Factors responsible for rural household participation in institutional credit programs in Pakistan

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Institutional credit plays a pivotal role in increasing farm production and improving the socioeconomic life of farmers. However, procuring credit from formal lending institutions is not easy. A number of pre-conditions are to be fulfilled to qualify for the institutional credit. This paper explores the factors that account for a household’s participation in formal agricultural credit programs. The study was conducted in 2005 to 2006 in northwest Pakistan. Using regression analysis, the study finds that education and farm size are important determinant for a household to participate in institutional credit program. The study concludes that the formal lending institutions need to devise a credit delivery mechanism based on relaxed pre-conditions which small and landless farmers could easily fulfill.

Key words: Institutional credit, participation, collateral, farm production.

INTRODUCTION

Despite the recent tremendous technological advancement, food production per capita is decreasing in many developing countries. In the past, much of the increase in food production came from increased area under cultivation. Nevertheless, the rate of this increase in production has recently become lowered partly because land has decreased productivity due to factors such as soil erosion, water logging and salinity, etc., and mostly because land is fix and is becoming scarce with the passage of time. Other associated reasons for low productivity include land fragmentation, lack of managerial skills in farmers to manage their farms and adapt to improved farming practices, and insufficient use of modern technology and inputs. The latter is a function of the inadequate financial availability to the farmers, particularly to a large proportion of smallholders. The matter of enhancing agricultural productivity, therefore, largely depends on inter alia, the availability of sufficient finances to the farmers (Jan et al., 2008). Studies such as Richard (1990), Khandker and Faruqee (2003) and Khan et al. (2008) provided empirical evidence that institutional agricultural credit has played a key role in enhancing farm production. No doubt, agriculture can be the main medium for improving the socio-economic conditions of the rural people. In context of the developing countries, agricultural credit is an important instrument for agricultural development (Okurut et al., 2005). The term credit, refers to the temporary transfer of purchasing power from one person to another or between groups of people, for a limited period. Credit can be granted free of charge or for interest or at the cost of other obligations depending upon the system on the basis of which credit is granted (Berger, 1986; Jan, 2007). Credit system means a distinguishable category or system of social interaction whose content is the preparation and execution of the credit transactions. These interactions are based on social values and norms. Such an interaction system is introduced by normative behaviour patterns and regulative mechanisms and administered in some cases, in accordance with the complexity of the transaction, by an organizational apparatus that is materially endowed (Manig, 1991b). A household has access to a particular source of credit if it is able to borrow from that source, although for a variety of reasons it may choose not to do so. The extent of access to credit is measured by the maximum amount a household can borrow (credit limit). If this amount is

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positive, the household is said to have access (Diagne and Zeller, 1998).

Types and structures of financial institutions

There are two types of financial institutions in the developing countries: formal and informal. Formal financial institutions include Agricultural Development Banks (ADP) and other banking institutions, as well as, members based on Micro-finance Institution (MFIs). This group includes; credit unions and cooperatives, group-based programme supported by government agencies or non-governmental organizations, village banks, and financial service associations. All other household financial transactions are within the informal sector (Zeller and Sharma, 1998). The informal institutions include; friends, relatives, neighbours, landlords, commission agents and professional money lenders and so on (Jan, 2007). The informal supply of credit is socially and functionally tied to the social and economic relations of both parties. No doubt, that informal credit played an important role in the past but major part of this credit went into non-productive purposes.

The formal sources of agricultural credit in Pakistan are Zarai Traqiati Bank Limited (ZTBL), other commercial banks and credit cooperatives. In past few years, the supply of agricultural loans from formal creditors has expanded. The National Bank of Pakistan for the first time started a selective credit programme in 1972, and presently almost 3000 branches of all commercial banks grant credit (Jan, 2010). The ZTBL generally grants medium-term loans (development loans) for procurement of the capacity effective inputs whereas commercial banks grant short-term loans (seasonal loans and production loans) in order to finance variable inputs. The credit programmes of the cooperative banks differ very little from those of the commercial banks and the ZTBL. In supply of credit from the organized creditors, there are only minor differences with respect to the upper credit limits and the security demanded (Jan, 2007).

The role of institutional credit in food production is recognized worldwide. In Pakistan, the importance of institutional credit for enhancing farm production and improving socioeconomic life of people has been highlighted by past studies. For instance, Zuberi (1989) finds that 70% of total institutional credit is used for the purchase of inputs like seed and fertilizer and concludes that increases in agricultural output can be explained by changes in the amount of seed and fertilizer expenditure. Likewise, Malik et al. (1991) provides evidence of the role of institutional credit in agricultural production. They use a two-stage structure where the probability of taking an institutional loan is predicted in the first stage and the predicted value is used in the second stage to estimate the impact of fertilizer use per acre. Like Zuberi’s study (1989), their results show that institutional credit is an important determinant of fertilizer and seed expenditure.

The study of von Braun et al., (1993) shows that farmers having access to credit have 37% higher input expenditures than those who do not have access to credit.

The impact of institutional credit, however, depends on what kind of farmers receives the credit. Does expansion in the supply of credit from the formal institutions in Pakistan ensure participation of smallholders in such schemes? The answer is possibly ‘no’. Yet, less than 10% of rural households have access to adequate and affordable financial services (Jan et al., 2011; Jan and Manig, 2008). They face severe constraints when they seek credit from formal lending institutions. Formal financial services such as those offered by banks are often not available to the poor, because of restrictions requiring that loans be backed by collateral. In addition, the distribution of the institutional credit is in accordance with the mechanisms of the institutional redistribution. Thereby, more influential groups in a society use their social, economic, and political influences to derive more advantages of the credit programs for themselves (Manig, 1990). This study is carried out with the specific objective to investigate the factors that makes a household participate in institutional credit schemes.

Research question and hypothesis

The research is by guided by the general question: to what extent do farmers have participation in the institutional credit services? Before getting a possible answer to this question in light of the empirical evidence from the field survey, it is hypothesized that participation in institutional credit services is influenced by the individual and household level variables.

METHODOLOGY

Research location

The research was conducted in 2005 to 2006 in six villages of district Peshawar in Khyber Pakhtunkhwa Province of Pakistan. The sample villages surrounding Peshawar city included Dalazak, Kukar, Gubela, Kochian, Mushtarzai and Yusaf Khel. The study was a part of the project on institutional changes executed by Georg-August University Goettingen, Germany. The same project was undertaken in the same villages in 1967 to 1968 and then 1986 to 1987. The research villages were selected on the basis of different socio-economic and logistic criteria, such as the influence of the economic and administrative centre (Peshawar), land tenure system, type of irrigation system, and employment structure (Manig, 1991a). Therefore, a variety of feedback was expected from the respondents in different villages.

Survey design

The research method used for data collection was mainly interview based. A semi-structured questionnaire was used to collect both qualitative as well as quantitative data. A household, which is
defined as a group of persons who normally live and eat together in the same dwelling (Chianu and Tsujii, 2004), was the unit of analysis for this study. All households in each village were separated as farm and non-farm households. The farm households were further categorized on the basis of land holding and employment structures. To ensure an even and unbiased inclusion of all socio-economic groups in the sample, the selection of sample respondents in each village was made proportionately from different socio-economic categories of farmers. The total sample size across the six villages was 120, which were proportionately selected from all farm household categories. Thus a proportionate stratified random sampling technique was used to select the sample size. The data were analysed through SPSS by using the binary logistic model.

RESULTS AND DISCUSSION

The level of a household participation in formal agricultural credit was determined by using regression analysis. The dependent variable that is, ‘participation in formal credit programs’ is in dummy (binary) form. In this case binary logistic model is an appropriate econometric tool for regression analysis. The general regression model is:

\[ Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots \ldots \ldots + \beta_p X_p + \mu \]  

(1)

Where: \( Y \) = Dependent variable;

\( X_1, X_2, \ldots \ldots, X_p \) = Explanatory variable; \( \beta \)'s = Regression coefficients; \( \mu \) = Error term.

But whenever \( Y \) is of binary form, then the linear regression model is not adequate for various reasons. For example, the linear probability model is simple to estimate and use but its most important disadvantage is to provide outcomes of the fitted probabilities less than 0 or greater than 1. These limitations of the LPM can be overcome by using more sophisticated Binary Response Model (Greene, 2003; Gujrati, 2004) presented thus:

The model considered is:

\[ Y = 1 \text{ if } \beta_0 + \beta' X > \mu \text{ and } Y = 0 \text{ if } \beta_0 + \beta' X \leq \mu \]

Where: \( \beta' = \beta_1, \beta_2, \ldots \ldots, \beta_p \); \( \mu \) = Error term.

Assuming \( \mu \sim \text{logit standard}, \) then:

\[ P(Y=1 \mid X) = \frac{1}{1+e^{-\hat{\beta}' X}} \]  

\[ \text{Logit}(Y) = \hat{\beta}_0 + \hat{\beta}_1 X_1 + \hat{\beta}_2 X_2 + \ldots \ldots \ldots + \hat{\beta}_p X_p \]  

(2)

The model specification

Participation in formal agricultural credit services is modeled as a dichotomous variable where participation takes the value 1 ‘if a household participates’ in these services and 0 ‘if it does not’. The probability of a household to participate is formulated as a function of individual and household level characteristics. Description of the variable hypothesized to influence a household participation in formal credit services is given in Table 1.

The observed variables in the model include attributes of household characteristics that influence a household participation in the formal agricultural credit. These characteristics include socio-economic factors like; age and education of the household head, household income, farm size, and frequency of household members visit to the main city of Peshawar. It is hypothesized that age could work as proxy for experience. More experienced farmers have more inclination to properly use their land for production. Therefore they are more likely to participate in the credit schemes so that to finance inputs and technology. To account for the possible non-linear effect of age, the age squared has also been used in the model. However it is also important to mention that age could sometimes have negative effects as with higher age, people become more conscious and try to avoid risks perceived in their minds about participating in formal credit service.

Education can be used as proxy for more knowledge (awareness) about the requirement for credit. Similarly, household’s income is expected to have positive effect as more wealthy households may have higher probability of having participation in credit services. This is due to the fact that they can easily afford the transaction cost of attaining these services. Frequency of the household members visit to Peshawar is also hypothesized to increase the chances of participation in credit. Total land holding can also play a significant role in a household’s participation in formal credit programs. Land is an important collateral tool for attaining formal credit. It is expected that household having more land will have higher probability to access credit schemes. Descriptive statistics of the variable used in the analysis is given in Table 1.

Regression analysis

Results of the regression analysis are elaborated in the foregoing. The model developed for participation in credit is:

\[ \text{Logit}(Y) = \hat{\beta}_0 + \hat{\beta}_1 X_1 + \hat{\beta}_2 X_2 + \ldots \ldots \ldots + \hat{\beta}_S X_S \]  

(3)

Where: \( Y = 1 \text{ if participated in formal credit program; } \hat{\beta} \)'s = Estimated coefficients of \( X_1 + X_2 \ldots \ldots X_S \) (the explanatory variable).

Table 2 shows the outcomes of logit model of a household’s participation in formal credit. The results
show that age, used both in linear as well as quadratic form does not have any significant effect on a household participation in credit programs. Other variables such as household income and education of the household head also did not show any positive effect on a household participation in formal credit. As already mentioned in the specification of the model, age could possibly have an opposing effect on a household participation in credit schemes due to the risks associated with the credit. Therefore, age did not show any positive effects on participation in formal credit schemes. This model has specific explanatory context. In this model, most of the variables do not show any significant effects because the positive response size was too low.

The illiterate category of farmers was used as reference category and education with matric and higher level showed higher significant effects on household participation in formal credit compared to the illiterate one. The important variable in the model i.e. total land holding turned out to be significant at 10% probability. The land holding is important in this model because land is the only source to be used as collateral for obtaining formal credit in the area. One of the pre-requisites of formal credit is to provide land documents with the application as security for the credit. Thus, the model confirms that the likelihood of a household’s participation in formal credit schemes increases with increase in the total land holding and vice versa. The overall model is significant at 10% of probability.

Conclusions

The role of institutional credit in enhancing agricultural production and improving the socioeconomic life of population is recognized worldwide. In Pakistan, the supply of intuitional credit has expanded in the recent past. Yet this expansion does not correspond to the needs of the majority of the potential borrowers in the area. This is because of the strict security and collateral requirements, which most of the farmers fail to fulfill. A very low percentage of farmers succeed in attaining...
credit from the formal institutions. Many others, who wish to obtain credit from these institutions, fail to do so simply because of the tough pre-conditions of the formal lending institutions. This paper finds that factors such as education and farm size play important role in procuring credit from formal credit institutions. In acquiring agricultural credit from formal institutions in Pakistan, the most important collateral tool is land. Thereby only those farmers who have large farm sizes are capable of attaining institutional credit. In Pakistan, like other developing countries, majority of the farmers are either stallholders or landless. Thus a large proportion of the farmers who are directly involved in agriculture cannot qualify for institutional credit due to lack of land ownership. Hence, the policy implication of this study is that the credit institutions need to restructure their policies and device a mechanism that requires securities in the form (such as standing crop, personal security, etc.) that small farmers could easily comply with. Similarly, cumbersome procedure of obtaining land certificate from the revenue department, due to which most of the farmers lose interest in applying for formal credit, needs to be simplified.

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