

AGRICULTURAL CREDIT, A CRITICAL INPUT ON FARMERS INCOME: A STUDY FROM NAYAGARH DISTRICT OF ODISHA

Abstract:

To protect agriculture and other allied sectors, credit is indispensable for a farmer to expand and run his business more efficiently and properly which may not otherwise be possible on his savings. In this perspective, an investigation was made to show the impact of farm credit on the farmers income which was designed through a random sample survey of hundred credit availed farmers in the diverse agriculture terrains of Nayagarh block of Nayagarh district and analyzed by statistical tools like regression analysis and descriptive statistics. The statistical analysis indicated that the farm credit per household, land holding have positive and significant relationship with the household income while farm size farm expenditure are negatively related to the household income. The R^2 value is 0.74 that indicated 74 per cent of the variation in dependent variable is explained by the independent variables. There is decreasing returns to scale (0.766). The average per acre farm expenses and income from sale of the crop of a sample respondent of the pooled category was Rs 15753 and Rs 31606 respectively. The farmers efficiently utilize the agricultural credit, but at the same time there should be provision for procurement of perishable goods by the government or bank agencies that would secure the income of farm borrowers. In addition, a timely and need based support in creation of quality asset will lead to the overall economic growth of the block as well as the district and ramify business of the banks.

Key words: Credit, household income, farm expenses, economic growth

Introduction:

Agriculture sector being one of the prime sources of Indian economy needs to be addressed in the canons of national economic parameter. India has gravitated to join the global economic club as the sixth largest economy (World Bank report, July 2018) and its diverse economy embedded in primary, secondary and tertiary sectors encapsulates

traditional village farming, modern agriculture, proliferation of modern industries, and multitude of services. It is well known that sixty eight per cent of country's population is residing in rural areas which directly or indirectly are dependent on agriculture. In this context, to protect agriculture and other allied sectors, credit is indispensable for a farmer to expand and run his business more efficiently and properly which may not otherwise be possible on his savings.

The outcome of agricultural credit for Indian farmers is immensely appraised as it has resulted in purchase of machineries (tractors, power tillers, threshers, sprayers etc.), ware housing facilities that eliminated distress sale, establishment of process units that prevented postharvest produce damage, enhancement of horticultural set up (mushroom, fruits and vegetables, floriculture etc.), enhancing irrigation area thereby boosting cropping intensity, emancipation from local money lenders and economic stability. It has also encouraged individual savings ability to invest for further enterprises, growth of productive resources of the individual and the country. Adhering to this, the living standard of the farmers though not spectacularly increased nevertheless had a slow and gradually in the level of income that added to it thereby it had a positive impact on Indian economy.

In this research, an investigation was made to show the impact of farm credit on the farmers' income in the study area.

Materials and methods:

Nayagarh district in the state of Odisha was purposively selected for the study. The sampling procedure followed here for the study was a multi staged random sampling method. On the first stage, Nayagarh block was randomly selected only.

On the second stage out of the twenty nine gram panchayats in Nayagarh block, one third (ten) of them were selected randomly that would represent the entire block. Such panchayats were Balugaon, Champatipur, Badapandusar, Biruda, Bhattasahi, Lenkudipada, Kalikaprasad, Lathipada, Nabaghanapur, Sinduria. Here all possible institutional agencies have financed.

In the third stage, all the households of ten Gram Panchayats, availed loan from institutional agencies, were listed and ten households were taken from each GP randomly.

Head of the household was the respondent. The farm holdings were classified in three size groups as:

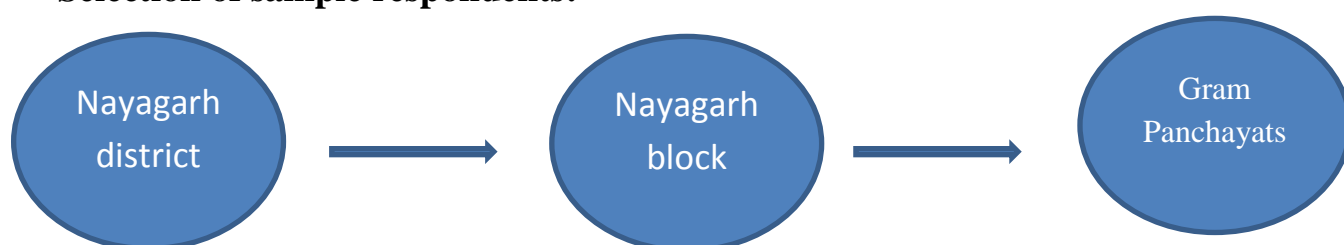
Group-I: Marginal farmers (< 2.5acres)

Group-II: Small farmers (2.5-5acres)

Group-III: Large farmers (> 5acres)

It was seen in all the Panchayats that nearly sixty per cents farmers belonged to Group-I category while thirty five percent from Group-II and rest from Group-III category. From each panchayat ten households were take randomly that comprised of six marginal farmers, three small farmers, and one large farmer.

Selection of sample respondents:



| CATEGORY ↓ GPs | Group-I | Group-II | Group-III | Total |
|----------------------|---------|----------|-----------|-------|
| Balugaon | 6 | 3 | 1 | 10 |
| Champatipur | 6 | 3 | 1 | 10 |
| Badapandusar | 6 | 3 | 1 | 10 |
| Biruda | 6 | 3 | 1 | 10 |
| Bhattasahi | 6 | 3 | 1 | 10 |
| Lenkudipada | 6 | 3 | 1 | 10 |
| Kalikaprasad | 6 | 3 | 1 | 10 |
| Lathipada | 6 | 3 | 1 | 10 |
| Nabaghanapur | 6 | 3 | 1 | 10 |
| Sinduria | 6 | 3 | 1 | 10 |
| Total | 60 | 30 | 10 | 100 |

Thus in this way hundred households i.e. sixty from Group-I, thirty from Group-II and ten from Group-III were selected from the block for the present study.

Only primary data was collected for the study using a pre tested structured interview schedule. The finalised schedule sought detailed information on farm expenses, income, family size, land holding and quantum of credit availed from different sources. The information provided by the respondents related to input and output of the agriculture sector was related to the agricultural year 2018-19.

Descriptive data analysis and regression techniques were used to provide valuable information about the basic feature of the data in the study. With the descriptive technique, the estimates and summaries were arranged in tables, to meet the objective. To be very specific, the technique was used to describe what is and what the data shows.

The relationship between the independent and dependent variables were expressed as a function and analysis of the functional relationship between those variables is the regression analysis. In this study, income of the respondents was taken as the dependent variable and was predicted by the independent variables viz. farm credit, family size, land holding, and farm expenditure to know the impact of credit on income.

Results and discussion:

The impact of the credit can be best inferred from the net income of the sample respondents. If the credit could be utilized in a productive manner, it is obvious that with the access to agricultural credit the farmers could adopt improved technology that would reduce the cost and add to the return. So to analyze whether there is a significant impact of the credit on the farmers, impact of the credit is well discussed on the following sub-heads:

1. Farm expenses
2. Net income
3. Regression analysis

1. Farm expenses

The farm expenses of sample respondents in various inputs and operations like land improvement, seed, sowing, fertilisers, plant protection chemicals and irrigation, intercultural operation, harvesting and threshing are represented in Table 1. To sum up, in all these activities a Group-I respondent spends almost twenty nine thousand rupees while a Group-II respondent uses fifty six thousand rupees and a Group-III respondent uses one lakh seventeen thousand rupees. So on an average a sample respondent of pooled category spends forty six thousand rupees and per acre farm expenditure is fifteen thousand seven hundred fifty three rupees. Qualitatively it could be said that taking the factors like the area of land holding, access to mechanical implements, use of hired labours into consideration there is uniform expenditure pattern of all categories of the respondents. The

farm expenses are bit high due to more of manual operation rather than mechanical means that signal credit requirement for capital formation. Again, the per acre average farm expense of all the categories are almost same. However, per acre average farm expenses is bit more in group II and III categories due to the fact that the Group II respondents use more hired labour and Group III respondents incur more expenditure in application of fertilizers.

2. Net income

The net income of the sample respondents from various activities like sale of crops, livestock and its produce, income from earning assets, profession and wages and gifts received is depicted in Table 2. The major income is from sale of crops followed by from profession and wages. Group-III respondents are the highest earners with two and half lakh rupees followed by Group-II respondents with one lakh eighty thousand rupees and Group-I respondents with one lakh twenty thousand rupees. In the pooled category, net income from per acre sale of crop is thirty one thousand six hundred six rupees. An average respondent earns around one lakh rupees from agriculture and allied activities while his total income averages to one and half lakh.

The net income of sample respondents from various sources as given in Table 2 reveals that maximum amount is gained from sale of the crops. Per acre average income from sale of the crops is highest for the Group I respondents. It is owing to the difference in cropping intensity of different categories. Further Group III respondents give more time on non-agricultural activities though they profess it as their major profession. Next to sale of crop, the respondents earn something from their non-agriculture based profession. It is because in off season (rest period from agricultural activity) they concentrate on their professional activities. Not that only in off season, they also work during the cultivation period. But the situation is that in off periods of agriculture they devote more time for their allied activities. Gifts have been earned in the form of KALIA Yojana given by the Odisha Government. Out of the sixty Group-I respondents forty have got it. Similarly, nineteen from Group-II and five from Group-III have got the KALIA money. Moreover the net income of the respondents has been found to be satisfactory owing to the efficient use of the credit.

This is akin to the works conducted by Ibrahim and Baver in 2013 with respect to effect of microcredit on profit of rural farmers in Dry land area of Sudan.

Table 1: Farm expenses of the sample respondents (n=100)**(in Rs)**

| Sl. No. | Particulars | Category | | | |
|---------|---------------------------------|----------------------------------|----------------------------------|-----------------------------------|----------------------|
| | | Group-I (n ₁ =60) | Group-II (n ₂ =30) | Group-III (n ₃ =10) | Pooled (n=100) |
| 1 | Land improvement | 1058 (556) | 1795 (505) | 3520 (495) | 1526 (524) |
| 2 | Seed and sowing | 1660 (935) | 3124 (879) | 6235 (878) | 2631 (903) |
| 3 | Fertilizer | 3732 (1965) | 6425 (1809) | 23570 (3319) | 6524 (2239) |
| 4 | PPC(Plant Protection Chemicals) | 5110 (2690) | 8900 (2507) | 17775 (2503) | 7514 (2579) |
| 5 | Intercultural operation | 3175 (1671) | 9291 (2617) | 12525 (1764) | 5945 (2040) |
| 6 | Harvesting | 13133 (6912) | 24966 (7032) | 50300 (7084) | 20400 (7003) |
| 7 | Threshing | 2075 (1092) | 3566 (1004) | 7100 (1000) | 3025 (1038) |
| 8 | Total expenses | 28943 (15233) | 56076 (15796) | 117030 (16483) | 45891 (15753) |

Figures in the parenthesis indicate per acre average farm expenses

Table 2: Net income of the sample respondents (n=100)**(in Rs)**

| Sl. No. | Particulars | Category | | | |
|---------|-------------------------------------|----------------------------------|----------------------------------|-----------------------------------|-------------------|
| | | Group-I (n ₁ =60) | Group-II (n ₂ =30) | Group-III (n ₃ =10) | Pooled (n=100) |
| 1 | Sale of crop | 71033 (37386) | 111500 (31408) | 160000 (22535) | 92070 (31606) |
| 2 | Sale of live stock | 916.6 | 666 | 1000 | 850 |
| 3 | Sale of livestock produce | 7833 | 11166 | 8000 | 8850 |
| 4 | Total agriculture and allied income | 7978 | 123333 | 169000 | 101770 |
| 5 | Income from earning asset | 2666 | 12000 | 18000 | 7000 |
| 6 | Gifts | 3333 | 3166 | 2500 | 3200 |
| 7 | Profession/ wages | 36000 | 46833 | 5200 | 40850 |
| 8 | Total subsidiary income | 42000 | 62000 | 72500 | 51050 |
| 9 | Total income | 121783 | 185333 | 241500 | 152820 |

Figures in the parenthesis indicate per acre average income

3. Regression analysis

Table 3 gives an idea about the relationship between the independent variables viz. farm credit, family size, land holding, and farm expenditure and dependent variable net farm income. A negative sign in the coefficients of parameters of family size and farm expenditure implies negative association of these two with the income while the other two land holding and farm credit have a positive impact. In addition, the coefficient of determination (R^2), returns to scale, and F value have been indicated that comes around respectively 0.74, 0.766, and 27.954. Above all, the intercept value is 15.284.

Table 3: Estimated Cobb- Douglas Production Function Coefficients

| Sl No. | Particulars | Parameters | coefficient |
|--------|------------------|------------------|-------------------|
| 1 | Intercept | A | 15.284 (1.904) |
| 2 | Farm Credit | b_1 | 0.405 (0.155) |
| 3 | Family size | b_2 | -0.186 (0.149) |
| 4 | Land Holding | b_3 | 1.450 (0.208) |
| 5 | Farm expenditure | b_4 | -0.903 (0.129) |
| | | R^2 | 0.740 |
| | | Returns to scale | 0.766 |
| | | F value | 27.954 |

Note: Figures in parenthesis indicate their respective standard error.

The relationship between the independent variables viz. farm credit, family size, land holding, and farm expenditure and dependent variable net farm income can be expressed as a functional relationship as

$$\mathbf{Y=15.284+0.405X_1-0.186X_2+1.45X_3-0.903X_4+e}$$

This is called linear regression model with four predictor variables. The variables in the model are

Y (the response variable) = income

X₁(the first predictor variable) = farm credit

X₂(the second predictor variable) = family size

X₃(the third predictor variable) = land holding

X₄(the fourth predictor variable) = farm expenditure

e (the residual error) = an unmeasured variable

The parameters in the model are:

A (Y intercept) = 15.284

b₁ (first regression coefficient) = 0.405

b₂ (second regression coefficient) = -0.186

b₃ (third regression coefficient) = 1.45

b₄ (fourth regression coefficient) = -0.903

Interpreting the Intercept, it can be said that an average net income of 15.284 units is expected, if it is reasonable that all the predictor variables can be zero or very near to zero. The intercept has no real intercept if neither of the conditions are true.

Similarly the coefficients of predictor variables can be interpreted as since X_1 is a continuous variable, b_1 represents the difference in the predicted value in the income for each one unit difference in X_1 , if the other three variables are held constant. Similarly, the coefficients of other predicted variable are determined.

Since the coefficient of determination is 0.74, fifty four per cent of the variance in the net income is from the independent variables like farm credit, family size, land holding, and farm expenditure, while twenty six per cent level of disagreement between the predictable and predictor variables.

Summation of slope coefficients gives return to scale. It comes around 0.766 indicating decreasing return to scale.

F value comes out to 27.954 signifying it as significant.

Thus it can be stated that credit has a significant impact on the farm income that arose for good productivity.

It is similar to the findings of Ayaz and Hussain in 2011 in Faisalabad district of Pakistan regarding credit requirement to enhance resource use efficiency and Duy in 2012 regarding effect of agricultural credit on farm productivity in Mekong delta region of Pakistan.

Thus it can be noted from the net income, farm expenses and regression analysis that the farm credit is obligatory requirement for agriculture production process and in the study area farmers by availing credit from various sources have put them to use efficiently.

This is akin to the findings of khatun *et al.* regarding credit utilisation in Kushtia district of Bangladesh.

Conclusion:

Based on the findings of the study, the following policies are suggested in the study area to reduce the restrictions in credit lending and to enhance efficient utilization of farm credit.

- There should be provision for procurement of perishable goods by the government or bank agencies that would secure the income of farm borrowers that would help better

repayment or alternatively a crop insurance scheme akin to Farm Income Insurance Scheme during 2003-04 need to be reintroduced.

- Post credit disbursement follow up by the bank officials in association with the Department of Agricultural officials need to be undertaken
- Awareness camps in every village or Village Panchayats need to be organised by the NABARD officials or Lead Banks officials or any officials directed by them in frequent intervals to make them familiar about credit perspectives
- A timely and need based support in creation of quality asset will lead to the overall economic growth of the block as well as the district and ramify business of the banks.

Farmers, in the study area, are undoubtedly the weaker sections of the society. If any part of the body gets an injury, the whole body suffers. Similarly, if a section of the society gets neglected the whole nation will suffer. It is therefore imperative for the government to recognize its duty to protect the legitimate interest of the farmers, especially the small and marginal farmers and there should be no compromise in safeguarding the interest of the farmers. In this way, we can assure for a strong and healthy nation of tomorrow with the prosperity of the farming community.

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