CHAPTER - 1

INTRODUCTION: INCOME DISTRIBUTION AND INEQUALITY
INTRODUCTION

The subject matter of income distribution and inequality are of crucial economic issues in global level in general and within a country in particular. This is evident in the shift of focus from theoretical studies to the empirical study on distributive impact of development on various segments of society.

This chapter is divided into three sections. Section A deals with some concept like income distribution and inequality while section B explains importance, methodology, objectives, hypothesis, limitations, etc of this study. The last section describes profile including certain socio-economic scenario of Mizoram.

SECTION A: INCOME DISTRIBUTION

The subject matter of the theory of income distribution is the study of the determination of the share of the factors of production in the total output produced in the economy over a given period. The distribution of income may be functional or size distribution. In the theory of functional distribution of income we study the principles governing the rewards or remuneration of various factors of production for their services or functions performed by them in the process of production\(^1\). The size

distribution of income or what is also called *Personal distribution of income* refers to the distribution of national product not on the basis of individuals' contribution to GNP, but on the basis of productive services owned and commanded by them, usually expressed as distributed among different households in the economy.

The *functional distribution of income* has been treated as primarily a reflection of choices made by individuals through the market. The value of factors is derived from the value of the final product that they cooperate in producing; and the values of final products in turn are determined by choices of consumers among the alternatives technically available. The size distribution of income on the other hand, when it has been analysed at all, has been treated as largely independent of choices made by individuals through the market, except in so far as it affects the price per unit of the factors of production. A difference among individuals or families in the amount of income received are generally regarded as reflecting either circumstances largely outside the control of the individuals concerned, such as unavoidable chance occurrences and differences in national endowment and inherited wealth, or collective action and as donation and subsidies. Milton Friedman says that "The traditional theory of distribution has little to say about the distribution of income among the individual members of the society, and there is no corresponding body of theory that does. The absence of a satisfactory
theory of personal distribution of income and of a theoretical bridge connecting the functional distribution of income with the personal distribution is a major gap in modern economic theory\textsuperscript{1}.

The present study is confined only to the study of size distribution of income of a representative cross section of society.

A.1.1. SIZE INCOME DISTRIBUTION

Size distribution of income can be defined as 'the way in which total national income is divided among the households in a country'. The distribution takes place on the basis of the Socio-Politic-Economic system of a country or the evaluation of effort, labour, capital and efficiency displayed by individuals in a society\textsuperscript{2}.

It means different things to different people. Much of the analysis in this study focuses on the distribution of family income while some economists would argue that per capita income is even more appropriate. Figures on income distribution provide insight into many social, political and economic problems. In dealing with the question of income distribution we should bear in mind that if distribution has a middle and a top it must also have a bottom and somebody must be there. The question is why they are there and how much do they get?

\textsuperscript{2} B.N. Ahuja: \textit{Dictionary of Economics},[New Delhi: Academic (India) Publishers], p-88
Despite the importance of its study, the subject of income distribution has not occupied the central position in economics that one would expect. A glance at the titles in the economic section of any library and bookshop will show that there are relatively few books devoted principally to this topic, especially mathematical and econometrical approach. An analysis of two leading professional journals in Britain and the United States, the American Economic Review and the Economic Journal, reveals that out of more than 1500 articles published in the last 10 years, only some 100 dealt with income distributional question in any form. It is probably fair to say that most textbooks on economics give more prominence to economic efficiency, growth, employment, and the international trade, than to the issues with which this study is concerned\(^1\).

This relative neglect of the distribution of income has not of course passed completely unnoticed and in recent years it has been one of the main criticisms of ‘mainstream’ economists made by radical economist in the United States and elsewhere. According to Lindbeck (1971) "The development of the theory and analysis of distribution problems has been considerably weaker than the development in many other branches of economic during the period since World War II"

\(^1\) D.K. Mal, *Distribution of Income and Wealth during Plans*, (Firma KLM Pvt. Ltd.).
It would be wrong to suggest that economists have always neglected the subject of distribution; indeed classical writers gave it a great deal of importance. Economists' interest in income distribution is as old as modern economics itself. It has cyclical upswings and downswings. Certainly it enjoyed a peak during the time of Ricardo, who wrote to Malthus that “Political economy you think is an inquiry into the nature and causes of wealth...” just as distribution theory reached peaks of popularity during the time of Wicksell - Clark - Wicksteed and, in early 1930's of Hicks and Douglas. The great depression, World War II and the Keynesian revolution brought about a marked decline in professional concern about distribution theory that, until recent times, revived only sporadically. (Ferguson 1972).

A.2. THE CONCEPT OF INEQUALITY

The concept of inequality or equality involves social judgment and as such opinions differ as to how 'inequality is defined'.

As Bauer and Prest (1973) have observed, the term may either be applied quite generally to cases where income or wealth are simply different, just as we might refer to two persons being of unequal height, or be restricted to cases where there is a moral content (i.e. a presumption that equality would be desirable). The mere existence of disparities in income and wealth is not a sufficient basis for statement
about justice or injustice. We need to establish that the people involved are comparable in other relevant aspects. The other relevant aspects are a matter of social judgment, and here are some of the important factors which are likely to be taken into account.

**Resources and needs:** An income received by an individual is to be viewed in relation to his needs as represented by his age, size of family, health, level of education, etc. What is adequate for a healthy person or children may not be adequate for unhealthy or adult man. Therefore, the inequality between individuals is to be assessed in the light of one’s need and resource.

**Tastes and choices:** An individual differs in their choice, preference and taste that lead to different decisions that cause wide difference in their income and inequality. Some individual may prepare to accept low wage and low responsibilities than higher wage and heavy responsibilities. They may also differ in regard to their choices for saving, investment and risk taking that result in a wide disparity in their incomes.

**Age and life cycle:** The distribution of income is also influenced by the age and life cycle of an individual. A person may be richer than the other due to his oldness and had chance of better investment opportunities.

---

person may choose to forgo earnings when young to train for a skilled job, whereas other does not due to their oldness.

Opportunity and outcome: The impact of random chance also plays an important role in the distribution of income. The opportunity and chance of one person may be totally different from others that lead to wide disparities in their income, which means a wide range of inequality. If we are concerned only with equality, then all that is relevant is how they start out - whether the expectation of success is the same for anyone. If we are concerned with equality of outcome, then the working of chance becomes a matter for concern.

Thus we conclude that any inequality in income is not injustice, so too, we should not conclude that difficulties of comparison mean that distributional questions should be ignored.

In this text, the term inequality will mean the mere existence of disparity in income.

A.1.2.1. AXIOMS FOR INEQUALITY

For any formula to be termed as good they have to satisfy certain axioms. Henceforth, any measures of inequality so developed are also to be judged in accordance with their ability to satisfy the given axioms. A consistent and reliable formula for measuring income inequality must satisfy the following axioms.
Let $x_1 \leq x_2 \leq x_3 \leq \ldots \leq x_n$ is an ordered income distribution among 'n' individuals denoted by a non-negative vector $x = (x_1, x_2, \ldots, x_n)$. The inequality measure $\theta(x)$ is defined as a unique function of $x_1, x_2, \ldots, x_n$ satisfying certain desirable properties. These properties may not all be considered desirable at the same time\(^1\).

1. If $y = \alpha x$ ($\alpha > 0$), then $\theta(x) = \theta(y)$.

   This axiom requires that a proportionate increase in overall distribution of income should not result in a change of inequality, which implies that inequality measure is independent of the scale of measurement. This axiom is known as *Scale-invariant* or *Mean-independence*.

2. If the new distribution $y$ is obtained from $x$ by adding a constant amount 'd' to incomes of all individuals, if it follows that -

   (a) If $d > 0$, $\theta(y) < \theta(x)$

   (b) If $d < 0$, $\theta(y) > \theta(x)$

   This axiom requires that equal addition (subtraction) of a constant number to all individuals reduces/increases inequality level. This

axiom corresponds to *Dalton's principles of equal additions to incomes*¹.

3. Inequality remains unaffected if a proportionate number of persons are added at all Income levels. This axiom corresponds to *Dalton's principle of proportionate addition of persons*. Any inequality measures associated with Lorenz curve always satisfy this axiom.

4. If a transfer of income \( d < \frac{h}{2} \) takes place from a person with income \( x \) to a person with lower income \( (x - h) \), the inequality strictly diminished, where \( h \) stands for the difference between the two income.

   If the transfer of income takes place from the richer to the poorer subject to the restriction \( d < \frac{h}{2} \), the new distribution is Lorenz superior. Because the restriction \( d < \frac{h}{2} \) ensures that the transfer is not so large as to reverse the relative position of two (groups of) individuals. This process of transfer is called *The rank preserving equalisation*. There will be a maximum reduction in equality if the transfer is \( d = \frac{h}{2} \)

¹ For proof: *ibid*, P-66
5. \( \theta(x) = \theta[\pi(x)] \), where \( \pi \) is any permutation of \( x \). This axiom implies symmetric inequality measures, which means that if two individuals interchange their income positions, inequality remains unchanged. The inequality depends only on the frequency distribution of incomes and not on the order in which individuals are ranked within the distribution. This axiom is called 'Symmetry axiom'.

6. \( 0 \leq \theta(x) \leq 1 \). When every individual receives equal proportion of income, then \( \theta(x) = 0 \) and when one individual receives all the income, then \( \theta(x) = 1 \). This axiom is called 'Normalization'.

7. Continuity Axioms requires that the inequality index to be continuous in the domain of income distribution.

8. Sub-group Invariant requires that, ceteris paribus, an increase in inequality in every sub-group within a population should lead to an increase in overall inequality.

A.2.2.1 INCOME INEQUALITY MATRICES

Income inequality metrics or income distribution metrics are techniques used by economists to measure the size distribution of income among members of a society. In particular these techniques are used to measure the inequality, or equality of income within an
economy. These techniques are typically categorised as either absolute measures or relative measures.

**Absolute measures** define a minimum standard, then calculate the number (or percent) of individuals below this threshold. These methods are most useful when determining the amount of poverty in a society. Examples include Poverty line, Poverty index\(^1\). **Relative income measures** compare the income of one individual (or group) with the income of another individual (or group). These measures are most useful when analysing the scope and distribution of income inequality. Relative Lorenz curve, Gini coefficient, Robin Hood index, Theil index, Standard deviation and Percentile distributions\(^2\) are some of the best known measures of income distribution.

**SECTION B : METHODOLOGY OF THE STUDY**

**B.1. Importance and relevant of the study**

Every study and work has a specific purpose to focus on and this study is no exception as far as the goal is concerned. The following few

---

\(^1\) Amartya Sen developed as: \( I = (P/N)(B - A)/A \), where, \( P \) = number of people below the poverty line, \( N \) = total number of people in society, \( B \) = poverty line income, \( A \) = average income of those people below the poverty line.

\(^2\) One percentile is compared to another. For example, it might be determined that the income of the top ten-percentile is only slightly more than the bottom forty-percentile. Or it might be determined that the top quartile earns 45% of the society's income while the bottom quartile has 10% of society's income. The interquartile range is a standard percentile range from 25% to 75%
lines will summarize where this study will go and what will be the means for achieving that goal.

The study of income distribution and severity of the inequality have much and wide importance as well as relevance in the economy especially in developing economies like ours. Income distributions are used by economists to answer a wide range of questions as follows. Is the income level of individuals more equal today than it was in the past? Do taxes necessarily lead to greater equality in the distribution of personal income and wealth? The study of inequality are useful in dealing with the questions like are the developing economies characterised by greater inequality than advanced economy? What kind of planning technique should be applied to have a higher rate of economic development? These questions have attracted a good deal of attention in India in recent years. Apart from enabling us to answer these questions, the income distribution throws light on the pattern of future demand for goods and services, hence enabling us to estimate the levels of personal savings. When the pattern of income distribution and consumption expenditure elasticities of demand for different components are available, it is possible to compute elasticities for different component, showing how planned changed in aggregate consumption would affect the demand for the individual items. In addition, the distribution of consumption is implicit in all welfare
comparisons. The study of income distribution is important to find out and identify rural families who are under poverty line, in order to enable government to formulate suitable scheme to be implemented in an integrated manner by various department for the benefit and upliftment of the poorer section of the society. For these reasons, a study of income distribution and inequality would appear highly relevant and much important.

B.2. Objectives of the Study

1. To calculate Gini coefficient and other related inequality measures for Mizoram.
2. To have temporal comparison of income inequality in Mizoram.
3. To identify the most suitable distributional form of income distribution for Mizoram.
4. To suggest a suitable mathematical formula to measure growth of per capita income that will take into account the growth rate of all sections of the population.

B.3. Testing of Hypothesis

A statistical hypothesis is some statement or assertion about a population or equivalently about the probability distribution
characterising a population, which we want to verify on the basis of information available from a sample.$^1$

In this research, the level of significance $\alpha$, also known as the size of critical region or region of rejection is kept at 5% which means that the level of confidence interval also known as confidence limit or fiducial limit is 95%, i.e. that the probability at which a sample fall within a region of acceptance is 0.95. This can also be interpreted in another way. The probability of committing a type I error i.e. rejection of True $H_0$ is 0.05.

In this way, the following three hypotheses are to be tested against appropriate alternative hypothesis with a 5% level of significance.

1. The income distribution is positively skewed i.e. skewed to the right.

2. Income Gini coefficient of Mizoram is smaller than that of all India Gini coefficient.

3. Income inequality in Mizoram is increasing

**B.4. SOURCES OF DATA**

As indicated in this research proposal, samples are collected through field study during the month of November and December 2006

---

relating to income from primary, secondary and tertiary sector. Since direct and open questioning quite often fail to extract a correct answer from the respondents, we also made an inquiry of the expenditure incurred by the households so as to arrive at the correct estimate of income. The data were collected by direct and indirect personal interview through schedule questionnaires. Since there is always a tendency to underestimate income among the households but to overestimate expenditure, careful extrapolation through scholarly assessment is made to avoid estimating errors. As such there is the possibility of sampling and non-sampling errors in spite of the utmost care given to the final tabulation of data so collected.

In addition, there are different types of secondary data taken from internet and various statistical handbooks of Mizoram, State Domestic Product of Mizoram, Socio-Economic Review - Mizoram, Village Level statistics of Mizoram-2003, published by Directorate of Economic & Statistics, Govt. of Mizoram, Statistical Abstract (Department of Agriculture & Minor Irrigation, Mizoram) published by Agriculture Department, On all India third census of Small Scale Industries in respect of Mizoram state compiled & Issued by Directorate of Industries Mizoram, various issues of Natural Resources mapping of Mizoram using Remote sensing & Geographical Information System (A project report) published by State Remote sensing center, Science, Technology
and Environment, Planning Department, Aizawl, and many more information brochure received from various directorates of Mizoram government. Regarding the quality and reliability, it is hoped that it would be of a high degree of accuracy and reliability.

Some data relating to income distribution and Gini coefficient in respect of various countries of the world are obtained from various reports of UNO through its website, world bank and other agencies. The reliability and accuracy of these data depends on the concerned organisation.

B.5. STATISTICAL METHODOLOGY EMPLOYED

Complete enumeration of the population in the study area is not possible from the viewpoint of time, accuracy, costs involved, manpower requirements, etc. and as a result it is inevitable to resort to the use of sampling technique. Sampling method is to be used with extreme caution. Firstly, the most important task is to determine the size of sample to be drawn from the population, so that the population parameter may be estimated with a specified degree of precision.

The state is fairly rich in data provided routinely by the Department of Economics and Statistics. It is not unusual for the different agencies to arrive at different figures of statistical data. According to the estimate given in the Statistical Handbook of Mizoram
(2000), the percentage of people living below poverty line (BPL) in Mizoram was 19.47 whereas Village Level statistic of Mizoram (2003) registered below poverty line population as 49.93%. In the mean time by 2006, the Food, Civil Supplies and Consumer Affairs Department, with the voluntary help of the Young Mizo Association (the most trusted NGO in Mizoram) and Village Council, had verified the income status of the households to classify those who are eligible to receive rice ration at BPL rate and identified 68,000 families, that means the percentage is 39.62%. Incidentally, The President of India, Dr. APJ. Abdul Kalam, on the 2\textsuperscript{nd} Convocation of Mizoram University held on 16\textsuperscript{th} October 2006 said the BPL Percentage as 15%. The question is which one is reliable? Any way, one thing is clear, some data are not reliable, and in this situation it is warranted for the researcher to conduct an independent investigation. It is strongly believed that the figure 49.93% for the year 2003 and 39.62% for 2006 are totally wrong and hence it is safe to say that the BPL is in between the 15% and 19.49%. This will be used for determining the sample size.

The degree of precision is usually determined in terms of:

(i) The margin of error permissible in the estimate (d)
(ii) The confidence coefficient \((1 - \alpha)\) with which we want this estimate to lie within the permissible margin of error. In this study it will be sufficient if the level of \(d\) is 5% and \(1 - \alpha\) is 95%. We know that

\[
\sigma = \sqrt{\frac{PQ}{n}},
\]

where \(P = \) The percentage of BPL. \(Q = 1 - P\), \(n = \) the sample size. Hence, we may put,

\[
2\sqrt{\frac{PQ}{n}} = 5 \quad \text{or} \quad n = \frac{4PQ}{25}
\]

Now, for any value of \(P\) between 15 and 19.49, the product \(PQ\) lies between 1275 and 1569 and the corresponding \(n\) lies between 319 and 392. To be on the safe side, Approximately 392 can be taken as the initial estimates of the sample size. However, to be more accurate or to achieve greater precision and for reduction of sample collection costs elaborate procedure may be followed to determine the sample size as under.

Here the population is divided into two mutually exclusive groups

- Below poverty line (BPL) and Above poverty line (APL). From Probability theory, we know that

\[
P\left(|p - P| \geq d\right) = \alpha,
\]

Simple random sampling is assumed, and \(p\) is taken as normally distributed. We have
\[ \sigma_r = \sqrt{\frac{N-n}{N-1}} \sqrt{\frac{PQ}{n}}. \]

Hence the formula that connects \( n \) with the desired degree of precision is \( d = t \sqrt{\frac{N-1}{N-1}} \sqrt{\frac{PQ}{n}} \), where \( t \) is the abscissa of the normal curve that cuts off an area of \( \alpha \) at the tails. Solving for \( n \), we get

\[ n = \frac{\frac{t^2 PQ}{d^2}}{1 + \frac{1}{N} \left( \frac{t^2 PQ}{d^2} - 1 \right)}. \]

For practical use, an advance estimate \( p \) of \( P \) is substituted in this formula. If \( N \) is large, a first approximation is \( n_0 = \frac{t^2 PQ}{d^2} \), If \( \frac{n_0}{N} \) is negligible, \( n_0 \) is the satisfactory approximation of \( n \). If not, the sample size is

\[ n = \frac{n_0}{1 + \frac{n_0 - 1}{N}} \quad \text{Or} \quad n = \frac{n_0}{1 + \frac{n_0}{N}}. \]

In Mizoram there are 1,71,631 families\(^1\), the required sample size may be estimated as -

\[ d = 5\% = .05, \ p = 0.1949, \ q = 1 - p = 0.8051, \ \alpha = 5\%, \ t = 2, \]

\[ n_0 = \frac{2^2 (.1949)(.8051)}{(.05)^2} = 252. \]

Here, \( \frac{n_0}{N} \) is negligible the required sample size is 252.

---

\(^1\) Directorate of Economics & Statistics, Village Level statistics of Mizoram-2003 (Aizawl: Govt. of Mizoram, 2004), p-v. For determining sample size the no. of households for the year 2003 is used because there is no data for 2006.
B.6. Survey and Data Collection

In Mizoram, there are 8 districts and 22 Rural Development Blocks. For the purpose of data collection, it was given a careful thought whether districts will be taken as strata or not. It was agreed to follow the broad classification by treating each district as constituting a stratum.

For allocation of sample, we followed Bowley's principle of sample allocation of sample is used. Before collecting the sample we designed a sampling frame consisting of villages and some villages are selected using cluster technique of sample survey. After a village is selected sampling units are listed out and the final samples are obtained using simple random sampling with small application of judgment sampling technique.

While the required sample size for precision is 252 households/families, we took a total of 256 households/families covering 1579 persons. The optimum sample size for each district and actually drawn from such district is given in the annexure No. 1.A

For estimating household income an economy is divided into 3 sectors viz; primary, secondary and tertiary sector. Primary sector includes Agriculture & Horticulture (growing of field crops, fruits, nuts,
seeds and vegetables, plantation, foreyard & backyard cultivation, etc) Livestock (slaughtering, preparation and dressing of meat, production of milk, eggs, honey, silk, etc) forestry, fishing and all other related activities including incomes from manual (paid) labours/ paid labourers on daily basis. The production of this sector is calculated by production approach except income from manual daily labourers at 2006 current year prices. However, some standard adjustments are made for this sectoral product¹.

The secondary sectors includes mining & quarrying (production of stone, cubic stone, stone chips/dusts, boulders, sand stone, and all types of mineral products from the soil), manufacturing (registered and unregistered) activities, construction (all types of new construction, repairs and maintenance of building), gas and water supply, rent of house and land, incomes from artistic and handicraft products (village level). For estimating this sectoral contribution to the total production a mixture of income and expenditure is used. For mining & quarrying income method is used with a deduction of input costs of 33% from the total income². For construction expenditure method is used and for others income method is employed.

¹ More detail is available in the subsequent paragraphs.
² Directorates of Economics & Statistics, State domestic product of Mizoram (Aizawl: Govt. of Mizoram, 2004), p-6
The tertiary sector includes transport & communication, trade, hotels, restaurants, wage & salary of government employees including muster roll, work charge, contract employment, self-employment and all other types of service activities. For this sector, income method is used to arrive at the final figure for the sector.

There is a special sector called "others" which includes income from ancestors, lottery/lucky tickets, compensation, reward/prizes, pension benefits including old age pension, any form of grant/subsidy receive from the government or Non Governmental Organizations, charitable gifts, etc. If this sector were eliminated-absent its contribution may be added to tertiary sector. All the valuable and uncountable services of housewife and other members of the family that are honestly rendered for family are excluded while estimating income.

B.7. STATISTICAL TOOLS EMPLOYED

In this study various statistical tools like Snedecor's F-test, Student's t test, $\chi^2$-distribution, Karl Pearson's correlation coefficient, Rank correlation, Contingency table, Z - test, Maximum likelihood estimation, Method of moments for estimation, etc are employed. No introduction to highlight the technique is required for all these topics are readily available in statistical and econometric textbooks. Computer
software like SPSS, Excel and SYSTAT are frequently employed for this study.

B.8. LIMITATIONS AND ASSUMPTIONS OF THIS RESEARCH

1. Since census is conducted at an interval of 10 years, the population figure of Mizoram and that of the districts for the year 2003 are projected figure. For determining the sample size the number of household for the year 2003 is used due to the non-availability of the figure for the year 2006. However, the gap of just 3 years will not make any significant effects on the output of the study.

2. While collecting samples, simple random sampling (SRS) technique is applied with a limited degree. That is, most of the samples are collected using SRS but under a peculiar situation, the researcher is occasionally compelled to use judgment sampling, which is also very efficient at the hand of an expert.

3. For approximation of income for agricultural labourers/farmers their agricultural output like ginger, chilies, potato and other items which are not supposed to be marketed (except rice) are not taken into account due to the fact that rural cultivators/farmers seldom record their agricultural products, their products are meant chiefly for their family consumption and a reliable estimate
is not available. Instead of imputing/or guessing the value, their value is excluded for determining their income. This is the chief limitation of this study.

4. The exclusion of production for home consumption (above point No. 3) from income estimation leads to a relative substantial underestimation of income in less developed region like Mizoram. This, in turn, exaggerates income disparities between the rich and the poor. To compensate this, Kuznet (1966) makes an approximation. He assumes that the missing output would be a quarter of the total product of agricultural sector and concludes that the relative per capita income should be raised by roughly one – tenth\(^1\). The same adjustment is done here, i.e. the agricultural production is raised by quarter of the product of the sector. This eliminates/compensates the limitation of point No. 3 to some extent, but not entirely.

5. Again, another adjustment/enhancement is made on agricultural production to incorporate the production of ‘Mini field or Huan (in Mizo)’ in and around the compound of family dwelling place by increasing the output of the sector by a factor 0.22\(^2\)

---

\(^1\) AB. Atkinson, *op cit*, p-240
\(^2\) Directorates of Economics & Statistics, *State domestic product of Mizoram, op cit*, p-4
6. The income also includes their sure/expected income. Suppose a particular family rear a pig for commercial purpose and there is every likelihood that the same is expected to sell during 2006, those types of expected income are included in the estimate of that particular year. This income estimate also includes all types of monetary income received during 2006 irrespective of the sources.

7. There are different systems of counting the amount of paddy yield in Mizoram. However, the basic unit of measurement is the same i.e. a ‘kerosene can’ which liquid capacity is 15 litres. The 4 tins are called one ‘Kawt’ (‘kawt’ means to carry by shoulder) in south Mizoram, 3 tins are called one ‘Phur’ (Phur means on one’s back), but in the north and in the eastern side the measurement is said simply as ‘tin’. Therefore three (3) kawt, four(4) Phur and twelve (12) tins of paddy are the same. The price of Paddy is estimated at a rate of Rs. 100/- only per tin for this is the prevailing price in the rural areas where paddy is grown. Its real equivalent value in urban area is much higher than Rs 100/- per tin, but the actual price received on transaction by the farmer – seller, that is, Rs 100/- has been taken as the price of one tin of
paddy. The standard conversion rate of paddy to cleaned rice is 66%\(^1\).

8. The price of ginger, potato, chilies, and all other marketable products are varying from place to place and year to year. Depending upon the backwardness, distance from main road, the prevailing price in the previous year was taken as the most reasonable price. Considering all relevant possibilities that can affect their prices, it was thought reasonable to assign a predicted value to their prices if the products are not yet marketed.

9. The monetary value is calculated on the basis of their respective local market prices because of the fact that their products are seldom sold in the super market or in urban areas.

10. This research employed a methodology of positive economics which deals with finding of facts or the state of existing order and has nothing to do with normative economic. It is only an attempt to find things in their existing order. The 'why and how' of economic order with any doses of prescription has not been dealt with.

11. The income data collected is family income. If some family/families is/are financially not independent, then that family,

---

\(^1\) Directorate of Agriculture, *Agriculture handbook of Mizoram (1999)*, (Aizawl: Govt. of Mizoram, 1999), p-18
along with the member(s), is clubbed with the parent/dependent family.

12. The word ‘household’ and ‘family’ may be used interchangeably though they are different. In these samples, fortunately, there are no households that are financially dependent (so as to call them a single family) on others so that the two words, even if used interchangeably, may not matter at all.

B.9. CHAPTERISATION OF THE THESIS

This thesis is divided into seven chapters. The content of each chapter is as under –

Chapter one introduces the concept of income distribution, inequality, axioms of inequality measures, importance and relevance of the study, objectives of the study, hypothesis, sources of data, sample collection, tools of analysis, assumptions, limitation of the study and profiles of Mizoram. Chapter two explains theories on distribution of income that describe functional income distribution, size income frequency distributions, and also various measurement of inequality. Chapter three examines the income distribution at the global level and trend of inequality. Chapter four presents the state-wise analysis of income distribution and inequality while Chapter five concentrates on Mizoram in respect of income distribution, curve fitting and calculation of
inequality index using various formulae. In chapter six, we see the causes and effects of inequality. In the last chapter, i.e. chapter seven, findings and suggestion of this study are presented.

SECTION C: PROFILE OF MIZORAM

At the time of independence, Mizoram was one of the hilly districts of Assam state and attained the status of Union territory on January 21, 1972. On the signing of the so called ‘Mizoram Peace Accord’ on June 30, 1986 between Government of India and Mizo National Front (who fought complete sovereignty and Independence for Mizoram since 1966) and consequent upon the passing of constitution (53rd) Amendment Bill and the state of Mizoram Bill (1986) by the Parliament on August 7, 1986, statehood was granted to Mizoram on February 20, 1987 to become the 23rd state of the Indian union. Some of her statistic is depicted as below-

<table>
<thead>
<tr>
<th>Headquarters</th>
<th>Aizawl</th>
<th>Area</th>
<th>21,087Sq.km</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>8,88,573(2001)</td>
<td>Literacy</td>
<td>88.49%</td>
</tr>
<tr>
<td>Male</td>
<td>4,59,109</td>
<td>Male</td>
<td>90.69%</td>
</tr>
<tr>
<td>Female</td>
<td>4,29,464</td>
<td>Female</td>
<td>86.13%</td>
</tr>
<tr>
<td>Density</td>
<td>42</td>
<td>Sex ratio</td>
<td>938</td>
</tr>
<tr>
<td>No. of RD blocks</td>
<td>22</td>
<td>Road length/100sq.km</td>
<td>17.93</td>
</tr>
<tr>
<td>Urban population</td>
<td>49.45%</td>
<td>Infant Mortality rate</td>
<td>0.38</td>
</tr>
<tr>
<td>Electrified Houses</td>
<td>75.09%</td>
<td>No. of Villages</td>
<td>710</td>
</tr>
</tbody>
</table>
C.1. LOCATION

Mizoram is bounded by Myanmar in the east and south, Bangladesh and Tripura state in the west, Assam state and Manipur in the north. It has an international boundary of 404 km and 318 km with Myanmar and Bangladesh respectively. The lengths of its inter-state boarder with Assam, Tripura and Manipur are 123 km, 66 km and 95 km respectively. Mizoram has a geographical area of 21,081 Sq.km, sandwiched between 92°15' E to 93°29' E longitudes and 21°58' N to 24°35' N latitudes\(^1\).

C.2. CLIMATE

The climatic condition of Mizoram is in general cool and wet. It enjoys a moderate climate owing to its tropical location. It is neither very hot nor very cold throughout the year. Mizoram falls under the influence of southwest monsoon. Short winter and long summer with heavy rainfall are the main characteristics of seasonal variation. Based on rainfall, temperature, humidity, wind, etc, four different seasons are observed as - \textit{winter season} - starts from December to first half of February, \textit{spring season} – starts from the second half of February to the first half of March, \textit{summer/rainy season} – starts from second half of

\(^1\) Directorate of Economics & Statistics, \textit{Statistical handbook of Mizoram} 2006, op cit., p- xv
March to the second half of September and Autumn - starts from the month of October to the second half of November.

In autumn, the temperature usually ranges from $18^\circ$C to $25^\circ$C and in winter, temperature is generally between $11^\circ$C and $23^\circ$C. The summer temperature is in between $21^\circ$C to $31^\circ$C. The minimum and maximum temperature (on monthly basis) recorded during 2004 and 2005 is $11.20^\circ$C and $28.57^\circ$C. The minimum and maximum relative humidity (on monthly basis) recorded during the last two years is 17% and 97.2% respectively. The annual rainfall for the last 7 years are as 1999 – 2600mm, 2000 – 2883mm, 2001 – 2535mm, 2002 – 2648mm, 2003 – 2546mm and 2005 – 2094mm.

C.3. RIVERS, MOUNTAINS AND FORESTS

Rivers like Tlawng –185.15kms, Tiau –159.39kms, Chhimtuipui River – 138.46kms, Khawthlangtuipui – 128.08kms, Tuichang – 120.75kms, Tuirial – 117.53kms, Tuichawng – 107.87kms, and their respective tributaries, drain Mizoram. Mizoram is characterised by mountainous terrain of tertiary rocks. The mountain ranges are inclined in north to south alignment between which are found the deep gorges of rivers. The elevation ranges from 40 metres at Bairabi to 2157 metres at Phawngpui, the highest peak in Mizoram$^1$.

We find three types of forest viz. Tropical wet evergreen forest, Tropical semi-evergreen forest and Montane sub – tropical pine forest. Forests in Mizoram support variety of Flora and Fauna. More than 400 medicinal plants and 22 species of Bamboo have been reported to exist. The forest produce during 2005-06 was valued at 257.97 lakhs. As per the last estimation done by Forest Survey of India (State of forest report, 2001), the percentage of forest cover in Mizoram was ranked at third with 82.01%, just after Lakshadweep (89.91%) and Andaman & Nicobar Island (84.01%) among all the states and Union territory of India\(^1\). There are 8 administrative districts in Mizoram.

C.4. Economy

Mizoram has per capita income of Rs 21,327/- and Rs 26,673/- in 2003-04 and 2006-07 at current prices respectively with a Gross State Domestic Product of Rs 2,96,549 lakh at current Prices (1999- 2000) series during 2006-07. The plan outlay during 11\(^{th}\) Five-year plan stood at Rs 4,500/- crore\(^2\).

By 2006, Mizoram has 4,67,159 total workers of which 3,62,450 are main workers and 1,04,709 are marginal workers. Work participation rate is 52.57%. Mizoram is a schedule tribe dominated state where the

---

\(^1\) Planning & Programme Implementation department, op cit, p-25

\(^2\) Planning & Programme Implementation department, Economic survey 2006-07(Mizoram)[Aizawl: Govt. of Mizoram, 2006], p-1, 15, 53,
percentage of schedule tribe population is 94.46%, schedule caste 0.03% and others 5.51%. Regarding religion, the Mizo are mostly the followers of Christian faith where the percentages of different religion are Christian 86.97%, Buddhist 7.93%, Hindu 3.55%, Muslim 1.13% and others 0.42%\textsuperscript{1}.

\textbf{C.4.1. AGRICULTURE AND ALLIED SECTOR}

One of the foremost important ingredients for economic development is a sustained growth in agricultural production. If we look back to the economic development of our global history, it was empirically established that success in agriculture was a precondition for development. As the tenth Five Year Plan has rightly said, "Agriculture development is central to economic development of the country". Any change in agriculture sector – positive or negative has a multiplier effect on the entire economy. The agricultural sector acts as a bulwark in maintaining food security and in the process, national security as well. To maintain ecological balance, there is a need for sustainable and balanced development of agriculture and allied sectors.

There is 6,31,000 Ha of estimated area available for horticultural crops, of which 35,984 hectares are actually utilised by 2000-01. Mizoram as a whole has a total gross cropped area of about 1,04,689

\textsuperscript{1}Planning & Programme Implementation department, op cit, p-15.
hectares; against this the gross irrigated area was 11,629 hectares only. Fisheries in Mizoram are only fresh water fisheries including both cultured and captured fisheries\(^1\).

**TABLE No. 1.1**  
(Contribution of agriculture and allied sector in the NSDP/GSDP)  
(Rs. are in lakh)

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>PRIMARY SECTOR</th>
<th>2001-02 (NSDP)</th>
<th>2002-03 (NSDP)</th>
<th>2003-04 (NSDP)</th>
<th>2004-05 (GSDP)*</th>
<th>2005-06 (GSDP)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Agriculture</td>
<td>Rs 38,814</td>
<td>Rs 37,615</td>
<td>Rs 38,906</td>
<td>Rs 30,790</td>
<td>Rs 31,542</td>
</tr>
<tr>
<td>2</td>
<td>Forestry</td>
<td>Rs 1,239</td>
<td>Rs 1,340</td>
<td>Rs 1,108</td>
<td>Rs 2,059</td>
<td>Rs 2,181</td>
</tr>
<tr>
<td>3</td>
<td>Fishing</td>
<td>Rs 2,405</td>
<td>Rs 2,411</td>
<td>Rs 2,714</td>
<td>Rs 2,077</td>
<td>Rs 2,113</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>Rs 40,451</strong></td>
<td><strong>Rs 41,561</strong></td>
<td><strong>Rs 43,642</strong></td>
<td><strong>Rs 34,927</strong></td>
<td><strong>Rs 35,636</strong></td>
<td></td>
</tr>
</tbody>
</table>


Agriculture forms the backbone and strength of Mizoram economy. The net production of agriculture & allied sector at factor cost at current prices (in 1999-2000 series) are given in table No. 1.1

Out of the total forest cover of 18,717 sq.km, 7909 sq.km is classified as Reserved forest, 3568 sq.km Protected forest and 5240sq.km Unclassified forest\(^2\) respectively. The contribution of Primary sector is estimated at 18.52% of total production in Mizoram during 2006-07\(^3\). The percentage contribution of the sector in the state economy for various years are given in the following table No 1.2

---

1. Planning and Programme Implementation Department, op cit. p - 21.
2. Planning and Programme Implementation Department, op cit. p - 25.
3. Our own research.
TABLE No. 1.2
(Percentage contribution of agriculture and allied sector in NSDP/GSDP)

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>PRIMARY SECTOR</th>
<th>2001-02 (NSDP)</th>
<th>2002-03 (NSDP)</th>
<th>2003-04 (NSDP)</th>
<th>2004-05 (GSDP)*</th>
<th>2005-06 (GSDP)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Agriculture</td>
<td>21.32%</td>
<td>19.92%</td>
<td>19.23%</td>
<td>14.98%</td>
<td>14.98%</td>
</tr>
<tr>
<td>2</td>
<td>Forestry</td>
<td>0.72%</td>
<td>0.71%</td>
<td>0.55%</td>
<td>1.00%</td>
<td>1.04%</td>
</tr>
<tr>
<td>3</td>
<td>Fishing</td>
<td>1.39%</td>
<td>1.28%</td>
<td>1.34%</td>
<td>1.01%</td>
<td>1.00%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>23.42%</td>
<td>21.91%</td>
<td>21.12%</td>
<td>16.99%</td>
<td>17.02%</td>
</tr>
</tbody>
</table>


C.4.2. INDUSTRY & ALLIED SECTOR

Industrialisation has a major role to play in the development of the underdeveloped countries. The level of its industrialization largely determines the gap in per capita income between developed and underdeveloped region. Mizoram till today is one of the most backward states in India due to many pertaining inhibiting factors among which, lack of basic infrastructure, shyness of capital and unregulated market facilities are prominent1.

Industrial & Allied sector contributes 19.01% of total production in 2006-072. The sectoral contribution during the period from 2001-02 to 2005 – 06 is presented in table No 1.3.

---

2 Our own research
### TABLE NO. 1.3
(Contribution of Industry and allied sector in NSDP/GSDP)
(Rs. are in lakh)

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>INDUSTRY AND ALLIED SECTOR</th>
<th>2001-02 (NSDP)</th>
<th>2002-03 (NSDP)</th>
<th>2003-04 (NSDP)</th>
<th>2004-05 (GSDP)*</th>
<th>2005-06 (GSDP)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mining &amp; Quarrying</td>
<td>Rs 387</td>
<td>Rs 195</td>
<td>Rs 914</td>
<td>Rs 851</td>
<td>Rs 435</td>
</tr>
<tr>
<td>2</td>
<td>Manufacturing</td>
<td>Rs 1704</td>
<td>Rs 1710</td>
<td>Rs 1904</td>
<td>Rs 2874</td>
<td>Rs 3921</td>
</tr>
<tr>
<td>3</td>
<td>Construction</td>
<td>Rs 19489</td>
<td>Rs 22120</td>
<td>Rs 24745</td>
<td>Rs 23362</td>
<td>Rs 29030</td>
</tr>
<tr>
<td>4</td>
<td>Electricity, Gas &amp; Water supply</td>
<td>Rs 4187</td>
<td>Rs 4229</td>
<td>Rs 4291</td>
<td>Rs 8226</td>
<td>Rs 7984</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>Rs 25747</strong></td>
<td><strong>Rs 28254</strong></td>
<td><strong>Rs 31854</strong></td>
<td><strong>Rs 35,113</strong></td>
<td><strong>Rs 41,370</strong></td>
</tr>
</tbody>
</table>


There are as many as 2,718 registered Small Scale Industries in Mizoram of which 2632, 48 and 38 are perennial, seasonal and casual in nature of operation respectively. These Small Scale Industries generate employment opportunities for 2,176 females and 6,837 males. By 2005-06, the total installed and generated electric power in the state is 47.07MW and 11.46MW respectively.

There are 1,61,247 LPG subscribers up to March 2006 and 84.94% of villages are electrified and given safe drinking water facilities as well\(^1\). The percentage contribution of the sector in the state economy for various years are given in table No 1.4

---

### TABLE NO. 1.4
(Percentage contribution of Industry and allied sector in NSDP/GSDP)

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>INDUSTRY AND ALLIED SECTOR</th>
<th>2001-02 (NSDP)</th>
<th>2002-03 (NSDP)</th>
<th>2003-04 (NSDP)</th>
<th>2004-05 (GSDP)*</th>
<th>2005-06 (GSDP)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mining &amp; Quarrying</td>
<td>0.22%</td>
<td>0.1%</td>
<td>0.45%</td>
<td>0.32%</td>
<td>0.21%</td>
</tr>
<tr>
<td>2</td>
<td>Manufacturing</td>
<td>1.11%</td>
<td>0.99%</td>
<td>0.91%</td>
<td>1.4%</td>
<td>1.78%</td>
</tr>
<tr>
<td>3</td>
<td>Construction</td>
<td>10.05%</td>
<td>11.28%</td>
<td>11.72%</td>
<td>11.35%</td>
<td>13.79%</td>
</tr>
<tr>
<td>4</td>
<td>Electricity, Gas &amp; Water supply</td>
<td>3.53%</td>
<td>2.42%</td>
<td>2.24%</td>
<td>4.00%</td>
<td>3.79%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>14.91%</td>
<td>14.97%</td>
<td>15.74%</td>
<td>16.99%</td>
<td>17.02%</td>
</tr>
</tbody>
</table>


#### C.4.3. BASIC INFRASTRUCTURE AND SERVICES

Infrastructure plays a key role in the enterprise of economic development of any country. The three layers of communication (viz. physical communication, electronic communication and knowledge communication), good banking services, quality education, better health services, etc are the key ingredients for a healthy and sustained economic growth. The absence of these services is bound to adversely affect the quality of human life and its productivity.

In certain areas, Mizoram has taken a place of primacy at national level. These areas are literacy, village electrification, provision of safe drinking water and infant mortality rate. However, in some other vital areas Mizoram is still lacking behind other states.
### Table No. 1.5
(Contribution of service sector in SDP/GSDP)

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Service sectors</th>
<th>2001-02 (NSDP)</th>
<th>2002-03 (NSDP)</th>
<th>2003-04 (NSDP)</th>
<th>2004-05 (GSDP)*</th>
<th>2005-06 (GSDP)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Transport, storage &amp; communication</td>
<td>Rs 1835</td>
<td>Rs 2285</td>
<td>Rs 1493</td>
<td>Rs 5656</td>
<td>Rs 6500</td>
</tr>
<tr>
<td>2</td>
<td>Trade, hotel &amp; Restaurants</td>
<td>Rs 16398</td>
<td>Rs 16382</td>
<td>Rs 17742</td>
<td>Rs 14719</td>
<td>Rs 14846</td>
</tr>
<tr>
<td>3</td>
<td>Banking &amp; Insurance</td>
<td>Rs 4390</td>
<td>Rs 7090</td>
<td>Rs 7924</td>
<td>Rs 7152</td>
<td>Rs 8338</td>
</tr>
<tr>
<td>4</td>
<td>Real estate, ownership of dwelling &amp; Business Services</td>
<td>Rs 30692</td>
<td>Rs 34665</td>
<td>Rs 40854</td>
<td>Rs 35305</td>
<td>Rs 37739</td>
</tr>
<tr>
<td>5</td>
<td>Public</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Administration</td>
<td>Rs 27936</td>
<td>Rs 33915</td>
<td>Rs 33351</td>
<td>Rs 46021</td>
<td>Rs 41209</td>
</tr>
<tr>
<td>6</td>
<td>Other services</td>
<td>Rs 25202</td>
<td>Rs 24808</td>
<td>Rs 26370</td>
<td>Rs 28732</td>
<td>Rs 24872</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>Rs 106453</strong></td>
<td><strong>Rs 119145</strong></td>
<td><strong>Rs 127734</strong></td>
<td><strong>Rs 135685</strong></td>
<td><strong>Rs 133304</strong></td>
<td></td>
</tr>
</tbody>
</table>


Since there is a causal relationship between the services sector and basic infrastructure & services, it is worthwhile to look at the sectoral contribution of service sector at factor cost at current prices (in 1999-2000 series) in Table No. 1.5

Education institutions which are currently operating are 1 central university, 25 colleges, 67 Higher secondary schools, 452 High schools, 939 Middle schools and 1481 Primary Schools with student enrollment of 414, 7964, 10,555, 41,610, 88,044 and 1,32,046 respectively in 2005-06. There are 43,277 telephone connections with 10 Hospitals, 9 community Health Centers, 57 Primary Health Centre and 351 Sub
Centre respectively manned by 155 doctors, 393 Nurses, 88 pharmacists, 656 health workers and 38 Lab. Technicians.

**TABLE No. 1.6**

(Percentage contribution of service sector in NSDP/GSDP)

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>SERVICE SECTORS</th>
<th>2001-02 (NSDP)</th>
<th>2002-03 (NSDP)</th>
<th>2003-04 (NSDP)</th>
<th>2004-05 (GSDP)*</th>
<th>2005-06 (GSDP)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Transport, storage &amp; communication</td>
<td>1.06%</td>
<td>1.21%</td>
<td>0.75%</td>
<td>0.02%</td>
<td>0.01%</td>
</tr>
<tr>
<td>2</td>
<td>Trade, hotel &amp; Restaurants</td>
<td>9.5%</td>
<td>8.68%</td>
<td>8.77%</td>
<td>7.165</td>
<td>7.05%</td>
</tr>
<tr>
<td>3</td>
<td>Banking &amp; insurance</td>
<td>2.54%</td>
<td>3.76%</td>
<td>3.92%</td>
<td>3.48%</td>
<td>3.96%</td>
</tr>
<tr>
<td>4</td>
<td>Real estate, ownership of dwelling &amp; Business Services</td>
<td>17.78%</td>
<td>18.36%</td>
<td>20.19%</td>
<td>17.17%</td>
<td>17.93%</td>
</tr>
<tr>
<td>5</td>
<td>Public Administration</td>
<td>16.18%</td>
<td>17.97%</td>
<td>16.48%</td>
<td>22.38%</td>
<td>19.58%</td>
</tr>
<tr>
<td>6</td>
<td>Other services</td>
<td>14.5%</td>
<td>13.14%</td>
<td>13.03%</td>
<td>13.00%</td>
<td>11.72%</td>
</tr>
</tbody>
</table>

|      | 61.66%                      | 63.12%          | 63.14%          | 65.94%          | 63.33%          |


During 2005-06, the number of domestic tourists visiting Aizawl is 84,225 and that of foreign tourists is 617. The service sector contributes 62.47% of the state's product in 2006-07. The table No. 1.6 shows the percentage contribution of the sector in the state economy.

---

1 Planning and Programme Implementation Department, op cit. p-9, 29.
2 Our own research
Source: Our own sample survey.

<table>
<thead>
<tr>
<th>Districts</th>
<th>No. of persons covered (Showing the optimum sample size and actual sample size)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mizo</td>
<td>Aizawl</td>
</tr>
<tr>
<td>Serchhip</td>
<td></td>
</tr>
<tr>
<td>Saiha</td>
<td></td>
</tr>
<tr>
<td>Mamit</td>
<td></td>
</tr>
<tr>
<td>Lawngtlai</td>
<td></td>
</tr>
<tr>
<td>Kolasib</td>
<td></td>
</tr>
<tr>
<td>Champhai</td>
<td></td>
</tr>
<tr>
<td>Lunglei</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

No. of persons covered

596
586
98
96
37
30
16
21
18
15
19
6
19
26
19
27
36
98
252
98
256
19
15
16
19
6
97
82
91
109
186
218
110
1579