to work for the landlord. How can we? We are tilling his land'.

9. Conclusions

This paper examined the different factors limiting smallholders' access to rural credit. The survey data from two villages of Peshawar district has been used to identify and analyze these factors. The analysis shows that formal borrowers have significantly higher values than informal and non-borrowers for all socio-economic variables, while informal and non-borrowers can be treated as a homogeneous group with their only major difference being off-farm income. Considering the access ratios or proportion of credit received by the group to the total formal credit, the results show that smallest smallholders have less than average access to formal credit in the study area.

The main factors explaining inaccessibility to formal credit are found to be the total operated area, literacy status, value of non-fixed assets and infrastructure quality in the area. In terms of borrowing costs, no significant difference has been found in time taken to obtain the loan. The effective rate of interest and the average transaction cost as percentage of average amount of loan decreases as the size of holdings increases. Thus, the smallest smallholders have to pay higher costs to obtain formal credit. The total operated area, family labor, literacy status and off-farm income are found to be significantly related to the determination of credit status for informal borrowers. The single most important variable determining credit status is found to be the tenure status, as 98 percent of sample formal borrowers are owner-cultivators and 72 percent of sample informal borrowers are tenants.

Informal credit is found to be used for both consumption and production. The findings show a higher dependence of the smallest smallholders on informal sources that falls as the size of holding increases. However, the average loan amount borrowed from informal sources increases as the size of holding increases. It suggests that informal lenders also select borrowers for quantity rationing. There is no explicit cost of borrowing from informal sources, as no interest is charged. However, for friends and relatives borrowers have to sacrifice an independent say in the family and community matters and for landlords repayment includes free labor and rough estimation of repayment in kind.

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