CHAPTER V

INCOME GENERATION THROUGH IRDP

5.1 Introduction
5.2 Analytical Framework
5.3 Results and Discussion
5.4 Summary
5.1 INTRODUCTION

The Integrated Rural Development Programme is a major poverty alleviation programme which accounts for half the total plan outlay on rural development.¹ The primary objective of the programme is to raise the income levels of the target group households and it is expected that the households taking assistance would be able to cross the poverty line not only at a particular point of time but for all time to come. The main thrust of the programme is to promote self-employment of the rural poor through productive activities leading to generation of income for crossing the poverty line. A total investment of Rs.17,257 crores, consisting of Rs.6,536 crores of subsidy by the Government and Rs.10,721 crores of credit from the financial agencies, was made for 400 lakh beneficiaries under the Integrated Rural Development Programme from 1980-81 to 1990-91.² The annual budgetary outlay of Rs.345.46 crores in 1990-91 was increased to Rs.623.70 crores in 1994-95.³ These are fabulous figures by any standard, and undoubtedly a tremendous achievement in physical and financial terms.⁴

While the achievement of physical and financial targets is important, it is more important that the objectives of the programme, namely, enabling rural families to cross the poverty line has to be achieved. The real success of the programme depends on how many of such families have effectively been benefited in terms of assets created out of the loans and their retention, the generation of incremental income and crossing the poverty line.

A number of micro and macro level evaluation studies have been conducted by a number of organisations, both Government and autonomous on IRDP. The important ones are those carried out by the Programme Evaluation Organisation (PEO) of the Planning Commission in 1985, the Reserve Bank of India (RBI) in 1984 and the Institute of Financial Management Madras in 1984. The evaluation of the IRDP by independent research agencies indicated that though the programme provided incremental income to poor families, the number of families able to cross the poverty line was relatively small.

In this context it is important to distinguish between the apparent success of IRDP in terms of physical and financial achievements and the net results achieved in terms of generation of net possible income to cross the poverty line.\(^5\) It is perhaps not possible for all IRDP

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beneficiaries to cross the poverty line at one go. This is because all of them do not start from the same income level and secondly the income generating capacity of the schemes adopted by them is not the same in all cases.

Against this back drop, an attempt has been made in this chapter to examine the income generating capacity of various schemes adopted by the IRDP beneficiaries and to assess thereby the extent to which this programme has enabled them to cross the poverty line. As part of the analysis, an attempt has also been made to identify the crucial factors which influence the income generation pattern, so that in the implementation of the programme, there would be more emphasis on these factors for maximisation of income to the beneficiaries. Accordingly the present chapter is divided into three parts.

I. Income generating capacity of IRDP schemes.

II. Poverty-Alleviation Effects of IRDP.

III. Factors influencing income generation.

5.2 ANALYTICAL FRAMEWORK

The following paragraphs bring out the analytical framework of this chapter.
For the purpose of analysis the various economic activities under IRD Programme in each block of the Tirunelveli Kattabomman district were grouped under the three major schemes viz. Agriculture, Animal Husbandry covering primary sector, and Industries, Service and Business (ISB) covering secondary and tertiary sectors.

The income generation from the scheme is estimated annually by considering the income earned with and without the IRDP scheme at the same point of time. The income earned with IRDP scheme is higher than the income earned without the IRDP scheme. Income generation is taken as the difference between income earned with scheme and without scheme of the beneficiaries.

The data collected for the purpose of the present study were from those beneficiaries who were assisted during the year 1993-94 thus allowing sufficient time for the programme to have its impact on the income of the households as per the Planning Commission expectation. The study takes into account the concept of net family income, which is calculated on annual basis. Therefore reference to income in the chapter will always stand for net income.

In order to estimate the scheme income, information was collected from the sample beneficiary households in respect of costs and benefits of the scheme which had accrued to them annually as a consequence of benefit schemes provided to them. Capital costs (non-recurring) include loans and subsidy. The expenditure (recurring) consists of input costs, operating expenses, obligation towards repayment of loan (Principal and Interest) and other expenses. Gross scheme income includes income from both main products and by-products. The net income from scheme is calculated by deducting recurring expenditure of the scheme from gross scheme income.

For the purpose of the calculation of family income, the Income generation and the Income generation rate, the following methodology has been adopted.

Income from Land Assets \( (\text{Rs.}) = \text{ILA} \)
Income from Livestock Assets \( (\text{Rs.}) = \text{ILSA} \)
Income from other sources \( (\text{Rs.}) = \text{IOS} \)
IRDP Scheme Income \( (\text{Rs.}) = \text{SI} \)
Family Income without scheme \( (\text{Rs.}) = Y_0 \)
Family Income with scheme \( (\text{Rs.}) = Y_1 \)
Income generation \( (\text{Rs.}) = Y_g \)
Income generation rate \( = Y_{gr} \)
\[ Y_o = ILA + ILSA + 103 \]
\[ Y_1 = Y_o + SI \]
\[ Y_g = Y_1 - Y_o \]
\[ Ygr = \frac{Y_g}{Y_o} \times 100 \]

Tabular analysis has been done so as to derive the conclusions from the study. Z test was used to test the significant difference between means to with and without IRDP scheme incomes of the sample beneficiary households. Further, Chi-square test has been used to test if the IRDP has produced uniform impact on income in all the activities.

In order to study the relative significance of the variables influencing the scheme income, a multiple linear regression model was tried out and estimated by the method of least squares.

The income derived by operating the asset, known as scheme income, depends on a number of factors such as pre-assistance family income, capital cost of the asset, size of land holding, value of livestock possessed by the beneficiary households at the time of assistance, number of dependent persons in the beneficiary family, size of the market for the scheme, skills and capabilities of the beneficiary,
educational status, caste, subsidy received and occupation of the family. It is the simultaneous operation of these factors which determines the scheme income. In order to study the strength of the relationship of these factors with the scheme income, inter-correlations were worked out. Some of the factors which were found to have no relation in explaining the variations were dropped.

Finally, seven explanatory variables as indicated below in the regression model were chosen along with the dependent variable (Scheme Income).

Production function: \( Y_g = f(Y_0, C_c, L_S, L_h, D_r, S_s, S_m) \)

Regression model: \( Y_g = b_0 + b_1Y_0 + b_2C_c + b_3L_S + b_4L_h + b_5D_r + b_6S_s + b_7S_m + U \)

Where \( Y_g \) = Income generation from the schemes (Dependent Variable)

Explanatory Variables:

- \( Y_0 \) = Family income without scheme in rupees.
- \( C_c \) = Capital cost of the scheme in rupees
- \( L_S \) = Value of livestock assets held at the time of assistance in rupees.
- \( L_h \) = Size of land holding at the time of assistance in acres.
- \( D_r \) = Dependency ratio ie. Number of dependent persons in a beneficiary family to the number of employed persons at the time of assistance.
\[ S_s = \text{Skills and capabilities of the beneficiary household.} \]
\[ S_m = \text{Size of market for the scheme.} \]
\[ b_0 \] is an intercept (constant)
\[ b_{1b2} -- b_7 \] partial regression co-efficients
\[ U \] is the Error term

Of these variables, the last two, skills and capabilities of the beneficiary households and size of market for the scheme, being qualitative in nature, had to be used as dummy variables.

The relative contribution of each of the explanatory variables of the explained variation was calculated to obtain a more definite idea of the relative importance of each explanatory variable to the total predicted variance of dependent variable. The percentage contribution is derived as

\[ B \times r \times 100 \]

Where \( B \) = the standard partial regression co-efficient

\[ r \] = the corresponding correlation co-efficient between the dependent and explanatory variables

The standard partial regression co-efficient is calculated by using the following formula:
\[
\beta = \text{Partial regression} \times \frac{\text{Co-efficient}}{\text{Standard deviation of the corresponding explanatory Variable}} \times \frac{\text{Standard deviation of the dependent variable}}{\text{Standard deviation of the dependent variable}}
\]

The explanatory variables that were identified in terms of their contribution to the income generation of the scheme and family are additive in nature because of the contribution to income in the given situation, that is the income generating capacity of the schemes, is direct and proportionate. Hence the linear multiple correlation and regression analysis were resorted to.
5.3 RESULTS AND DISCUSSION

5.3.1 Income Generating Capacity of IRDP Schemes

In this section an attempt has been made to assess the income generating capacity of the IRDP schemes selected for the study. The main indicators that have been selected for the purpose are: Distribution of sample households according to net increase in annual income, income generation rate, comparison of mean income of beneficiary households with and without schemes.

The size of the annual income generated through IRDP assistance among the sample households is set out in Table 5.1. It can be observed from Table 5.1 that on an average each household income has increased by Rs.3391.98 per annum due to assistance. The average increase in income was the lowest in case of households which had adopted Industry, Service and Business (ISB) activities. In their case the average addition to income was Rs.2534.81 per household per annum.
TABLE 5.1

Distribution of Sample Beneficiary Households According to Income Generation due to IRDP Assistance

<table>
<thead>
<tr>
<th>Income generation per household per annum</th>
<th>Number of Beneficiary Households engaged in</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Agricultural Activities</td>
<td>Animal Husbandry Activities</td>
</tr>
<tr>
<td>0 - 1500</td>
<td>10 (27.78)</td>
<td>29 (21.48)</td>
</tr>
<tr>
<td>1500 - 3000</td>
<td>8 (22.22)</td>
<td>15 (11.11)</td>
</tr>
<tr>
<td>3000 - 4500</td>
<td>11 (30.56)</td>
<td>36 (26.67)</td>
</tr>
<tr>
<td>4500 and above</td>
<td>7 (19.44)</td>
<td>55 (40.74)</td>
</tr>
<tr>
<td>Total</td>
<td>36 (100.00)</td>
<td>135 (100.00)</td>
</tr>
</tbody>
</table>

Mean Income: 2864.17  4034.33  2534.81  3391.98

Note: 1. Figures in parentheses represent percentage distribution.

2. Calculated Chi-square value is 25.72 against table value 12.59 at df = 6 at 5 per cent level.

Source: Field Survey data.
For agricultural activities, the average increase in income was Rs. 2864.17 per annum. Animal Husbandry schemes appeared to be most productive and the beneficiary households assisted under the scheme were able to generate the highest income. Their average additional income was Rs. 4034.33 per annum. Considering the total sample it can be observed that about 56 per cent of the beneficiaries were able to generate an additional income of more than Rs. 3,000 per annum and in the case of about 44 per cent of sample households the income generation was less than Rs. 3000 per annum.

In order to test the null hypothesis that income generation is independent of various activities, chi-square test was applied. The test rejected the null hypothesis leading to the conclusion that there was a significant difference between the various schemes with respect to income generation. The income generation was found to be distinctly favoured in the case of Animal Husbandry activities.

Table 5.2 analyses the distribution of beneficiaries according to the income generation rate. It reveals that majority of the beneficiaries (52%) were under the higher range of income generation rate (more than 50%). Mean Income generation rate in Animal Husbandry was found to be the
TABLE 5.2
Distribution of Sample Beneficiary Households According to Income Generation Rate

<table>
<thead>
<tr>
<th>Income Generation Rate %</th>
<th>Number of Beneficiary Households Engaged in</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Agricultural Activities</td>
<td>Animal Husbandry Activities</td>
</tr>
<tr>
<td></td>
<td>176</td>
<td>135</td>
</tr>
<tr>
<td>0 - 25</td>
<td>9</td>
<td>29</td>
</tr>
<tr>
<td>26 - 50</td>
<td>47.22</td>
<td>71.11</td>
</tr>
<tr>
<td>Above 51</td>
<td>24</td>
<td>130</td>
</tr>
</tbody>
</table>

| Mean Income Generation rate (%) | 43.39 | 63.54 | 42.90 | 54.30 |

Note: 1. Figures in parentheses represent percentage distribution.

2. Calculated Chi-square value is 61.05 against table value 9.49 at df = 4 at 5 per cent level.

Source: Field Survey data.

Highest (63.54%) followed by Agriculture (43.39%) and ISB (42.90%). It was observed during the study that there was a direct relationship between income generation and pre-assistance income level of the beneficiary households. Further, chi-square test was applied to test the significance
of relationship between income generation rate and different IRDP schemes. The test rejected the null hypothesis that there is no significant relationship between income generation rate and the IRDP schemes. The income generation rate was found to be distinctly favourable in case of Animal Husbandry.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Number of Beneficiaries</th>
<th>Mean Income per beneficiary per annum</th>
<th>Mean Income Generation Rate %</th>
<th>Z-Test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Without Schemes</td>
<td>With Schemes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agriculture</td>
<td>36</td>
<td>6601.39</td>
<td>9465.56</td>
<td>43.39</td>
</tr>
<tr>
<td></td>
<td>(2085.51)</td>
<td>(4005.60)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Animal Husbandry</td>
<td>135</td>
<td>6349.41</td>
<td>10383.74</td>
<td>63.54</td>
</tr>
<tr>
<td></td>
<td>(1776.06)</td>
<td>(4433.24)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industry Service and Business</td>
<td>79</td>
<td>5908.67</td>
<td>8443.48</td>
<td>42.90</td>
</tr>
<tr>
<td></td>
<td>(2049.01)</td>
<td>(3672.81)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Sample</td>
<td>250</td>
<td>6246.42</td>
<td>9638.40</td>
<td>54.30</td>
</tr>
<tr>
<td></td>
<td>(1919.44)</td>
<td>(4219.86)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: 1. Figures in Parentheses represent standard deviations.
2. *Significant at 1 per cent level.

Source: Field Survey data.
In addition to the classification of sample beneficiary households according to income generation and income generation rate, it is of interest to understand their mean income with and without adoption of IRDP schemes. The percentage increase in the mean income can indicate the net result of IRDP. The mean income and the percentage increase therein have been shown in Table 5.3. The table reveals that the average change in beneficiary households' income, with and without the scheme, was the highest in the case of animal husbandry activities (63.54%) followed by agriculture (43.39%) and Industries, Service and Business (42.90%). The overall mean income per beneficiary household which was Rs.6246.42 without the adoption of the scheme increased to Rs.9638.40 with adoption of the scheme which is an increase of 54.30 per cent.

Since the data used for making these calculations pertain to the beneficiaries who got assistance one or two years before from the time of survey, the overall increase of 54.30 per cent in their income during this time span appears to be significant. Further the application of Z test to understand the significance of the difference between mean values reveals that income generated per beneficiary
household was found to be statistically significant (at 1% level) in agriculture, animal husbandry and Industries Service and Business (ISB) and the total sample.

5.3.2 Poverty-Alleviation Effects of IRDP

IRDP aimed at lifting the beneficiary families above the poverty line. An important indicator of the success or otherwise of the programme was the number of beneficiary household crossing the poverty line. The ability of the beneficiary family to cross the poverty line depends on two factors, namely the family income prior to getting the IRDP asset and the net additional income after operating the asset. The pre-assistance family income is relevant because it determines the distance which the family has to travel on the income scale to reach the poverty line.

In this section an attempt is made to assess poverty alleviation effects of IRDP schemes. One way to measure poverty alleviation effect on the beneficiary is to examine the inter-strata movement of the beneficiaries, that is the movement upward in the income ladder in their attempt to cross the poverty line. For the purpose of the present analysis, selected sample household beneficiaries were classified under four income groups, namely Rs.0 to 6000,
Rs.6,000 to 8,500, Rs.8,500 to 11,000 and above Rs.11,000. This is done because, under the programme, poverty line has been defined in terms of the annual income of the family. The poverty line adopted in rural areas is at the income level of Rs.11,000 per annum per family with effect from 1.4.92. Since the objective of IRDP is to assist the poorest of the poor first, the assistance to the rural family having an annual income below a 'cut-off'line of Rs.8500/- constitutes the target group. Even among them families with annual income below Rs.6000/- are assisted first.

Going by this yard stick and taking the income distribution of selected households with and without IRDP schemes, it was possible to find out the number of households who were able to cross the poverty line. The classification of sample household beneficiaries according to the above income groups as well as scheme-wise, and all schemes put together with and without IRDP schemes, are presented in Table 5.4.
<table>
<thead>
<tr>
<th>Income Groups (in Rs.)</th>
<th>Without IRDP Schemes</th>
<th>With IRDP Schemes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Agricultural Activities</td>
<td>Animal Husbandry Activities</td>
</tr>
<tr>
<td>------------------------</td>
<td>------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>6000</td>
<td>16</td>
<td>63</td>
</tr>
<tr>
<td>(44.45)</td>
<td>(46.67)</td>
<td>(60.76)</td>
</tr>
<tr>
<td>8000</td>
<td>12</td>
<td>48</td>
</tr>
<tr>
<td>(33.33)</td>
<td>(35.55)</td>
<td>(27.85)</td>
</tr>
<tr>
<td>11000</td>
<td>8</td>
<td>24</td>
</tr>
<tr>
<td>(22.22)</td>
<td>(17.78)</td>
<td>(11.39)</td>
</tr>
</tbody>
</table>

| Total                  | 36                     | 135                         | 79                                          | 256   | 24                     | 84                          | 53                              | 161   |
|                        | (100)                  | (100)                       | (100)                                       | (100) | (100)                  | (100)                       | (100)                           | (100) |

Figures in parentheses represent percentage distribution.

: Field Survey data.
The persual of Table 5.4 shows that after the adoption of IRDP schemes 161 (64.40%) beneficiaries were below the poverty line, while it was 250 (100%) without adoption of schemes. It shows the progress in families shifting from lower income group to higher income group. With out adoption of the schemes, there were 127 (58.80%) beneficiaries in the group of below Rs.6000, while with the adoption of the schemes there were only 64 (25.60%) such families. This shows that some of the beneficiaries had crossed over either to income group of Rs.6000-8000 or higher. In the income group of Rs.8500-11000, the number of beneficiaries were 41 (16.40%) without schemes, whereas this number rose to 58 (23.20%) with schemes which shows that some of the beneficiaries in the income groups of Rs.6000-8000 or below Rs.6000 had shifted to this group. Among the different schemes, in relative terms, the highest percentage (37.78%) of beneficiaries who could comfortably cross the poverty line were in the sphere of Animal Husbandry (37.78%) followed by Agriculture (33.33%) and ISB (32.91%). In all, those who spilled over to the income level of above Rs.11000 were 89 who constitute 35.60 percent of the overall sample.
5.3.3 Factors Influencing Income Generation: Multiple Correlation and Regression Analysis

In this section an attempt is made to study the relative significance of factors which influence the income generation pattern of IRDP schemes. This was done through Multiple Correlation and Regression Analysis. The regression model was fitted for the total sample as well as for three broad groups of schemes namely Agriculture, Animal Husbandry and Industries, Service and Business (ISB). Thus in all, four regression equations were fitted.

The regression models are represented as $AG$ (Agriculture), $AH$ (Animal Husbandry) $ISB$ (Industries, Service and Business) and $TS$ (Total Sample). The corresponding multiple determination and calculated $F$-test values with corresponding degrees of freedom are represented as $R^2_{AG}$, $R^2_{AH}$, $R^2_{ISB}$, $R^2_{TS}$ and $F_{AG}(n_1 n_2)$, $F_{AH}(n_1 n_2)$, $F_{TS}(n_1 n_2)$ respectively.

The percentage contribution of each of the explanatory variables to the total explained variation of dependent variable is calculated to obtain a more definite idea of the relative importance of each explanatory variable in the regression model. The summary of regression results is presented in Table 5.5.
The regression equations and the analysis based on the regression results are presented and discussed in the following paragraphs.

**TABLE 5.5**

Factors Determining Income Generation
Summary of Regression Results

<table>
<thead>
<tr>
<th>Explanatory Variable</th>
<th>Agricultural Activities (Yg AG)</th>
<th>Animal Husbandry Activities (Yg AH)</th>
<th>Industries Service and Business (Yg ISB)</th>
<th>Total Sample (Yg TS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-786.001</td>
<td>-394.446</td>
<td>-882.867</td>
<td>41.850</td>
</tr>
<tr>
<td>Income without Scheme (Y0)</td>
<td>0.06</td>
<td>0.15</td>
<td>0.31</td>
<td>0.02</td>
</tr>
<tr>
<td></td>
<td>(0.468)</td>
<td>(2.832)</td>
<td>(7.996)</td>
<td>(0.674)</td>
</tr>
<tr>
<td></td>
<td>[6.58]</td>
<td>[9.40]</td>
<td>[38.39]</td>
<td>[1.56]</td>
</tr>
<tr>
<td>Capital Cost of the Scheme</td>
<td>0.23</td>
<td>0.03</td>
<td>0.06</td>
<td>0.07</td>
</tr>
<tr>
<td></td>
<td>(4.421)</td>
<td>(0.810)</td>
<td>(4.096)</td>
<td>(3.667)</td>
</tr>
<tr>
<td></td>
<td>[42.62]</td>
<td>[3.97]</td>
<td>[11.08]</td>
<td>[10.57]</td>
</tr>
<tr>
<td>Value of Livestock Asset holding at the time of assistance (Lg)</td>
<td>0.22</td>
<td>0.59</td>
<td>0.17</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>(2.551)</td>
<td>(9.241)</td>
<td>(4.149)</td>
<td>(14.358)</td>
</tr>
<tr>
<td></td>
<td>[20.53]</td>
<td>[52.59]</td>
<td>[16.92]</td>
<td>[45.97]</td>
</tr>
<tr>
<td>Size of Landholdings at the time of assistance (Lg)</td>
<td>252.77</td>
<td>137.53</td>
<td>178.64</td>
<td>288.73</td>
</tr>
<tr>
<td></td>
<td>(3.633)</td>
<td>(1.694)</td>
<td>(5.276)</td>
<td>(7.259)</td>
</tr>
<tr>
<td></td>
<td>[28.51]</td>
<td>[8.58]</td>
<td>[15.44]</td>
<td>[19.34]</td>
</tr>
<tr>
<td>Dependency Ratio (Dg)</td>
<td>-374.97</td>
<td>-844.93</td>
<td>-845.30</td>
<td>-1325.68</td>
</tr>
<tr>
<td></td>
<td>(-0.872)</td>
<td>(-2.361)</td>
<td>(-3.047)</td>
<td>(-8.322)</td>
</tr>
<tr>
<td></td>
<td>[-5.83]</td>
<td>[-0.18]</td>
<td>[-0.54]</td>
<td>[-1.49]</td>
</tr>
</tbody>
</table>
### Summary Table

<table>
<thead>
<tr>
<th>Explanatory Variable</th>
<th>Agricultural Activities ($Yg\ AG$)</th>
<th>Animal Husbandry Activities ($Yg\ AH$)</th>
<th>Industries Service and Business ($Yg\ ISB$)</th>
<th>Total Sample ($Yg\ TS$)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Skills and Capabilities ($S_s$)</strong></td>
<td>n: -11.60 (S 5) [-0.35]</td>
<td>n: -35.59 (-0.141) [-0.22]</td>
<td>n: 404.65 (6.731) [8.23]</td>
<td>n: 43.33 (0.897) [0.41]</td>
</tr>
<tr>
<td><strong>Size of Market ($S_m$)</strong></td>
<td>***: 177.53 (1.913) [6.87]</td>
<td>**: 620.50 (6.595) [24.56]</td>
<td>*: 326.90 (3.952) [9.70]</td>
<td>*: 590.06 (9.952) [21.85]</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.9938</td>
<td>0.9870</td>
<td>0.9922</td>
<td>0.9821</td>
</tr>
<tr>
<td>F-Statistic ($n1\ n2$)</td>
<td>638.65 (7,28)</td>
<td>1381.08 (7,127)</td>
<td>1298.23 (7,71)</td>
<td>1895.74 (7,242)</td>
</tr>
<tr>
<td>Durbin Waston</td>
<td>0.9207</td>
<td>0.7856</td>
<td>1.9743</td>
<td>0.7196</td>
</tr>
<tr>
<td>Number of Observations</td>
<td>36</td>
<td>135</td>
<td>79</td>
<td>250</td>
</tr>
</tbody>
</table>

**Note:** Figures in brackets below the co-efficient values are 't' values. Figures in brackets below the 't' values are percentage contribution of explanatory variable to total variation. * ** *** denotes significance at 1 per cent, 5 per cent and 10 per cent levels respectively. 'n' not significant.

**Source:** Field Survey Data.
Agricultural Activities

Most of the beneficiaries assisted under the scheme are small and marginal farmers who depend upon big farmers for cultivation of their land and for their wage employment. The assistance under the scheme intends not only to reduce their dependence, but also to generate extra income for them. The contribution to income generation through function $Y_{gAG}$ for the beneficiaries of agricultural activities is presented and discussed below:

$$R^2_{AG} = 0.9938 \quad F_{AG}(7, 28) = 638.65$$

$$Y_{gAG} = -766.001 + 0.06Y_0 + 0.23C + 0.22L_s + 252.77L_h - 374D_r$$

$$(6.58) (42.62) (20.53) (28.51) (-5.38)$$

$$- 11.60 S_s + 177.53S_m$$

$$( -0.35) (6.87)$$

Note: Figures in brackets are percentage contributions of explanatory variable to the total variation.

It can be observed that function $Y_{gAG}$ has 99.38 per cent of variation. While estimating the contribution of explanatory variables influencing income generation in agricultural activities, it was observed that 'Capital cost of the asset' contributed the highest (42.62 per cent) followed by 'Size of Landholding' (28.51 per cent) and 'Value of Livestock assets at the time assistance' (20.53 per cent).
The positive and significant correlation between these variables and income generation suggest that higher the values of these variables, the higher would be the income generation. The variable, 'size of market for the scheme' contributed to the extent of 6.87 per cent and is significant. During the course of study, it was observed that the activity under the Agriculture scheme did not always provide full time occupation and the income generated under the scheme was seasonal in case of many respondents. It was reported by many beneficiaries that if more work was made available, the scheme could prove to be more profitable. In this function the contribution of 'family income without scheme' in explaining the variation was positive but not significant, indicating that it could not help the beneficiaries significantly in generating income from the scheme. The skills and capabilities of the beneficiary households did not contribute positively and significantly indicating that skills and capabilities for this scheme were of negligible importance. As expected, dependency ratio has contributed (5.38 per cent) negatively in income generation and it is insignificant.
Animal Husbandry Activities

It is found that the major type of income generating asset in the study area is animal husbandry. It has already been stated that 54 per cent of the sample beneficiary opt for animal husbandry schemes and mainly for milch animals. It may be due to the fact that the animal husbandry is very much based on agriculture. It is also observed during the course of the study that the small and marginal farmers and agricultural labourers hardly get 90 to 120 days labour work in farm activities and during rest of the year they remain unemployed. Thus, dairy farming and other animal husbandry activities are best suited subsidiary occupations for them. Further enquiries with block development officials revealed that though the thrust was being shifted to ISB and tertiary sector, the demand for animal husbandry activities was still there. The regression results and analysis with respect to function $Y_g \text{ AH}$ are given below:

$$R^2 \text{ AH} = 0.9870 \quad F_{\text{AH}(7,127)} = 1381.08$$

$$Y_g \text{ AH} = -394.45 + 0.15Y_0 + 0.03C_g + 0.59L_s + 137.53L_h$$

$$- 844.93D_r - 35.59S_s + 620.50S_m$$

Note: Figures in brackets are percentage contributions of explanatory variables to total variation.
Function $Y_{g\,AH}$ explains the variation in income generation for animal husbandry beneficiaries to the extent of 98.70 per cent. While estimating the percentage contribution of each of the explanatory variables in the explained variation it was observed that the major contribution (52.59 per cent) was made by the variable 'value of livestock assets'. It implies that the impact on income generation through animal husbandry programme was higher in the case of such beneficiaries who possess livestock, at the time of their identification as beneficiaries of IRD programme. The 'size of market for the end products of the scheme' explains the next higher percentage of variation (24.56 per cent) in income generation of the scheme. The relationship suggests that adequate marketing facilities particularly for the milch animal beneficiaries are essential.

It is obvious that 'capital cost of the asset' did not indicate significant contribution to the income generation of the scheme. It suggests that the unit cost sanctioned under the scheme was not optimum for making sufficient income generation possible. It was found during the survey that due to inadequate investment size, in many cases the beneficiaries had either purchased less than the minimum number prescribed or had purchased inferior quality animals.
This had a telling effect on the success of the project and on their income generating capacity. The respondents contended that if the quality of the animal was poor, getting the desired quantity of milk, would become difficult.

The other variables which made significant contribution to the income generation are 'family income without schemes' (9.40%) and size of land holdings' (8.58%). The positive and significant correlation between 'income generation and family income without scheme' indicates that as 'family income without scheme' rises, income generation tends to increase. It implies that the beneficiaries have used some portion of their income in acquiring fodder, feed and veterinary services and maintaining their assets procured through IRDP schemes. 'Size of land holdings' is found to be positively and significantly correlated with income generation from the scheme. Its implication is that the beneficiaries who owned land assets could maintain their cattle in a better manner than those who were not possessing land. The study also points out that the inadequate availability of grazing lands, insufficient fodder and feed for the cattles, particularly in case of the landless labourers, coupled with the high cost of maintaining cattles during their dry period, were the key reasons for the beneficiaries not achieving the expected results.
As in the case of agricultural activities, the variable skills and capabilities of the beneficiary had contributed negatively and it is insignificant. It indicates that the scheme does not require any formal training or need to acquire new skills. The 'dependency ratio' has shown significant negative contribution to the income generation which implies that increase in the number of dependent persons in the beneficiary family adversely affected the income generation and vice versa. However this variable explained less than one per cent (-0.18 per cent) variation.

**Industries, Service and Business (ISB) Activities**

There were about 32 per cent beneficiaries in the sample, who had taken loans for various activities for industries, service and business. The schemes are aimed at providing vast scope for self-employment under non-farm activities. The regression results are presented and discussed below:

\[
R^2_{ISB} = 0.9922 \quad F_{ISB}(7,71) = 1298.23
\]

\[
Y_{ISB} = -882.87 + 0.31Y_o + 0.06C + 0.17L^5 + 178.64L^7 - 845.30D_r + 404.65S^5 + 326.90S^m
\]

(38.39) (11.08) (16.92) (15.44) (-0.54) (8.23) (9.70)

Note: Figures in brackets are percentage contributions of explanatory variables to total variation.
It can be observed that for ISB schemes 99.22 per cent of variation in income generation was explained by function $Y_g$ ISB. While estimating the relative importance of the explanatory variables to the total predicted variation of dependent variables, it can be seen that 'family income without scheme' explained the highest per cent of variation (38.39%) followed by 'value of livestock assets' (16.92%) 'size of land holdings' (15.44%) 'capital cost of the asset' (11.08%), 'size of market for the scheme' (9.70%) and 'skills and capabilities of the beneficiary household' (8.23%). As expected the variable 'dependency ratio' contributed negatively to the extent of 0.54 per cent.

It is significant to note that unlike in the case of other two schemes (Agriculture and Animal Husbandry), all the variables (except dependency ratio which is significant and contributes negatively) have significantly and positively affected the levels of income generation in ISB activities. The variable 'family income without scheme' is found to be one of the most important factors influencing 'income generation' in case of ISB activities. It suggests the positive association between the two. Its implication is that those beneficiaries who have higher family income at the
time of assistance is able to generate more income than others as they are able to meet the initial promotional expenses and subsequently their working capital requirements without much difficulty. One of the common problems reported by the respondents during the survey was inadequate provision of working capital. In order to make ISB projects fully sustainable and productive, it is essential to provide not merely assistance once in the form of fixed capital for acquiring assets, but also to support and care for their initial promotional expenses and working capital requirements. In the absence of such support and care the beneficiaries are not able to generate a continuous stream of income from the projects and consequently the assets created have become non-operational or non-viable. This is especially true in the case of beneficiaries who have lower levels of income at the time of assistance. It was also observed during the study that in order to bear initial promotional expenses, to cover inadequate financial assistance and to meet the working capital requirements, some of the beneficiaries were compelled to borrow from non-institutional sources of credit at high rates of interest which means a rise in the debt asset ratio and growing debt servicing burdens.
The variables 'size of land holding' and 'value of livestock assets' possessed by the beneficiaries at the time of assistance have also significantly and positively affected the level of income generation in ISB activities. The implication is that those beneficiaries who possessed land and livestock assets at the time of assistance got more income from the scheme than others who did not possess such assets. It suggests that the former used these assets not only to maintain or nourish the IRDP assets but also used them to diversify and expand their activities.

The 'capital cost of the assets' is found to be positively and significantly correlated with 'income generation of ISB activities. Its implication is that the higher the investment size the higher would be the income generation. The skills and capabilities of the beneficiary households play an important role particularly in the case of ISB activities in income generation. It is significant to note that in case of both agriculture and animal husbandry activities the variable has contributed negatively and is not significant. But in the case of ISB activities the variable is found to be positively and significantly correlated with income generation. It is found during the survey that those beneficiaries who possessed the suitable technical and marketing skills were able to generate more income than others.
The 'size of market for the scheme' is found to be a significant factor influencing the levels of income generation. It was observed during the course of study that all activities under ISB activities did not enjoy equal opportunities for sale and marketing, for different reasons. In case of some business and service activities the demand aspect was not properly determined before financing the assets and as a result the local markets were over-saturated. For some other activities like Korai mate weaving and coir rope-making, markets were not available locally to full capacity, as a result the beneficiaries had to search for outstation markets. For some other ISB beneficiaries, products were of lower quality and were not able to compete with bigger markets. Thus lack of adequate marketing support for various activities led to low income generation from the schemes. It is significant to note here that schemes generated in excess of what the area could absorb not only affected the income generation of IRDP beneficiaries but also affected the income of those non IRDP households who were already engaged in such activities. The variable dependency ratio was found to be negatively and significantly correlated with income generation. It suggests that income generation tended to decrease with the increase in number of dependents in the family.
Total Sample

The regression results with respect to total sample beneficiaries taken together are presented and discussed below.

\[ R^2 \text{ TS} = 0.9821 \quad F_{\text{TSB}(7,242)} = 1895.74 \]

\[ Y_{\text{g TS}} = 41.85 + 0.02Y_o + 0.07C_c + 0.50L_5 + 288.73L_h - 1325.68D_r + 43.33S + 590.06S \]

\[ (1.56) \quad (10.57) \quad (45.97) \quad (19.34) \quad (-1.49) \]

\[ + 0.41 \quad + (21.85) \]

Note: Figures in brackets are percentage contributions of explanatory variables to total variation.

To take sample beneficiaries together, it can be observed that 98.21 per cent variance to income generation of the IRDP schemes is associated with the selected explanatory variables for the study. While estimating the contribution of each explanatory variable to the income generation of the schemes it was observed that 'the value of livestock assets' possessed by the beneficiaries at the time of assistance explained the highest percentage of variation (45.97%), followed by 'size of market for the scheme' (21.85%), 'size of land holdings' (19.34%), 'capital cost of the assets' (10.57%), 'family income without schemes' (1.56%)
and 'skills and capabilities of the beneficiary household' (0.41%). The variable dependency ratio has contributed negatively to the extent of 1.49 per cent.

The implications of these variables for income generation from the IRDP schemes are as follows:

Family income of the beneficiaries household without scheme positively contributed to the income generation of the scheme but it was not significant. It suggests that the income of many beneficiaries was not adequate to help them in the income generation of the scheme. The variables, 'value of their livestock assets' and 'size of land holding possessed by the beneficiaries' at the time of assistance played an important role in the income generation of IRDP schemes. It suggests that income derived by the beneficiaries from these assets helped them to a larger extent to maintain or nourish the IRDP assets. 'Capital cost of the scheme' is found to be a significant factor influencing the levels of income generation. Its implication is that the higher the capital cost of the scheme the higher was the income generation. 'The size of market for the scheme' had also significantly and positively affected the income generation of the IRDP activities. It suggests that those schemes which had adequate marketing support could
than others. The 'Variable skills and capabilities of the beneficiaries household' is found to be positive but could not significantly influence the level of income generation of the IRDP schemes. It suggest that for some IRDP schemes skill status of the beneficiary was of neglicable importance and for some other schemes it was essential and could affect the level of income generation. The dependency ratio was found to be negatively and significantly correlated with income generation. Its implication is that increase in number of dependent persons in the family adversely affected the level of income generation of the schemes. It was found during the study that the variable affected more adversely in the case of beneficiaries who did not have land or livestock assets at the time of assistance.

5.5 SUMMARY

The main points from the analysis of income generation through IRDP schemes may be summed up as follows:

Most of the beneficiaries reported substantial increase in their income due to IRDP assistance. On an average each beneficiary household was able to generate an additional income of Rs.3392 per annum. The income generating capacity of IRDP schemes varied considerably among Agriculture, Animal Husbandry and Industries, Service and Business (ISB) schemes.
The highest income was generated by animal husbandry activities, followed by agriculture and ISB. Among the various schemes, income generation rate was found to be significantly favourable in animal husbandry activities. The average change in beneficiary households' income (income generation rate) was the highest in case of animal husbandry activities (63.54%) followed by agriculture (43.39%) and industries service and business (42.90%). The overall mean income per beneficiary household which was Rs. 6246.42 per annum without adoption of IRDP schemes increased to Rs.9368.40 per annum with adoption of scheme with an income generation rate of 54.30 per cent.

IRDP aimed at lifting the beneficiary families above the poverty line. It is perhaps not possible for all IRDP beneficiaries to cross the poverty line at one go. This is because all of them do not start from the same income level and secondly the income generating capacity of the schemes adopted by them is not the same in all cases. The yard stick for measuring the success of the programme is the percentage of families who cross the poverty line by attaining an annual income of Rs.11000. Going by this yardstick, the impact of programme on poverty alleviation was rather limited. The study reveals that out of 250 beneficiary households who were
below the poverty line without IRDP schemes, only 89 (35.60%) were able to cross the poverty line. In their case, the incremental income was sufficient to wipe out the initial gap. In the case of remaining beneficiary families the study reveals that there have been shifts in the number of families from lower to higher income groups. It was found during the survey that many households belonging to the higher income brackets had crossed the poverty line as compared to those belonging to the lower income groups indicating that the latter needed incremental income in order to rise above the poverty line.

Multiple Regression Analysis technique used to study the relative significance of the various factors influencing income generation of IRDP schemes, has produced the following results:

The regression model explained about 99 per cent variation in income generation as being associated with a set of explanatory variables selected for the study in all the schemes of IRDP and the total sample.
The variables, 'value of livestock assets' and 'size of land holdings' possessed by the beneficiary households at the time of assistance and 'size of the market for the scheme' were found to be the most important factors influencing income generation in each of the schemes under IRDP and the total sample. This implies that those beneficiaries who possessed livestock and land assets at the time of assistance could generate more income from the schemes than others. The positive and significant association between 'size of market for the scheme' and income generation indicated that all schemes under IRDP did not enjoy equal opportunities for sale and marketing and the scheme which had adequate marketing support generated more income than those which were not having adequate marketing support.

The 'capital cost of the scheme' was found to be a significant factor influencing the levels of income generation. The relationship between the two was positive and significant in agriculture and ISB activities and the total sample. Its implication is that the higher the investment size of the scheme, the higher was the income generation. However in animal husbandry activities, the capital cost of the scheme could not significantly influence the income generation of the scheme. It suggests that the
unit cost finance for animal husbandry scheme may not be optimum through which significant income generation is possible.

The variable ‘family income without scheme’ had significantly and positively affected the level of income generation in animal husbandry and ISB activities. The positive association between the two suggests that the beneficiaries had used some portion of their income in maintaining the IRDP assets and meeting their working capital requirements which were absolutely essential for deriving a continuous stream of income from the assets. However the variables could not significantly influence the level of income generation in agricultural activities and the total sample. It is due to the low income level of the beneficiaries. The variable dependency ratio was found to be negatively correlated with income generation in all the activities of the scheme and the total sample. Its implication is that increase in number of dependent persons in the family adversely affected the level of income generation of the schemes.

The ‘skill and capabilities of the beneficiary household’ did not contribute positively and significantly in Agriculture and Animal husbandry activities indicating that
skills and capabilities for these schemes were of negligible importance. However it played an important role in the income generation of ISB activities. It suggest that those beneficiaries who had adequate skills could generate more income than others, particularly in ISB activities. In total sample this variable was found to be positive but could not significantly influence the levels of income generation of IRDP schemes. It suggests that for some IRDP activities it was essential that the beneficiaries should possess skills and capabilities to manage their IRDP projects efficiently but for some other activities they were not so essential.