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INSTITUTIONAL CREDIT ARRANGEMENT AND THEIR IMPLICATION ON AGRICULTURAL INCOME IN THE SELECTED VILLAGES OF RAWALPINDI DISTRICT

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ABSTRACT:- Finance is the crucial instrument to boost the income earning capacity of subsistence farmers. The aim of the present research was to ascertain the impact of institutional credit on the agricultural income of the sample farmers. The study was based on the primary data collected from 150 farmers through purposive random sampling. Regression analysis was done to obtain the results. Ordinary Least Square (OLS) method was applied to generate the results. Results of this study revealed that there exists a positive and statistically significant relationship between institutional credit and agricultural income of the farmers. The other variables such as source of credit, ownership of farming machinery, access to market and family labour also have a positive and statistically significant relationship with the dependent variable except the age of the farmer. Therefore it is recommended that there is a strong need to enhance easy and timely accessibility of institutional credit for all growers so that they could increase their agricultural productivity that will further lead to increase their agricultural income. It is neccessary that government should practice the credit policy to protect the interest of small and medium farmers by providing them loans on easy terms and to facilitate them against any natural hazards and disaster.

Key Words: Institutional Credit; Regression; Ordinary Least Square; Farmers; Pakistan.

INTRODUCTION

Every modern business is operated on own capital or borrowed capital. Similarly, farming also requires capital. The need for farm credit in increasing production and effective utilization of farm resources is quite clear. Agricultural credit is an important financial support that a small farmer can get to bridge the gap between his income and expenditure in the field. Agricultural credit is an essential ingredient in the growth strategy of agricultural sector (Iqbal et al., 2003).

Many factors are affecting the agricultural productivity overtime, such as the efficient use of agricultural inputs, water resources and credit sources may lead to increased agricultural productivity that will result in higher agricultural income. Transformation of traditional agriculture into modernized agriculture depends on the adoption of new

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technologies, which are embodied in better and modern use of inputs. These inputs are relatively expensive and majority of farmers are dependent on market. To use them, it is essential to command over capital either in the form of personal savings or through borrowing. In countries like Pakistan, savings are negligible especially among the small farmers and agricultural credit appears to be an essential input along with modern technology for higher productivity (Ahmed, 2011).

The agricultural credit system of Pakistan consists of institutional and non institutional sources of credit supply. The informal sources include friends, relatives, commission agents, traders and private money-lenders etc. Presently, the formal credit sources comprised financial institutions like Zarai Taraqiati Bank Limited (ZTBL), formally known as Agricultural Development Bank of Pakistan (ADBP), Commercial Banks, and Federal Bank for Cooperatives. Recently, some Non-Government Organizations (NGOs) are also advancing agricultural credit to the rural communities. The Commercial Banks are the other important formal source of agricultural credit in Pakistan. The role of institutional credit in agricultural sector has been significant. Now a days farming has become complex and needs careful planning to achieve success, i.e. agriculture is no more a mode of life rather it has changed into commercial farming. Transformation of traditional agriculture sector to modern commercialization farming needs credit availability. Though there is a significant increase in borrowing from institutional sources from 1985 onwards when mark-up free loans were made available to farmers.

Considering the increasing demand of credit the Agricultural Credit Advisor Committee (ACAC) has allocated agriculture credit disbursement target of Rs.270 billion for 2010-11 as compared to Rs.260 billion fixed for last year. Bank for agriculture credit Zarai Taraqiati Bank Limited (ZTBL) disbursed Rs. 37.4 billion as compared to Rs.49 billion during the same period of last year (GoP, 2009). This decline in disbursement is mainly due to the recent devastating floods in the country which badly affected the cultivable land. Out of the total amount of agricultural credit disbursed, Rs. 195.1 billion was allocated to Commercial Banks, Rs.70.1 billion to ZTBL, Rs. 12.2 billion to the Microfinance Banks and Rs. 7.6 billion to the Punjab Provincial Cooperative Bank Limited (PPCBL).

Investment capacity of majority of the farmers is low as they are poor and they cannot afford to meet increased demand for the purchase of improved seeds, recommended dose of fertilizer, hiring farm machinery etc; so lack of finance is one of the main reasons for low productivity in agricultural sector of Pakistan. A number of previous studies indicated that institutional credit is essential input for farming community. A study regarding efficiency of agricultural credit in Punjab conducted by Sial and Carter (1996) highlighted that the individuals who obtained average size loans produced 48 % more output than the non-borrowers. Similarly Irfan et al. (1999), Qureshi and Shah (1992), Idress and Ibrahim (1993), Abedullah et al. (2009), Arif

(2001), Binswanger and Khandker, (1989, 1995) and Memon and Khatoon (2010) undertook these studies. All these studies recommended that credit is one of the important inputs to meet the cash requirements of the farmers. Most of the authors emphasized that there is a strong need to enlarge the lending capacity of the institutional credit market. The impact of institutional credit, fertilizers, seeds, and irrigation on agricultural production was found positive and statistically significant. Waqar and Hussain (2008) Mohsin et al. (2011)., Iqbal et al. (2003) have empirically investigated the impact of institutional credit on agricultural production in Pakistan. These studies suggested that institutional credit affects agricultural production positively. Zuberi (1989), Irfan et al. (1999) and Mukhtiar (1999) have pointed out that credit is the bridge leading from subsistence to cash economy and eventually to invisible surplus. They all have stressed that there is a strong need to provide large sums of institutional credit to all categories of the growers to enhance the agricultural productivity.

The present study also examined the impact of institutional credit on the income of the farmers along with other variables like age, education, farming experience, land holding, personal assets, number of household engaged in farming activities, farming machinery, access to agriculture market and non-farm income in the selected villages of Rawalpindi district.

The specific objectives for the study were to study the impact of institutional agricultural credit on the income level of farmers in the research area and to recommend future strategies for credit disbursement in the light of the study findings.

MATERIALS AND METHOD

The sample were taken from the four villages of Rawalpindi namely Chak Amral, Chakbeli, Mial, and Paryal. Rawalpindi district is in the north of the Punjab. The district has an area of 5286 km^2 and according to the 1998 census of Pakistan, a population of about 3,363,911 of which 46.97% were rural. The main crops in these four villages are wheat (*kharif* crop) and maize (*rabi* crop). A well structured pre-tested questionnaire was used for collection of data. Data was collected during 2009-10. Detailed information was collected regarding the demographic as well as farm characteristics of the sample farmer. For the model, farm income was taken as the dependent variable and the independent variables were age, family members engaged in farming activity, ownership of farm machinery, access to agriculture market and source of borrowing. Simple regression model has been incorporated to see the impact of institutional credit on the income level of the farmers. This was estima-ted with the help of Econometrics-Views 5.0 (E-Views 5). Ordinary least square is a statistical technique that uses sample data to estimate the results.

The specific form of the model used in this study is as follows:

$$Yi = \beta 1 + \beta 2\ TRCi + \beta 3i\ ACCi + \beta 4\ FMMi + \beta 5\ AGEi + \beta 6\ SRCi + Ui$$

where,

I = 1, 2, 3....., 150

Ui = Error term

Yi = Farm income
AGEI = Age of respondent (In Years)
SRCi = Dummy for source of credit (Formal = 1, otherwise = 0)
TRCi = Ownership of farming machinery (yes =1, otherwise= 0)
ACCi = Access to agricultural market (through middle man =1, otherwise = 0)
FMMi = Number of household members engaged in farming activities as a ratio to total household members.

RESULTS AND DISCUSSION

Empirical Analysis

Age plays an important role in boosting up household economy. This means that the number of more young members in a household results more labor and hence more income. The results indicated that the average age of the respondent was 58 years (Table 1). Education is an important indicator of quality of human resources and development stage of a society. Average education level of the respondent was primary which indicate that mostly farmers were aware about the farming techniques and agricultural input usage. Household size provides information about the quantitative and qualitative potential of household for work and income generation (Steimann, 2004) on average four household members were involved in farming activities which shows that agriculture is a highly labour intensive activity. Whereas a few number of household member were involved in non farming activities.

Table 1. Socio economic characteristics of the respondents

Variables	Mean	S.D
Age of the household head in years	57.91	8.927
Schooling of head of the household	5.11	3.957
No. of family members involved in farming activities	4.00	1.360
No. of family members involved in non farm activities	1.56	0.980

Data indicated the frequencies of all the categorical variables are related to the agricultural income of the household (Table 2). These are access to agricultural market (direct or through middle man), personal possession of farming machinery like tractor and source of credit (institutional or non institutional) and amount borrowed by the respondent.

Table 2. Frequency analysis

Variable	Category	Frequency (%)
Access to market	Middle man	115 (76.7%)
	Direct to retailer	35 (23.3%)
Tractor	Yes	61 (40.7%)
	No	89 (59.3%)
Source of credit	Banks	68 (45.3%)
	Arhti	44 (29.3%)
	Input fertilizer dealer	27 (18.0%)
	Others	11 (07.3%)
Amount borrowed	Low	117 (78.0%)
	Middle	30 (20.0%)
	High	3 (02.0%)

The result of the frequencies clearly demonstrate that mostly farmers have no direct access to agricultural market. They have to sell their production through middle man. A very few respondents (23.3%) have direct access to agricultural market. In ownership of farming machinery majority (59.3) of the farmers do not possess farming machinery. Source of credit is the fundamental variable. It is classified in to four categories that are banks, *arhti,* input fertilizer dealer and other sources. Other sources include borrowing from friends and relatives. Bank is big source of credit delivery in villages.

Results show that out of total sample, majority (45.3%) of farmers borrow from banks. *Arhti* is the other source of credit in villages. Results indicated that after banks *arhti* is a big source of credit for small farmers and 29.3% of the farmers borrow loans from them. About 18.0% from the total sample borrow from input fertilizer dealer for their farming requirements and a very few (7.3%) of the total sample goes to other sources for their credit requirements.

Amount of credit is also categorized in to three categories: low (< 100000), middle (100000 – 200000) and high (> 200000). Majority (78.0%) of the respondents obtain a low amount of credit whereas a very few farmers take a large amount of credit (Table 2).

Regression Results

According to the results there exists a significant association between the dependent and the independent variables (Table 3). Labour is the primary input in all the sectors of the economy (Steimann, 2004). Agricultural production in developing countries is a highly labour-intensive economic activity. Family labour is often an important source of labour supply among farm households in developing countries. It has a direct effect on efficiency and it is also complementary like other farm inputs (Izhar and Tariq, 2009). Number of family members engaged in farming activities as a ratio of total family members in household has also a positive and significant impact on the income level of farmer. As number of household labour participation increases it will lead to increased agricultural production that will further affect the farming income of the household. Household labour force participation has also positive relationship with farm income.

According to the results pertaining to the source of borrowing (that is taken as dummy in this study) indicate that institutional borrowing has a positive and statistical significant (at 1% level) impact on the agricultural income. The results revealed that the respondents who borrow from formal financial institutions,

Table 3. Impact of institutional credit on agricultural income

Variable	Coefficient	T-Statistics
Constant	3823.65	0.098
SRC	45966.94***	2.528
TRC	76109.11***	4.856
FMM	11373.14**	2.318
ACC	65527.86***	3.222
AGE	972.21	1.416

R-squared: 0.50 F-Statistics: 0.000000***
Adjusted R- Squared: 0.49
** and *** significant at 5% and 1% level

have relatively generated more farm income as compared to those who obtain credit from informal sources. Many researchers report that a strong positive relationship exists between the institutional credit and farm income. For example in Pakistan, Zuberi (1989) has estimated agriculture production and concluded that institutional credit has a positive impact on farm income. This relationship is also identified in other studies conducted by Iqbal et al. (2003) and Pitt and Khandker (1997). All these studies also concluded that institutional borrowing/credit may lead to increase agricultural production, welfare and income level of the farmers. These results reinforce the claims that the farmers production with credit were resourcefully more efficient than their counterparts that produce without credit (Olagunju 2007).

One of the most effective ways that farmers have getting the best price for their produce is to sell it themselves directly to final consumers at rural or urban markets. The coefficient of access to agriculture market is taken as dummy in this study (1 direct to retailer and 0 through middle man). Results showed that access to agriculture market through direct retailer has a positive and also statistically significant impact on agricultural income. This variable is significant at 1%. The results implies that the respondents who have direct access to retailer for their agriculture products have relatively higher income as compared to those who have access through middle man. Because the farmers who don't have direct access to agricultural market, they have to share their half profit with middle man that lead to cause in reduction of farm income.

In personal possession of farming machinery tractor is taken as dummy variable (1 if yes and 0 otherwise). The results revealed that this variable has a positive as well as significant impact on farmer's income. This variable is significant at 1% level that indicates 1% increase in the possession of this farming machinery will increase farm income by 75.85%. This relationship is certified by Malik et al. (1991). They concluded that there exists a significant positive relationship between these two variables as the probability of personal possession of farming machinery increase, it will induce rise in agriculture production thus lead to increase in farm income.

Age of the head of the household is also taken as independent variable. The results show that age of the head of the household has also positive but statistically non-significant impact on agricultural income. It can be justified as the age of the head of the household increases he will become more risk averse and adopt traditional way of cultivation that will lead to reduce the income level.

R^2 shows the variation in dependent variables due to independent variables and in this study 50% of the variation is shown by the independent variable. The F-Statistics shows that overall model is also statistically significant. For the problem of heteroscadasticity, white heteroscadasticity test was applied on the sample data which revealed no problem of heteroscadasticity in the model.

The study thus concludes that the credit not only solve the problems of food crisis but also increase the economic growth, saving and employ-

ment, in the country by increasing the income level of the farmers. The study investigated the impact of institutional credit on agricultural income of the farmers. The simple regression model has been used to estimate the results. The results show a positive and statistically significant relationship between institu-tional credit and agricultural income along with all other variable like access to agricultural market, family member involvement in farming activities, possession of farming machinery and age. However it was noticed that small farmers are generally reluctant to avail institutional credit. The reason behind this is that the procedure of credit disbursement through institution is lengthy and complicated so that farmers cannot understand them easily. There is a strong need to make easy and timely accessibility of such credit to all types of growers. It is necessary that government practice the credit policy to protect the interest of small and medium farmers by providing them loans on easy terms; to facilitate them against any natural hazards and disaster.

RECOMMENDATIONS

Some recommendations that can contribute for easy accessibility of institutional credit to small farmers are:

- Short term and long term loan problems solution is required for the improvement of the farmer. A special quota of credit for small farmer is necessary.
- Institutional attitude toward agriculture sector has to be changed so they become more responsive to small farmer need and requirements.
- Educate farmers about agriculture lending through formal and informal mean such as print and electronic media.
- Banks should collaborate with the farm related companies such as fertilizer, pesticides and tractors.
- Budget of credit or loan may be increased according to population and inflation increases.

LITERATURE CITED

Abedullah, N., M. Khalid, and S. Kouser. 2009. The role of agriculture credit in the growth of livestock sector: A case study of Faisalabad, Pakistan. Vet.J. 29(2): 81-84.

Ahmed, N. 2011 Impact of institutional credit on agricultural output: A case study of Pakistan. Theoret. and Appl. Econ. 10 (10): 99-120.

Arif, G.M. 2001. Effect of micro credit disbursed by ADBP on agricultural production in District Attock. Instt. of Dev. Studies, Agric. Univ. Peshawar, Pakistan.

Binswanger, H.P., and S.R. Khandker. 1995. The impact of formal finance on the rural economy of India. J. Develop. Studies, 32(2): 234-262.

Binswanger, H.P., and S.R. Khandker. 1989. The effect of formal credit on output and employment in rural India. World Bank report. Working paper series 277.

GoP. 2008-09. Economic survey of Pakistan. Ministry of Finance, Econ. Advisor's Wing, Islamabad, Pakistan.

Idrees, M., and M. Ibrahim. 1993.

Agricultural credit role in the development of agriculture. J. Rural Dev.& Administ. 25(4): 64-74.

Iqbal, M., A. Munir, and K. Abbas. 2003. Impact of institutional credit on agricultural production in Pakistan. The Pakistan Develop. Rev. 42(4): 469- 485.

Irfan, M., G.M. Arif, and H. Nazli. 1999. The structure of informal credit market in Pakistan, Research Report No. 168. PIDE Islamabad.

Izhar, A., and M. Tariq. 2009. Impact of institutional credit on aggregate agricultural production in India during Post Reform Period. Aligarh Muslim University, Aligarh, India. MPRA Paper No. 17075.

Malik S. J., M. Mohammad, G. Manzoor, and T. Andrabi, 1991. The role of institutional credit in agricultural development in Pakistan. Pakistan Develop. Rev. 30 (4): 1039-1048.

Memon A.M. 2010. Analysis of agricultural credit and constraint: Experience of Pakistan. Aust. J. Basic and Applied Sci. 4(6): 1410-1418.

Mohsin, A.Q., S. Ahmed, and A. Anwar. 2011. Impact of supervised agricultural credit on farm income in the Barani Areas of Punjab Pakistan. J. Social Sci. 31(2): 241-250.

Mukhtiar, K. 1999. Agricultural Financing for Production, Development and Marketing Needs, Pakistan's Experience Karachi. J. Institute Bankers, Pakistan.

Olagunju, F. I. 2007. Impact of Credit Use on Resource Productivity of Sweet Potatoes Farmers in Osun-State Nigeria. J. Social Sci. 14: 175-178.

Pitt, M., and S. Khandker. 1997. Household and Intra Household Impact of the Grameen Bank and Similar Targeted Credit Programme in Bangladesh. World Bank Discussion paper No. 320. Washington D.C.

Qureshi, S.K., and A.H. Shah. 1992. A critical review of rural credit policy in Pakistan. The Pakistan Develop Rev. 31(4): 781-801.

Sial, M.H., and M.R. Carter, 1996. Financial market efficiency in an agrarian economy: Micro-econometric analysis of the Pakistani Punjab. The J. Develop. Studies, 32(5): 771-798.

Steimann, B. 2004. Livelihood strategies in north-west Pakistan. Results from the sustainable livelihoods survey 2004, North-West Frontier Province (Pakistan). NCCR IP6 Working, Paper No.5. Deptt. Geography, Univ. Zurich, Switzerland.

Waqar, A., and Z. Hussain. 2008. Agricultural Credit Constraints and Borrowing Behavior of Farmers in Rural Punjab. Eur. J. Sci. Res. 23 (2): 294-304.

Zuberi, H.A. 1989. Production function, institutional credit and agricultural development in Pakistan. The Pakistan Develop. Rev. 28(1): 43-56.