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Let's Start!

Informal Credit's Effects on Productivity of Cereal Crops

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Abstract

The present study was conducted in village Regi, district Peshawar, Khyper Pakhtunkhwa, Pakistan. The aim of the study was to assess the impacts of credit on farm output. For this purpose, hundred respondents were selected and interviewed through simple random sampling technique. The study found that tenants are the efficient user of credit. With the use of credit, the output of both wheat and maize has significantly increased which was confirmed by the values of Welch's test value and its respective p-values. Based on the findings it is suggested that convenient and timely availability of credit has positive effects on the socio-economic condition of the farmers.

Key Words: informal credit, welch test, wheat and maize.

INTRODUCTION

Agricultural inputs, modern technology and technical efficiency are the factors that mainly contribute to the growth of agriculture sector. The optimal use of inputs requires funds at the disposal of farmers (Jan et al., 2012). These funds could be either from farmer's own savings or through borrowings. The developing countries having low saving rate is low, agricultural credit is an essential input along with modern technology especially among small farmers. It makes farmers undertake new investments and adopt new technologies.

The primary concern of agriculture planner is to increase farm production through the adoption of modern technologies. But small farmers are perceived as being poor to do the required investment in farm inputs. In Pakistan's economy agriculture sector has its due role as it provides raw materials and provides employment which help alleviate poverty. Its contribution to national GDP is 22.9 percent and its share in employment generation is 37.4 percent (GoP, 2023).

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As compare to other developing the agriculture output in Pakistan is comparatively low. For high crop yield transition from conventional methods to advanced technologies is required which requires farmer's access to financial resources (Jan and Manig, 2008). So adequate financial resource are must for technological adoption by farmers and coup with related risk (Jan and Khan, 2012) (Hulme and Mosley, 1996).

Financial resources are needed by farmers not only for purchase of inputs (Abbas et al., 2005) but also storage and marking (Iqbal et al., 2003). Formal and informal lenders are active in credit market (Adams and Fitchett 1992; Aleem 1990; Ghate 1992; Hussain and Demaine 1992; Udry 1990).

AIMS OF THE STUDY

The informal sources operate outside, and sometimes in conflict with the overall framework of economic policy. The objective of the study is to investigate the impacts of informal credit on crop output in district Peshawar, Khyber Pakhtunkhwa, Pakistan.

MATERIALS AND METHODS

This study is based on primary data. The primary data were collected through questionnaire from sample farmers of the area through face-to-face interview. Besides primary data, secondary data were also used for reference and comparison of the results/findings. There are sixty-two major villages in district Peshawar. Village Regi was purposively selected due to its proximity with both formal and informal sources of credit to the farmers.

SAMPLE SIZE

After selecting the village purposively, one hundred farmers were randomly selected they were divided into three categories based on land ownership i.e. owner, owner cum tenant and tenant. As wheat and maize are the important cereal crops therefore the productivity in mounds (1mound = 40kg) of two crops per acre (1 acre = 2.023 jaribs) was taken into consideration for analysis. In each category the output with credit of wheat and maize were compared with those without credit. Thus, a total of two hundred respondents were selected.

Table 1: Category Wise Selection of Respondents

Ownership category	Number of farmers with credit	Number of farmers without credit
Owner	28	30
Owner cum tenant	32	33
Tenant	40	37
Total	100	100

Source: field survey

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EMPIRICAL TECHNIQUES

The data was analyzed with the help of Minitab software. Welch test was employed in order the compare the means of two samples i.e. output with credit and those without credit. Welch test is robust when the assumption of homogeneity of variance is violated (Ahad et al., 2014).

Welch t statistics is calculated by the formula,

$$t = \frac{\bar{x}_a - \bar{x}_b}{\sqrt{\frac{s_a^2}{n_a} + \frac{s_b^2}{n_b}}}$$

where $\bar{x}_a and\ \bar{x}_b$ are the means of respective samples,

s_a^2 and s_b^2 and the variance and n_a and n_b are the sample size.

Hypothesis are:

Null hypothesis = the mean of two samples is equal

Alternate hypothesis = the mean of two sample is unequal

Degree of freedom for welch test is estimated as follow.

$$df = \left(\frac{s_a^2}{n_a} + \frac{s_b^2}{n_b}\right)^2 \Big/ \left(\frac{s_a^4}{n_a^2(n_a - 1)} + \frac{s_b^4}{n_b^2(n_b - 1)}\right)$$

RESULTS AND DISCUSSION

Discussion of the results are recorded in this section of the study. The primary focus is to compare the mean difference of “with” credit and “without” credit farm output of two main cereal crops i.e. wheat and maize. Because they main crops in the overall crop mix in Pakistan (Abbas, 2013).

CREDIT’S EFFECTS ON WHEAT OUTPUT

Wheat is staple food in Pakistan. Its share in national GDP is 2.2 percent (Hussain et al., 2014). Various studies reveals that informal credit has significant effect on wheat output.

Agriculture credit has positively and significantly contributed to wheat production in Punjab, Pakistan (Bashir et al. (2010) and Ahmad et al. (2015)).

To know the impact of informal credit on farm output information were gathered from sample “with credit” and “without credit” regarding yield of wheat. Although most of the farmers in the study area are subsistence farmer some of them also market a portion of their produce. The findings in Table 2 depicts that credit effects on the wheat output. As the data shows, 12.01 percent change in wheat output was observed in the owner category with credit.

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Similarly, in owner cum tenants and tenants this change is 19.65 percent and 23.43 percent respectively. The higher change was depicted in tenant category which reveals that tenants utilized the credit efficiently. Welch test estimates for the three categories also reveals a significant effect of credit on wheat output. As farmer needs credit for use of modern technology, high yielding varieties of seed, pesticides, fertilizer and storge which in turn high output of wheat. These results are in line with those of Muhammad (2003) and Ahmad et al. (2015) which also depicts that timely availability of credit leads to increased output as farmer utilize it on farm activities like use of advanced technology, HYVs of seeds, pesticides, fertilizers and adoption techniques against climate change, which has positive effect on wheat output.

Table 2: Credit's Effects on Wheat Output

Category of farmer	Output with credit	Output without credit	Percent change	Welch's test value	P-value
Owner	28 (17.4)	30(16.0)	12.01	2.00	0.050
Owner cum tenants	32(27.2)	33(9.01)	19.65	3.58	0.001
Tenants	40(78.1)	37(63.3)	23.43	2.17	0.033

Source: field survey 2024

Note: figures in parenthesis are StDev

CREDIT'S EFFECTS ON MAIZE OUTPUT

In Pakistan, maize too is staple food. In the area under consideration the farmers mainly sow maize and wheat. As there are no important large landholdings. Most the farmers are small land holder and are subsistence farmer. Table 3 shows the output of maize in the three categories of land ownership. As depicted by the data the percentage change in maize output varies across the three categories, i.e. 12.01 percent in owner category, 19.65 in owner cum tenants and 23.43 percent in tenants categories. The percentage change with credit and without reveals that tenants are the most efficient utilizers of input as compared to owner and owner cum tenants. So appropriate availability leads to increased maize output. Similarly, the Welch's test for three categories is also significant. All these results are in line with Khan et al. (2007) and Chandio et al. (2015) which had found that convenient availability of credit to farmers will lead to high maize output in Pakistan. Because timely availability of credit makes farmers use advanced technologies, pesticides, herbicides, fertilizers and the most important high yielding verities (HYVs) of seeds.

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Table 3: Credit's Effects on Maize Output

Category of farmer	Output with credit	Output without credit	Percent change	Welch's test value	P-value
Owner	28 (18.5)	30(15.8)	12.01	2.01	0.049
Owner cum tenants	32(27.4)	33(9.05)	19.65	3.56	0.001
Tenants	40(32.2)	37(28.1)	23.43	2.11	0.038

Source: field survey

Note: figures in barckets are StDev

CONCLUSIONS AND RECOMMENDATIONS

From the study it can be concluded that most of the rural economy is agrarian. The landholdings are fragmented in owner, owner cum tenants and tenants. These farmers have limited access to formal credit market. But on the other hand, informal sources were easily accessible, and the service is virtually available at the farmer's doorstep. Hence farmers prefer to borrow from informal sources. Farmers also participate in informal credit market in order to maintain good relationship with the lenders in view of their future needs. Low or no administrative cost, lack of communication gap, nearness, accepting repayments in kind, simple procedure and lack of collateral are the factors responsible for the expansion of informal credit market. Also, lenders in informal market enjoy certain privileges over the formal lenders in terms of risk of repayment of loan due to their personal information about clients.

Credit has significant impact on farm output. As the Welch test and its respective p-value shows significant difference between the output of those with credit and those without credit for both wheat and maize.

In order to compete with informal credit market, formal sources would be required to create parallel facilities to attract small farmers and tenants to borrow from them. Formal credit should be made easily available as compared to informal sources. Procedural simplicity, adequacy and timeline are the factors which would make formal sources compete with informal sources. Provision of loan should be linked with efficiency of land rather than securities. The mode of repayment should be simplified. Information and communication technologies should be utilized on similar grounds as used in e-banking and branchless banking.

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