1

Introduction
The dimensions of the agricultural sector engaging nearly 62 per cent of the population and contributing about 30 per cent to the national income compel us to an inescapable emphasis in any analysis of rural economic scenario in India. Over the last four decades, agriculture has made important strides through substantial development and change in its level of production, cropping pattern and intensity of input use. The new era in the agricultural development can be traced to the launching of Intensive Agricultural District Programme in 1960-61. Since then the high yielding variety programme, plant protection measures, use of chemical fertilisers etc., have influenced the agricultural production in India and thereby income of the farmers has also increased in absolute terms. Now, the opinion of the agricultural scientists is in favour of the second Green Revolution in agricultural sector. Obviously, when the task of the second Green Revolution is accomplished, the question of income distribution in rural areas would again assume importance.
Setting of the Problem:

The existing literature* clearly indicates that, in the course of rapid agricultural development, the economic and social environment in rural areas has undergone a marked transformation. The phenomenon of agricultural development frequently raises very pertinent questions:- How have the gains of agricultural development been distributed among different categories of the farming community? Why the trickle down theory does not operate so as to help the marginal and small farmers? Is the relative income disparity widened due to the agricultural development? How has the agricultural development affected the distribution of income in developed, moderately developed and less developed villages? The present study is an attempt to find out answers to these old but important questions in a specific regional context.

Income Distribution and its Significance:

We have a wide range of discussions in economic literature on the relationship between growth and development. It was customary to use growth and development interchangeably. However, economists observed that development affects the distribution of income. It has been pointed out that development along with creating more out

* Details in Chapter II
put was concerned with equity.\textsuperscript{1}

In evaluating the level of development, paramount importance has been given to distributional justice. Until recently the measure of development was Gross National Product; but it has got its own limitations. Now, there is a shift from this macro economic indicator of development to micro economic aspect of development - income. Field argues that, "Income is the single best measure of economic condition and that change in income is the single best measure of improvement in that position."\textsuperscript{2}

The pattern of income distribution influences production, level of production and the market structure, flow of investment and employment.\textsuperscript{3}. The economic and social life of people is determined by the level of income. Income is required not only for minimum biological subsistence, but also for minimum freedom, power and self respect.\textsuperscript{4} Therefore, distributional objectives should be treated as an integral part of development strategy. In fact, without a better knowledge of the trends in secular income structure and of the factors that determine them, our understanding of the entire process of economic growth is limited.\textsuperscript{5}

Widening of income inequality perpetuates social tension. For a given level of income, a higher degree of
inequality reduces social welfare. Hirschman rightly pointed out that in the early stage of economic development due to the substantial tolerance of the people disparity widens. If the disparity will not narrow down in the course of development, there is bound to be trouble and perhaps disaster.

Therefore, the distribution of income is a very important issue which attracts the attention of social scientists in general. As early as 1912, Fisher viewed that "No other problem has so great a human interest as this (the distribution of personal income), and yet scarcely any other problem has received so little scientific study." This opinion was more or less reiterated by Atkinson in 1975: "......... Far too little is known about this central subject. This is an indictment of economics, but it is also a challenge."

The empirical evidence on size distribution of income is rather scanty in India. There is no census data on the household or the individual income. However, several scholars and institutions in India attempted to analyse the size distribution of income on the basis of data on aggregate consumption collected by the Central Statistical Organisation, income data from tax statistics, Reserve Bank of India, data on household savings and National Sample
Survey data on consumer expenditure. But their reliability is vitiated by the narrow coverage of population and the kind of income; also because of widespread evasion of income, these estimates are of limited value from the point of view of overall distribution. Further, if the objective is to furnish the planners with the requisite information and analysis for devising and applying economic and social correctives for reducing inequalities, a measure of inequality based on consumption expenditure alone provides highly incomplete picture of the existing disparities. Therefore, analysis of income should be supplemented for the objective study of distributional justice. In fact several macro studies referred to in Chapter II indicate that the decline in the distribution of income has not been steady. Various statewise studies on the distribution pattern of rural income have revealed that inequalities in some states were higher and in some others lower. Some scholars have thrown light successfully with the help of empirical evidences on the increasing and decreasing trends in the distribution of rural income. But these studies have limited applicability because of their narrow coverage and they fail to compare the inequality of income among different categories of farming community in the regions with different levels of development.
Objectives:

The specific objectives of this study are as follows:

1. To examine the pattern of income distribution in rural areas - income distribution among marginal, small, semi-medium, medium, and large farmers and agricultural labourers and comparison of these categories between the developed, moderately developed and less developed blocks;

2. To assess the distribution pattern of land holdings among different size groups in three blocks mentioned;

3. To understand and analyse the consumption expenditure pattern of different categories of farmers mentioned above in the three blocks;

4. To study the extent of income inequality among the farm size groups;

5. To examine the pattern of current farm expenditure and its impact on the distribution of income;

6. To make an assessment of savings pattern of different farm size groups and,

7. To make an assessment of the impact of non-farm
activities on income distribution of farm size groups.

The hypotheses of this study will be presented after a thorough review of existing literature.

Scope of the Present Study:

In this study we have carried out an integrated investigation of level of agricultural development, production, distribution of landholdings, income, consumption expenditure, non-farm incomes, savings and income and expenditure pattern of landless agricultural labourers. Therefore, this is an indepth micro analysis of income distribution in relation to agricultural development of Shimoga district in Karnataka State.

Selection of the Study Region and its Significance:

The study region has been selected for the following two reasons - Firstly, Shimoga district has experienced a significant diversification of the agricultural economy through shift in the cropping pattern, HYV programme, use of modern inputs etc.; and it emerged as an agriculturally developed district by the dawn of 1970s. Even in terms of industrialisation, the district has flourished well. Therefore, it is apt to look into the income distribution pattern of the district; and, Secondly, within the district, it is possible to identify developed, moderately developed
and less developed villages mainly in terms of irrigation.

Methodology:

This study is based both on secondary and primary data. All the relevant secondary data used to analyse the agricultural development of Shimoga district were collected from the published brochures of Directorate of Economics and Statistics, Government of Karnataka, Bangalore, District Statistical office, Shimoga, Principal Agricultural Office, Shimoga and village revenue records. However, despite the best possible efforts, it was not possible to get reliable secondary data regarding the production and other conditions of agriculture at taluk and village levels.

(i) Selection of Villages:

The three villages were chosen keeping in mind the broad framework of the access to irrigational facilities that the different categories of farmers have had. It is important in the light of the fact that, under the condition of ceteris paribus, irrigation increases productivity of land, aids in higher cropping intensity, as also in the cultivation of more remunerative crops. The villages were selected on the basis of development performance (Details in Chapter IV) with the help of the District Village Directory prepared by the Census of India 1971 and 1981.
(ii) Selection of Samples:

The farmers of the three villages were classified into five groups according to the size of landholdings. On the basis of number of households in the three villages totally 300 samples were selected. These 300 apportioned samples were classified into six classes adopting proportional sampling technique and due representation has been given to all the categories of the farming community and landless agricultural labourers. Out of the total population six per cent and out of the total number of households approximately thirty per cent samples were interviewed. From the samples so selected, the data were collected with the help of a specially prepared interview schedule. The data regarding cropping pattern, yield, income, operational expenses, consumption expenditure etc., were collected pertaining to the agricultural year 1994-95. Table 1.1 (See next page) shows the category-wise samples selected in the three study blocks. It can be seen from the above table that the total sample size in Block-1, Block-2 and Block-3 comes to 100, 140 and 60 respectively.
### TABLE - 1.1

**Category-wise Sample Selected in the Study blocks**

<table>
<thead>
<tr>
<th>SI No.</th>
<th>Category</th>
<th>Size of holdings (Hectares)</th>
<th>Balemarana halli</th>
<th>Kariganur Basavapura</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Block-1</td>
<td>Block-2</td>
<td>Block-3</td>
</tr>
<tr>
<td>A. Cultivators:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>Marginal holdings</td>
<td>0-1</td>
<td>40</td>
<td>15</td>
</tr>
<tr>
<td>II</td>
<td>Small Holdings</td>
<td>1-2</td>
<td>18</td>
<td>10</td>
</tr>
<tr>
<td>III</td>
<td>Semi-Medium Holdings</td>
<td>2-4</td>
<td>15</td>
<td>70</td>
</tr>
<tr>
<td>IV</td>
<td>Medium Holdings</td>
<td>4-10</td>
<td>06</td>
<td>18</td>
</tr>
<tr>
<td>V</td>
<td>Large Holdings</td>
<td>10 and above</td>
<td>04</td>
<td>07</td>
</tr>
<tr>
<td></td>
<td>Total Cultivators</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>83</td>
<td>120</td>
<td>49</td>
<td></td>
</tr>
<tr>
<td>B. Landless Agricultural Labourers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>20</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>100</td>
<td>140</td>
<td>60</td>
</tr>
</tbody>
</table>

**Note:**

To analyse the data collected the following techniques have been used:

1. Lorenz–Gini Technique:
   (a) Lorenz Curve:

   This graphical device is widely used to represent the size distribution of income. Lorenz curve can be obtained by plotting cumulative percentages of income against corresponding cumulative percentages of households receiving the income. If the Lorenz curve would coincide with the diagonal line, there is equal distribution of income. Any divergence from the diagonal line represents a degree of inequality.

   (b) Gini Ratio:

   A measure that has been widely used to represent the extent of inequality is the Gini coefficient. The higher Gini ratio connotes higher income inequality and vice versa. The following formula is used for calculating Gini coefficient:

   \[
   \text{G.C.} = \frac{1}{100} \left[ (x_1y_2 - x_2y_1) + (x_2y_3 - x_3y_2) + \ldots \ldots \ldots \right]
   \]

   \[
   \left[ (x_n(100) - y_n(100)) \right]
   \]

   Where \( x_1, x_2 \ldots \ldots \) represents the cumulative number of households and \( y_1, y_2 \ldots \ldots \) represents cumulative of
income received by the households.

2. Pareto Coefficient:

The simplified and improved version of Pareto Law is in the form of:

\[ X = AY^{-\alpha} \]

Where \( Y \) is the level of income and \( X \) is the proportion of income receivers, \( A \) and \( \alpha \) are constants. According to Pareto, the value of \( \alpha \) remained constant around 1.5. Greater the value of \( \alpha \) lesser the inequality and vice versa.

3. Elteto And Frigyes Method:

Elteto and Frigyes proposed a set of three inequality measures. They are:

\[ U_1 = (Y - Y_1) / Y \]
\[ V_1 = (Y_2 - Y) / Y_2 \]
\[ W_1 = (Y_2 - Y_1) / Y_2 \]

Where \( Y \) is the mean income of entire distribution.

\( Y_1 \) is the mean income of those people with income less than \( Y \)
\( Y_2 \) is the mean income of those people with income more than \( Y \)
\( U_1, V_1 \) and \( W_1 \) measure inequality in lower, upper, and entire parts of the distribution. In the state of perfect equality, the values of \( U_1, V_1 \) and \( W_1 \) would be zero, and deviation
from zero represents inequality.

4. Coefficient of Variation:

It is simply the standard deviation divided by the mean income level.

\[ C.V. = \frac{S.D}{\text{Mean}} \]

Higher value of this represents income inequality and vice versa.

Lognormality of Income Distribution:

Kakwani suggested a new coordinate system to estimate Lorenz curve. The Lorenz curve for the lognormal distribution is symmetric and, therefore, skewness is zero. To measure the degree of skewness of a Lorenz curve, the equation is

\[ n = a \pi^{\alpha} (\sqrt{2} - \pi)^{B} \]

In log form the equation becomes

\[ \log n = \log a + \alpha \log \pi + B \log (\sqrt{2} - \pi) \]

The value of \( \pi \) and \( n \) are estimated as follows:

\[ \pi = \frac{1}{\sqrt{2}} (F + F_1) \text{ and } n = \frac{1}{\sqrt{2}} (F - F_1) \]

Where \( F \) is the proportion of households and \( F_1 \) is the proportion of income received by the respective households. The constants \( a, \alpha \) and \( B \) are estimated by Ordinary Least Square Method. If \( a = B \) the curve is symmetric and follows lognormal distribution. If \( a < B \) the curve is skewed towards \((1,1)\) and if \( a > B \), the curve is skewed towards \((0,0)\)
Determinants of Farm Income:

A positive relationship exists between the level of adoption of new technology and level of income. To understand the determinants of farm income the following Cobb-Douglas model was used and the relative contribution of each explanatory factor was examined. The model is,

\[ y = a \times x_1^{b_1} \times x_2^{b_2} \times x_3^{b_3} \times x_4^{b_4} \times x_5^{b_5} \times x_6^{b_6} \times x_7^{b_7} \times x_8^{b_8} \times x_9^{b_9} \times x_{10}^{b_{10}} \times x_{11}^{b_{11}} \]

\[ y = \text{Gross farm Income} \]
\[ a = \text{Constant} \]
\[ x_1 = \text{Expenditure on seeds} \]
\[ x_2 = \text{Expenditure on fertilisers} \]
\[ x_3 = \text{Expenditure on manure} \]
\[ x_4 = \text{Expenditure on pesticides} \]
\[ x_5 = \text{Expenditure on diesel/electricity} \]
\[ x_6 = \text{Charges for hiring animals/implements} \]
\[ x_7 = \text{Wages paid out} \]
\[ x_8 = \text{Expenditure on maintenance of garden crops} \]
\[ x_9 = \text{Expenditure on Repairs and maintenance of implements} \]
\[ x_{10} = \text{Expenditure on transportation} \]
\[ x_{11} = \text{Size of landholdings} \]

Theoretically, it is expected that the above mentioned factors can influence the income of the farm families. Through the multiple regression analysis, the
correlation coefficients between the gross farm income and the factors of production have been calculated and, in turn, the distribution of factors of production among the farm families or their ability to acquire the factors of production provide the extent of inequality in the distribution of income. The above mentioned variables are very important in the determination of farm income of the various categories of the peasantry. They are also useful in analysing the inequality in the distribution of income.

Limitations of the present study:

The scope of the present study is limited to the three sample blocks at different levels of agricultural development in Shimoga district of Karnataka. Therefore, the findings of the present study may not be generalised. However, for the areas with similar features, the present study will throw light on the aspects of agricultural development and income distribution.

While collecting the primary data, recall-method was used because in rural areas, respondents do not maintain the records of their income and expenditure. Interview was conducted at the residence of the respondents and the information furnished by the farmers was cross checked and it was found that the recall lapses were negligible. In fact, the data collection was a very sensitive and
interesting exercise.

Chapter outline:

The present study is structured as follows:

Chapter I, as already shown, presents a discussion on growth and development. The objectives and methodology of the study are explained in this chapter. A brief account of the techniques used in the study can also be seen in this chapter.

Chapter II reviews briefly the relevant theoretical as well as empirical literature in the area of agricultural development and income distribution.

Chapter III examines the agricultural development and structural changes in the economy of Shimoga district. A brief account of the district income, human resources and occupational structure can also be seen in this chapter. It also observes the crop yields and they are compared with the State averages. This chapter also explains technological development, development of irrigation, use of fertilisers and cropping pattern in the district.

Chapter IV is based on the field study. This chapter explains the crop production structure and cost of production in the three villages. This chapter also gives
details of consumption expenditure, savings, non-farm incomes in the study villages.

Chapter V explains the pattern of income distribution in the three villages. This chapter is devoted to a comparative study of the pattern of income distribution of different categories of farmers and agricultural labourers in the three villages. The extent of inequity is confirmed by using various statistical techniques.

Chapter VI traces the distribution of consumption expenditure among the different categories of the farming community. This chapter analyses the extent of inequalities in the consumption expenditure. It also clearly indicates the inequality in the distribution of landholdings in the three villages.

Chapter VII contains summary, conclusions and recommendations.
References


11. I.Z. Bhatty, "Inequality and Poverty in Rural India" in T.N.Sreenivasn and P.K.Bardhan (eds), Poverty and Income Distribution in India, Statistical Publishing Society, Calcutta 1974, P.307