CONSUMPTION PATTERNS IN INDIA:
A Study of Inter-state Variations

Dissertation submitted to the Jawaharlal Nehru University
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CERTIFICATE

This is to certify that this dissertation entitled **"CONSUMPTION PATTERNS IN INDIA : A STUDY OF INTER-STATE VARIATIONS"** Submitted by **SUDHAKAR PATRA** in partial fulfilment of the requirements for the award of the Degree of **MASTER OF PHILOSOPHY (M. Phil.)** of this university is to the best of my knowledge, a record of the student's own work, carried out by him under my supervison and guidance. It is here by certified that this work has not been presented for the award of any other degree or diploma.

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Lastly I, myself bear the responsibility for any mistake in this dissertation.

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(SUDHAKAR PATRA)

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INTRODUCTION

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INTRODUCTION

The purpose of this chapter is to give brief introduction on consumption economics, it's use in macro models and it's application in developing countries. All the above have been analysed in three sections. The fourth section contains survey of literature on consumption studies.

I.1 CONSUMPTION ECONOMICS: THE CONTENT, SCOPE, PROBLEMS AND CHALLENGES

Planning for economic development usually involves a national income accounting system at a relatively high level of aggregation. Such an income accounting system includes a set of behavioural equations and almost always a consumption function. Consumption,the major component of aggregate demand is usually linked to income and possibly to other variables as well. Hence the study of consumer behaviour has lot of significance in planning and development.

Consumption economics is more of a multi disciplinary field than a sub-area of standard economics. But it retains its ties to economic behaviour and economic phenomena i.e. on the allocation of scarce resources and on the value of goods and services purchased by individual consumers and by group of consumers. Consumption economics has been evolving from professional work along the following lines (1) Micro economics theory relating consumer behaviour to price, income and in recent years to other socio-economic factors, (2) Macro economic theory of market demand in response to price and of consumption function in response to income, (3) empirical economic studies, (4) development in the applied areas of family and consumer economics and in marketing. Among all these lines economic theory of consumer behaviour relating to income has appeared as the significant part of it.

The relation between aggregate consumption or aggregate savings and aggregate income, generally termed as the consumption function has occupied a major role in economic thinking ever since J.M.Keynes made it a keystone of his theoretical structure "General Theory of Employment, Interest and Money". Keynes took it for granted that current consumption expenditure is a highly dependable and stable function of current income. In the words of Keynes, " The aggregate income, measured in terms of the wage-unit, is as a rule, the principal variable upon which the consumption constituent of the aggregate demand function will depend". He termed it a "fundamental psychological rule" of any modern community that "when its real income is increased, it will not increase its consumption by an equal absolute amount".[1]

Prior to Keynes, many studies were conducted but their focus was invariably on ascertaining budget relations for different groups of families. Alfred Marshall, who expressly recognised the relationship between aggregate income, consumption and saving, failed to recognise its crucial significance. Therefore, the consumption function, is rightly considered a keynesian invention for it has at the heart of his theoretical system and embodies what is now known as the absolute income hypothesis.

Theoretical interest stimulated much empirical work to test the hypothesis and derive consumption function. Numerical consumption functions were estimated from two kinds of data: first time series on consumptions, savings, income prices, and similar variables available mostly for the period after World War I: second budget data on the consumption, savings and income of individuals and families available from numerous sample surveys made during the past one and half centuries. Both the sources of data invariably corroborated and continued the hypothesis, producing a very high goodness of fit, with current income accounting for the

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1. J.M. Keynes : The General Theory Of Employment, Interest and Money.

bulk of the variation in consumption, the average and marginal propensity to consume being less than the average propensity to consume. Hence it was confirmed that current consumption expenditure was highly correlated with income and the percentage of income saved was increased with income.

Doubts about the adequacy of this hypothesis arose because of its inability to reconcile budget studies on savings, with observed long run trends. A serious conflict of evidence arose when Kuznets[2] observed in 1946 from the estimates of savings in the United States for a period since 1899 that the agregate saving ratio remained virtually constant, despite the fact that incomes rose substantially in this period. According to his estimates, the percentage of income saved was much the same over the whole of the period. The corresponding ratio of consumption expenditure to income was decidedly higher than the marginal propensities that had been computed from either time series or budget data. Examination of budget studies for earlier periods strengthened the appearance of conflict. The average propensity to consume was roughly the same for widely separated time points, despite substantial differences in average real income. Yet each set of budget

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2. S. Kuznets : national product since 1869.(National Bureau of Economic Research 1946)

studies separately resulted a marginal propensity decidely lower than the average propensity. Finally, the saving ratio in the period, after World War II was sharply lower than the ratio that would have been consistent with findings on the relation between income and savings in the interwar period-this experience dramatically underlined the inadequacy of consumtion function relating consumption or savings solely to current income.

The conflict of evidence stimulated more complex hypotheses. Dusenberry, Brady, Friedman and others attempted to explain this inconsistency by criticising the fundamental assumption of aggregate demand theory that (1) Every consumer's behaviour is independent of that of every other onsumer or individual and that (2) consumption relations are reversible in time. Brady and Friedman suggested that a consumer units consumption depends not on its absolute income but on its position in the distribution of income among consumer units in its community. They presented a good deal of evidence, mostly from budget data, in support of this relative income hypothesis. Dusenberry[3] based the same hypothesis on a theoretical structure that emphasises the desire to emulate one's neighbours and the demonstration by the neighbours of qualities of the hitherto

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3. J.S. Duesenberry: Income, Saving and The Theory Of Consumer Behaviour. Havard University press, cambridge Mass, 1949

unknown or unused consumption goods. In addition, he suggested that the relative income hypothesis could be used to interpret aggregate data by expressing the ratio of consumption to income as a function of the ratio of curreent income to the highest level previously achieved. Simply consumption and savings depend not on the level of income but on the relative position of the individual iin the income scale. Therefore there exists strong tendency for the people to emulate others consumption pattern and to strive constantly towards a higher standard of living. Once a higher standard of living is achieved, people are reluctant to return to a lower level when incomes go down. This was the main argument put forward by Dussenberry in support of the relative income by hypothesis.

Dussenberry used this hypothesis to reconcile the fact that dissairing at a given level of income was less frequent in 1941 than in 1935-36 and that Negro families saved more than white families in 1935-36 at the same level of income in the United States. However, findings such as these, do not necessarily serve to rule out the absolute income hypothesis and it is still open to question whether facts do indeed conflict with it. A basic tenet of the hypothesis is the ceteris paribus assumption for all variables other than income; yet data available on empirical studies have been too restricted to allow other relevant variables to be held constant and if such variables are not constant, failure of the rate of saving or of consumption to vary with income may represent simply, the effects of these omitted variables.

✓Tobin had examined the consistency of relative income hypothesis and the earlier absolute income hypothesis with a limited body of empirical evidence. Though he found neither hypotheses satisfactory, he concluded that the weight of evidence favours the absolute income hypothesis and he tentatively suggested that changes in wealth might explain the rough constancy overtime in the fraction of income saved.

The doubts about the adequacy of the Keynesian consumption function raised by the empirical evidence were reinforced by the theoretical controversy about Keynes's proposition that there is no automatic force in a monetary economy to assure the existence of a full-employment position. A number of writer, particularly Haberler and Pigou, demonstrated that this analytical proposition is invalid if consumption expenditure is taken to be a function not only of income but also of wealth or to put it differently, if the average propensity to consume is taken to depend in a particular way on the ratio of wealth to income. This suggestion was widely accepted, not only because of its consistency with general economic theory, but also because it seemed to offer a plausible explanation for the high ratio of consumption to income in the immediate postwar period.

One empirical study, by William Hamburger found that the ratio of wealth to income was closely correlated with the ratio of consumption to income, as judged by aggregate time series data for the inter-war and post-World War II period. Other studies particularly by Klein, have used budget data to investigate the role of particular kinds of wealth, especially liquid assets.

√The most recent attempt to reconcile conflicting indications about the basic form of the relationship of consumption to income is that provided by the more or less independent work of M.Friedman[4] and Modigliani. Friedman's famous work known as Permanent income hypothesis is based on the argument that the actual observable measured income of any period, for any individual or economy consists of the sum of permanent and transitory component. Likewise actual 'measured' consumption consists of basic permanent consumption and random transitory consumption. The transitory elements of consumption and income are

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4. M. Friedman :A Theory of Consumption Function. national Bureau of Economic Research. Inc. N.York,1955

uncorrelated with their corresspondinq permanent elements and with each other. However, permanent consumption is proportional to permanent income. All the above relations can be mathematically expressed in following ways :-

$$Cp = kYp$$

$$Y = Yp+Yt$$

$$C = Cp+Ct$$

$$Cor(YtYp) = Cor(YtCt) = Cor(CtCp) = 0$$

p denotes permanent, t transitory, c consumption, y income and k proportionality constant.

A cross-section consumption function plotted against income over a fairly short period of time, will tend to make the observed consumption function a good deal flatter than the 'true' propensity to consume. If consumption is a function of permanent income, a rise in actual income would be expected to affect consumption only in so far as the rise in income raises the consumer's permanent income. According to this hypothesis marginal propensity to consume would be very unstable and would be high or low depending on how an increase in current income will affect expectations about the permanent income. It implies that one cannot rely on the simple role that a given change in income will always produce a given predictable change in consumption. This hypothesis, though analytically very rich, is difficult to test empirically because of difficulty in measuring permanent income and consumption. Friedman himself has stated "the magnitudes termed 'permanent income' and 'permanent consumption' that play such a crucial role in the theoretical analysis cannot be observed directly for any individual units". The most that can be observed are actual receipts and expenditures during some finite period, supplemented perhaps by some verbal statements about expectations in future. The theoretical constructs are ex-ante magnitudes; the empirical data are ex-post. Hence it is difficult to test permanent income hypothesis through empirical test.

Modigliani's life cycle hypothesis is another landmark in the history of consumption theory. The life cycle hypothesis developed by Ando, Brumberg and Modigliani is based on household utility maximising behaviour. Assuming that the household has a given life span and intends to leave no legacies and also given certainty, the motive for saving is to rearrange life time consumption in relation to the expected future income stream. This hypothesis stresses the accumulation of non human wealth as the means of achieving this aim. The rate of consumption at any given period is a facet of the plan which extends over the balance of the individuals life, while the income accuring within the same period is but one element which contributes to the shaping of such a plan. The typical time profile of a life time income stream is one than rises in the early working years, reaches a plateau in the middle years and is followed by a sudden decline upon retirement. To even out the profile of the life time consumption a typical household will either consume or save very little when young, save in the middle years and consume upon retirement. It is assumed that the household's current consumption is proportional to its resources, the factor of proportionality depends on the interest rate used to discount future income. The main concern of the life cycle hypothesis is that it is concerned explicuty with the role of asset accumulation and the effect of age on household consumption. This hypothesis reconciles the non proportional consumption function produced by budget studies with the constancy of the long run aggregate average propensity to consume. A Cross section regression of correct consumption on current income produces the non-proportional consumption functions according to this hypothesis.

Although all the hypotheses try to explain consumption behaviour, the evidence surveyed leaves room for considerable satisfaction with the relationship postulated by Keynes that a highly regular relationship exists between aggregate consumption and aggregate disposable income. Thus, whatever particular combination of current level income, change of income and future income expectations may finally be settled on as the best explanation of current consumption. It is clear that the relationship of consumption and income is far more complex than was earlier believed[5].

The analysis of consumer behaviour is a branch of econometrics which has always been intensively investigated either from the data based on family budget or of time series or of a combination of both. The relationship showing how expenditure of a particular commodity or commodity group varies with the income level of the individual or household has been one of the important aspect on which attention has centered in recent times. Ernest Engel had investigated this subject over a century ago. He analysed family budget data and arrived at the following conclusions:

1) Food constitutes the largest proportion of total expenditure in the family budget.
2) The proportion of expenditure incurred on food decreases as the income level and standard of living increases.

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5. See R.Ferber,"Research On Household Behaviour",American Economic Review,vol. III,1962.

3) The proportion of expenditure on rent and clothing is approximately constant and that on luxury items increases with a rise in the income and standard of living. In his later study in 1985, Engel realised that first and third of his propositions are an inadequate representation of facts. His second proposition has been repeatedly confirmed in later studies and has become known as Engel's Law. He believed that the percentage of family expenditure devoted to purchase the food items provided an accurate and truthful measure of the material well- being of the people. He developed this idea into a natural law that : "The poorer an individual, the greater must be the percentage of income necessary for the maintainance of physical subsistance and again from this a greater proportion must be allowed for food."

However, Engel went further and tried to generalise the theory into a complete measure of the standard of living of an individual. In his general theory he implied that the variations in expense for the secondary necessities (Clothing, Housing, Light etc.) are approximately synchronous in rate and direction of change with food expense and are of the same general nature. All this implies that the demand for food is relatively inelastic.The validity of Engel's Law rests upon the theoretical consideration of the means and order of satisfying desires. Theoreticaly, it is not expected that this social process as predicted and shown by Engel would continue endlessly in the same direction. It may be expected eventual saturation points with a resultant change in the course of satisfaction of the desire for food. Some economists have shown that saturation points have reached for some items in highly developed countries after a certain level of income.

Whatever may be, Engel's law is a fruitful and useful law in consumption theory. The Engel curve describes the responsiveness of demand for consumer goods to changes in income of the consumer. It shows income elasticty of demand. This is graphically shown below.

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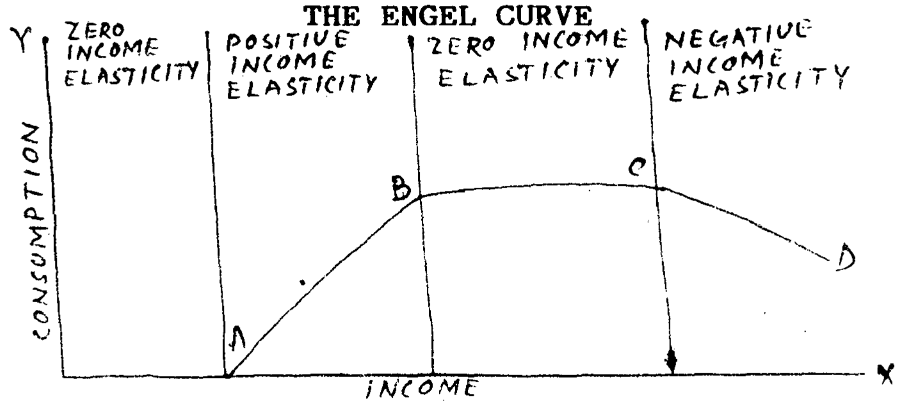
THE ENGEL CURVE



In the above figure ABCD curve is the curve showing relation between income and consumption for food. When the curve is rising income elasticity is positive in the range AB, in the range BC, demand for the good is not affected by the changes in the level of income, elasticity is zero. When the curve declines in CD, income elasticity is negative. This shows that the amount of a good actually consumed will vary with the level of income, that is at very low income most of income is spent on food items. As income rises the consumer may be able to dispense with inferior substitutes and by superior goods. At suficiently high income he may stop purchasing extra of the commodities even if his income rises. As Engel postulated and as has been observed, demand for some commodities like food and basic clothing may not increase very much as income rises, while the demand for some other commodities like luxuries may increase rapidly with income.

Engel Curves, however are crude approximations and can be regarded only as partial relationships beause expenditure on a commodity or a commodity group depends not only on income but on certain other factors too. Of all such non-income factors, household size, age of the head (decision maker) of the household are important to affect consumer expenditure. Other factors like age, sex, education and occupation may have an important influence on the consumption expenditure of a particular commodity. Since other factors are difficult to fit into Engel Curves, many have tried to analyse consumption pattern with family size and income. It may be thought that since household size is a non-economic factor, it could be possible to proceed by treating it as a random variable whose effects are superimposed on those of income and that its effects could be ignored by examining only the averages of a number of households of different sizes. This simple treatment is not justified for two reasons. Firstly, in most of the samples of household expenditures, there is a positive correlation between household income and household size, so that the biased estimates will result if household size is not explicitly treated. Secondly, variations in household size have comparatively large effects on consumption, so that in most samples of household expenditures the magnitude of the variations in consumption due to household size is for some commodities greater than that due to income variations. Thus household size must be considered explicitly in the formulation of Engel Curve.

The homogenity hypothesis allowing for the variations in household size is given by assuming that consumption per person depends on the level of income per person which in turn, corresponds to the assumption of constant return to scale. The adoption of the homogeneity hypothesis allows a number of simplifications in the theory of the household which are of importance. First of all, it implies that the Engel curve for households of different sizes are likely to cross if examined over their full range. Secondly, household size variations may be used to differentiate between luxuries and necessaries. If a good is a necessity, the income elasticity is less than one and it is to be expected that scatter diagrams will show the Engel curves for larger households laying systematically above those for smaller households. For luxuries, on the other hand, the income elasticity is greater than one and the curves for smaller households will be higher. In the intermediate case, when the elasticity is about unity, the curves will cross each other and shall show little systematic variations with the size of the household.

The other assumptions along with homogeneity assumption required for Engel curve[6] are as follows :

a) In the derivation of Engel Curve from family budget data, differences are observed to exist and those are the result of differences in the circumstances such as different incomes, different composition and size of households which act on consumers who react in the same manner. These differences are sought to be captured by observing consumers in diferent circumstances at the same time through cross - section studies.

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6. The Theory Under lying Engel Curve & Application:See S.J. Prais and H. S. Houthkker (1955), The Analysis Of Family Budgets. Cambridge University Press, cambridge

b) Prices are also assumed to be same for all households within the group to which the budget relates and the quantities are purchased over a period of time within which the level of prices has remained constant.

Due to certain complications the first assumption may not hold true. There are dyanamic factors which include a resistance on the part of the consumer to immediate changes in his habits and the effets of a stock of commodities and consumer expectations. There is also the possibility of revision of consumers preferences if the possibility of interdependences of preferences is recogised. Such complications can be ignored since they are usually concerned with the static theory of consumer behaviour. The second assumption is invalidated because of the existence of regional price variations, local monopolies price determination and semi - controlled markets. The error resulting from this assumption can be minimised by using appropriate statistical techniques i.e. by stratifying households into groups having more or less the same way of life and family composition. Lags in response to price changes may be of little importance but income lags are more serious and highly relevant to the interpretation of Engel Curves. They are also important because expenditure is not influenced by the less stable ¢transitory' components of income.

While deriving the Engel Curve expenditure on or quantity of a specific good may be used as dependent variable. Since the commodity is not always of a unique variety, it cannot be purchased at the same price. If that was the case, there would be no need for a choice since both would give the same result except for a proportionality factor equal to the price. In practice choice is guided by existing data. An argument can be put forward which suggests that the correct decision is to analyse the dependence of expenditure and average price paid on income and to derive the implied relationship for quantity as their ratio. This argument is based on the fact that the average price paid rises rather smoothly with income and expenditure being the product of quantity and in turn, average price will rise more smoothly than quantity. This principle suggests that the use of the proportion of expenditure on the commodity as the dependent variable is not advised, since for some commodities this has a distinct maximum with respect to income. If expenditure is used, there is no difficulty in forming composite commodities.

On the otherhand, independent variable in derivation of Engel Curve, that is, income, the considrations about its definition is complex. Since the income stream accruing to the consumer is not steady over time and his needs are also subject to change, the conditions of static demand theory remain unsatisfied and the income received in a particular period may be a poor indication of its standard of living. The true determinants of expenditure of household in a dynamic situation are a complicated function of past, present and expected incomes. However, this line of enquiry is difficult to pursue because of lack of adequate and sufficient information or data.

The use of total expenditure as a proxy for income as the independent or determining variable has been used in many studies due to lack of income data, specially in India. This can be justified on the assumption that while total expenditure may be a complicated function of income expectations etc., the distribution of expenditures among various commodities depends only on the level of total expenditure. Expenditure on a particular commodity and its relationship with income and total expenditure was subjected to graphical analysis. It was observed that in most cases particularly for non-durables, a better relationship emerged with total expenditure rather than income as the explanatory variable. For durables, in some cases, income failed to exhibit good relationship at the higher levels of income. Thus the use of total expenditure as an alternative for income for the estimation of Engel elasticities is not a drawback from the theoretical point of view. The estimation of Engel elasticity and fitting of curve have been very popular among economists to analyse consumer behaviour.

Consumption theory and its estimation procedures just outlined have passed through a century or more. Still there are several things on this field to be estimated, empirically tested. The applications of consumption functions and behaviour for policy formulatons have been very important in recent years.

I.2 THE CONSUMPTION FUNCTION IN MACRO MODELS & ITS POLICY IMPLICATIONS

Before 1940 most economic theory pertinent to consumption by large groups of people was developed from the theory of behaviour of an individual consumer by direct generalisation what the individual consumers would do in response to price alternatives or income changes was assumed to hold true for all consumers in a market or country. This assumptions ignored differences among individuals and a variety of problems in summing or aggregating over many people and often over several slightly different products.

The pre - world war theory of market demand which described how the quantities of a commodity taken by all consumers from the market would vary at alternative prices was such a generalisation. The market demand schedule was envisoned as the sum of the schedules of individuals in the market, without many complications but the aggregation of incomes of individuals making up the market was gradually recognised to involve quite complex problems. Keynes theory of consumption function was based on his introspective view of how a consumer must react to variations in income. This theory became an important part of his macro economic theory of employment, prices and income.

In constructing a complete macro economic model Planners and economists assumed a simple, absolute income consumption function. This can be a useful simplification if the main purpose of the model is to emphasise those features which are of fundamental importance to a particular theoretical approach. For instance, in a Keynesian model the abolute income-consumption function is an important ingredient because it is a simple way of obtaining a multiplier process.

Consumption funcions in which the major determinant is the flow variable, income, are much favoured by Keynesians. Monetarists often prefer a stock adjustment approach whereby consumption depends on wealth and the rates of return on different types of assets. However, the two approaches can be made equivalent, as the permanent income and life cycle hypotheses show.

In economic models with a more immediate policy application, a simple consumption function is inadequate since the effects of adjustment lags are an important consideration. A more complex function in which comsumption depends in a specific way on the current and lagged values of its determinants is needed. This applies equally to the other functional relationships included in such models. The inclusion of such lagged relationship makes an economic model dynamic. The model can trace out a dynamic time path of adjustment for the endogeneous variables. It is no longer restricted to comparative static analysis alone in which all variables are dated in current time. The quantitative size of the lags relating to each period of time will determine the adjustment path followed by the endogeneous variables. Thus the lag structure of consumption needs to be known with reasonable accuracy if the economy is to be requlated along Keynesian lines.

In aggregate economic models linear expenditure systems are of great interest where they provide desirable disaggregation of the consumption function. These are models which deal with commodities rather than individual commodity and such groups when, added, yield total consumer expenditure. One of the earliest linear expenditure models was suggested by R. Stone (Economic Journal, 1954). The Linear expenditure systems (LES) are usually formulated on the basis of a utility function from which demand functions are derived in the normal way (Maximisation of the utility function subject to a budget constraint). These models are applied to 'groups of commodities' between which no substitution is possible. In Linear expenditure systems the commodities bought by the consumers are grouped in broad categories, so as to be compatible with the additive postulate of the utility function.

There are various versions of the linear expenditue model, depending on the form of the utility function. Researchers are now working on LES with aggregate data. These models help in prediction for demand of different commodities.

POLICY IMPLICATIONS

The application of Jaynesian demand management policies requires a reasonable knowledge of the determinants of short run consumption. The short run marginal propensity to consume is relatively small and the relationship between current consumption and current income, even on an annual basis, is quite erratic and the quantitative effects of determinants other than income is still an unsolved issue.

There is still disagreement concerning the channels through which macro economic policy affects consumption expenditure. The traditional view is that disposable income is the predominant channel in the transmission mechanism, while changes in the money supply and interest rates have very little influence. This leaves direct and indirect tax changes (including subsidies) as the principal means by which the government can regulate consumption. However, the permanent income hypothesis suggests a weaker influence for fiscal policy since tax changes can only affect consumption if they alter permanent income. Thus temporary tax charges will have no impact on consumption because they only affect transitory income. If expectations are formed rationally, then any tax charges which can be anticipated by households, have already been taken account of in their estimates of permanent income. As these will not be revised of permanent income. As these will not be revised when the anticipated tax changes occur, then only unanticipayted tax changes, which are regarded as permanent, will affect consumption.

However, the permanent income hypothesis does predict that a change in transitory income will be entirely absorbed by household saving, which includes purchases of consumer durables. This enables tax changes to affect a sub-component of aggregate consumption expenditure. Opponents of this hypothesis maintain that households cannot borrow extensively on the expectation of uncertain future income. They, therefore, face a binding liquidity constraint which enforces a reasonably close correspondence between current consumption and current income.

The permanent income and life cycle hypotheses give monetary policy a greater role in determining aggregate consumption than does the traditional keynesian approach with its emphasis on current disposable income. This difference arises because the permanent income and life cycle hypothesis treat consumption as determined by wealth or its permanent income equivalent. The monetarist view of the transmission mechanism is that monetary policy affects aggregate demand by causing portfolio adjustment. Any change in either total private sector net wealth or in its consumption will result in portfolio disequilibrium. Asset holders will adjust back to equilibrium by shifting between the various types of financial and real assets (goods). The Government can increase the total amount of private sector wealth by increasing the stock of government bonds or money. Wealth will also increase if the ratio of money to bonds is increased, causing interest rates to fall. This, in turn, will increase the present value and raise the prices of financial assets, including equity. Therefore, total wealth will rise. In the monetarist transmission mechanism the effect of a change in the stock of money is thus both more direct, because consumption depends on wealth and more pervasive because portfolio adjustment occurs accross the whole range of financial assets and goods. In contrast the traditional Keynesian transmission mechanism is indirect as it is restricted to interest rate changes only. In addition, the consumption component of aggregate demand is regarded as unresponsive to interest rate changes. Keynesians, especially in Britain, typically consider that monetary policy only affects consumption by changing the availability of credit, whereas its cost has little effect. However, these differences should not be exaggerated particularly with respect to post 1960 developments. Keynesian economists such as Tobin have been in a forefront of developing a general equilibrium portfolio approach to financial analysis, and more recent Keynesian econometric models do now incorporate a relatively comprehensive monetary transmission mechanism.

I.3 RELEVANCE OF CONSUMPTION THEORY IN DEVELOPING COUNTRIES

The main objective of economic planning in developing countries is to achieve a secular increase in the real per capita income of the indivisuals. Hence the growth policy is to mobilise internal resources for the purpose of capital formation and to invest economy's available surplus in desired way to achieve rapid increase in income. Rise in rural per capita income is usually accompanied by an increase in the demand for different commodities. Hence supply of commodities must be increased in order to match the demand to keep the prices constant. Any disequilbrium in the demand and supply of commodites shall lead to bottleneck. It is, therefore, valuable to have knowledge of the future demand for different consumer goods[7].

The need for such a knowledge is further heightened by the fact that in developing countries, the increased incomes in the hands of poor people who form the bulk of population of these countries will generate demand for consumer goods rather rapidly and unless the available supplies match this increased demand, price level will rise. This is likely to impede the smooth functioning of the process of economic growth.

Looking at the Indian economy, its vastness, wide ranging variations in habits and tastes, it is essential to have adequate knowledge on future demand for different

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7. See V.K.R.V. Rao: "Investment,Income and the Multiplier in an underdeveloped Economy"in Agarwala & Singh ed. The Economics Of Underdevelopment, 1958.

commodities for policy formulations. We have a predominantly agricultural country where capital equipment is low and the standard of technical knowledge applied to production is inferior to that in the Western developed countries. Since, majority of wage earners falls in the cateogry of self employed, a significant proportion of the national output is intended for self consumption. The per capita incomes being very low, sometimes below the minimum level of subsistence, the bulk of the population live in the condition of abject poverty. The key to dynamism in such a country lies in its economic planning and policy. The relevance of consumption theory for India and for all such developing countries can best be appreciated through need of demand projection for macro level policies.

Usually in such developing countries, the simple multiplier principle of Keynesian Scheme does not work. Inspite of a high managerial propensity to consume, an increase in investment is not automatically followed by secondary increase in income, output and employment. This is because the consumption goods industries (particularly food) to which the increased demand is directed are not in a position to expand output due to smaller industrial base and lack of raw materials. Bottlenecks i.e., surplus of shortages are encountered at every stage of expansion of output and hence it is not possible to increase output very significantly despite a willingness to spend money on increasing production. Again an increase in money incomes of agriculturists which is consequent on economic progress will cause a large part of the increase to be spent on consumption goods particularly food items and food grains. This will lead to a reduction in the marketable surplus of grains, i.e., an increase in the demand for consumption goods will be met by a diversion of output from market to self-consumption. This means that the non-agriculture sector has to pay still higher prices for its food grains without an appropriate response on the part of production in agriculture. The position is not very different in the case of the non agricultural sector due to reasons such as the absense of effective excess capacity in industries, difficulty of obtaining raw materials and other ingredients for additional production, inelastic supply of skilled workers and various other bottlenecks. Thus the primary increase in investment and income would lead to secondary and tertiary increases in income but not such a noticable increase in output.The result would be a general rise in prices. Since the rise in percapita incomes which results from economic development when it is initiated will be accompanied by an increase in the demand for different consumption goods, particularly food. If this demand is not matched by an increasing supply of the same commodities, the rise in prices which will result will affect the already existing low consumption levels of the growing population. Also, it will necessitate the import of these goods thereby cutting down on other essential imports of raw material and machinary goods required for economic development. This will act as a major obstracle in the progress of the country.

In order to avoid such situations the planners have to take the responsibility of deciding 'what to produce' and 'how to produce'. In a mixed economy like India the planner is compelled to know consumer preferences, his preference schedules derive from the consumers' preference schedules[8]. The principle underlying this is that once the consumer's share in the society's total resources is settled and his wants 'pruned of irrationality', the production of consumer goods should be designed in such a way that it secures the maximum fulfilment of his wants. Planning without the requisite co-efficients of choice is bound to be arbitrary based on intuition and guesswork. This could prove disastrous for developing countries since they are not likely to have large stocks of goods to meet their current deficits. The influence of consumer demand has to be

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8. See H.K.Manmohan Singh: Demand Theory and Economic Calculation in a Mixed Economy, Allen and Unwin Ltd. London, 1963.

encountered by the planner in respect of the means of production as well. The guiding principle of growth policy in a developing country is the mobilisation of internal resources for purposes of capital formation. In order to ensure that the economy's available surplus is canalised into investment, consumption must be controlled. The volume, composition and direction of foreign trade is bound to be significant in these countries. It is revealed by statistics of international trade that on an average foreign trade of an developing country is 10 to 15 per cent of the total gross National Product of the country. Imbalances in the foreign trade sector will have far-reaching repurcussions on the whole economy. To make the supply demand relations in the foreign trade sector respond favourably to the general economic plans of the country, the factors that affect the conditions of supply and demand have to be studied carefully by the planners. The pricing policy has to be manipulated so as to equate the aggregates of money purchasing power and prices in the consumer goods markets. On the other hand, the economy may rely on the method of directly shaping the real purchasing power of every household through judicious taxes and subsidies. A mixed economy has to rely on both.

In the private sector, prices of outputs produced cannot be directly controlled by the state and the fiscal method can be only partially effective. Since only a few people in developing countries pay direct taxes, the fiscal method to be effective has to rely on indirect taxes. However, the tastes and needs of different households being different, the proportions in which indirect taxes will be different for households remain uncertain, besides involving a considerable time lag which reduce its effectiveness monitor resources into disired channels. Out of various direct control methods, price control is the most important which has to be imposed. The study of consumer demand and consumption pattern order in these circumstances is very essential. The elasticities of income and expenditure for different items of consumption provide valuable indices of what demand is likely to be. Thus the demand prediction helps the planners in the developing countries in formulating appropriate plans and taking decisions regarding investment and production.

I.4 REVIEW OF EXISTING LITERATURE ON CUMSUMPTION STUDIES

Consumer surveys have been conducted and studied for centuries. In the Seventeenth century Gregory King Surveyed English consumers as a part of his tax research. A trio of nineteenth century Europeans interested in problems of poverty started an extensive series of studies of family living expenses. Edovard Ducpetiaux collected data from Belgian families in the middle of the nineteenth centgury on consumption. Frederic Lee play started as a mining engineer but shifted to a full time study of the living conditions of European workers who were in the midst of the industrial revolution. In 1875 Carroll D.Wright, Commissioner of Labour Statistics of Massachasetts published an oustanding study of income and expenditures of Massachusetts working men's families, including a great collection of data which has been subjectd to careful analysis. Few economists evidenced any particular interest in income consumption relationship until greatly improved data were developed in the 1920's and 1930's.

The inception of modern statistical demand analysis or price analysis is usually traced to Henry L. Moore's research on economic cycles in which he tried to establish laws of demand for agricultural products. Since Moore's findings were published in 1914, tremendous statistical effort by many researcher has gone into the study of factors influencing the prices of specific commodities. The great depression of 1930's focussed attention on income and consumption and led to the monumental consumer purchases study (CPS) of 1935-36. Since the thirties there have been a number of large scale and hundreds of small-scale surveys, out of which many of them were to test the hypothesis put forward by Keynes and soon it stimulated much empirical work to derive the consumption function. Kuznets study in 1946 about the constant saving ratio since 1870 which went in contrary to the fundamental psychological law of consumption accelerated the research in this field. Although the work on consumption started purely for investigative purpose but it soon acquired importance for policy making including fiscal and monetary aspects of planning. The work done by Schultz[9] in 1938 in Chicago is regarded as the basic contribution in the field of demand studies. Soon it gathered momentum and serious econometric works on it started throughout the world.

Numerous studies based on the income and expenditure of a cross section of households have been carried out in most of the countries which are referred to as family budget studies. The studies by Stone[10] (1954), Prais and Houthakker[11] (1955), Wald and Jureen[12] (1953) are important land marks in this field.

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9. Schultz M. (1938): The theory and Mesurement of Demand, chicago

10. R. Stone: The Mesurement of Consumers' Expenditure Behaviour in the U.K, 1920-1938, Cambridge University Press Vol.1 (1954)

11. Prais and Houthkker: The Analysis of family Budgets, Cambridge University Press, 1955

12. Wald. H and Jurren L : Demand Analysis : New Work, Willy (1953)

In India hardly any attempt was made to study the consumer behaviour prior to 1950. This lack of interest in consumer studies in India can be attributed to the general stability of consumption patterns and the non availability of relevant data on household consumption. Since the inception of Five Year Plans in India the incomes of the people have increased considerably which in turn, has resulted in a higher demand for different commodities. All these developments necessitated a study on consumer behaviour in India. The availability of data on household consumption on a nation wide basis since the setting-up of the National Sample Survey Organisation (NSSO) in 1950 in India has further stimulated interest in consumer studies.

During the course of last forty years or so, numerous studies relating to consumer behaviour have been made in India. The first studies on consumer behaviour is a collection of papers by research workers on the Indian Statistical Institute, Calcutta. The Second long term projections of Demand and Supply of selected agricultural commodities, 1960-61 to 1975-76 is the result of the study made by the National Council of Applied Economic Research, New Delhi. Two other significant contributions on the subject are the unpublished thesis of Iyengar[13] (1964A) and

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13. N.S.Iyengar:"Contribution to the Analysis of consumer Behaviour" Unpublished Ph.D Thesis,I.S.I., Calcutta

Balvir Singh[14] (1968). Published book on consumption pattern in India by D.B. Gupta[15] based on his Ph.D thesis (1968) was a detailed study with the help of NSS data on consumer expenditure. He has considered effect of age of the head of the household on consumption patterns which very few researchers in this field have analysed.

Iyengar has made an extensive use of the method of concentration curves to compute expenditure elasticities for a number of commodities in India. Singh and Gupta have investigated the suitability of a number of engel functions for different commodities in different regions. Bhalla - Chadha study on Punjab based on the 1974-75 NSS cross section data on consumer expenditure analyses consumption pattern for all categories of rural dwellers, such as cultivating and non-cultivating households.

As most of the work on consumer behaviour in India is scattered, it is useful to summerise the main features of these studies. Majority of the researchers are concerned with the calculation of income elasticities by the method of least squares. But the method of concentration curves has

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14. Balvir Singh: "consumption Function in India, "Unpublished Ph.D Thesis

15. Devendra Gupta: Consumpton Patterns in India : A study Of Inter-state Variatons tata McGraw Hll Publishng Co. Ltd.

also found favours with the research workers at the Indian statistical Institute, Calcutta. The later method is generally unsuited to deal with two or more explanatory variables and hence it has limited applicability. Further this method is not commended in the view of the fact that, in contrast to the frequent use of the method of least square this method is rarely used elsewhere, thus making comparisons with other studies difficult. Almost all consumer studies in India are based on NSS data which tends to limit the scope of these studies because the NSS publishes data only on total expenditure and item expenditure (both expressed in per capita terms) for major commodity groups in respect of rural and urban sectors separately and it does not give any break-down of household expenditure by different household characterstics. Thus most studies confine their attention to the effect of income(total expenditure). On the otherhand since 1972-73 NSS has started publishing consumer expenditure data with a gap of five years thus making time series study impossible. In studing the expenditure consumption relationships, although a number of algebric forms have been investigated, the general preference is for the constant elasticity curve. Except for the work done by Maitra (1969) and Bhattacharya (1970), no distinction appears to have been made in these investigations regarding the geographical situation of the consumer.

From these features, it becomes apparent that research workers assume the homogeniety of consumer behaviour throughout India. Secondly, their studies donot allow for the operation of economics and diseconomies of scale in the household consumption. Clearly these assumptions are different to justify in a large country like India. First habits and social customs are not the same in all parts of the country. Secondary, different states or regions donot exhibit the same household characterstics such as household size. Thirdly, the levels of percapita income and the total expenditure are not the same. In all studies total per capita expenditure has been taken as a proxy for percapita income.

The above factors have been considered in some of the studies recently. Of notable studies it would be worthwhile presenting the broad features of some of the important ones. Ashok Rudra[16] for instance, used the linear Expenditure system developed by Richard stone for measuring income elasticity from time series for six commodity groups. The magnitude of elasticity derived for food grains was the

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16. Ashok Rudra:"Demand Elasticity for Foodgrains",Economic Weekly,November,1969

largest and fairly close to one. Ravi Varma[17] attempted a study of consumer behaviour on a regional basis so as to arrive at an overall estimate for food grains for the rural and urban sections of India by the income elasticity of demand. He fitted two forms of consumption functions by the method of least squares to each divisions of a sector - i.e., South, West, East, Central NOrth, North West and the period covered was April June 1951 to May September 1953. He found that the level of demand for food grains varied from one division to another. He also worked out weighted estimates of income elasticities of demand for foodgrains for rural and urban sectors using monthly expenditure on foodgrains in respective divisions as weights.The income elasticity estimates for South and East India were found to found to be very high as compared to other regions of the rural sectors. Also, the income elasticities for big cities were much smaller than those for other urban divisions and they were higher for the rural sector campared with the urban sector.

Balgota[18] investigated the bias in elasticity derived from per family expenditure and income elasticities under

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17. Ravi Verma: "Income Elasticity of Demand for Foodgrains : A Regional Approach,"Artha Vijnana. Vol1,1959

18. Balgota: "Bias in Income from Elasticity Estimates derived from Expenditure per family Data,"Artha Vijnana, Vol.6 1964.

various circumstances. According to his findings, the elasticity would be over-estimated when the income elasticity is greater than one and the regression co-efficient of expenditure on a commodity on family size is greater than the regression co-efficient of total family expenditure on family size. His study showed that the elasticities obtained by taking the family as a unit might be significantly different from the actual or real income elasticities. Thus he emphasised that family size was an important influence on consumptions. D.B. Gupta's study also emphasised the influence of family size an consumption.

R.P.Sinha[19] investigating in 1966 has suggested the suitability of log-log inverse form for all the major categories of food with total percapita expenditure as the main determinant of household per capita consumption. Similar investigations had been carried out by T. Maitra[20] (1969) and N. Bhattacharya[21] (1970). Puspendra Kumar's[22] study which is another significant contribution on the

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19. R.P.Sinha:"An Analysis of Food Expenditure in india," Journal of Farm Economics Vol.48,Nov,1966

20. Maitra T.(1961):"On Regional and Temporal Variations in Engel Curves In Rural India,:ISI,Calcutta

21. Bhattacharya N.and Maitra T.(1970):"An Analysis of Engel curves based on NSS Household Budget Data for 7th to 22nd Rounds," paper Presented at the 10th Indian Econometric conference(Mimeo)

22. Kumar Pushpendra:"Income Elasticity of Demand:A Regional Analysis,"Artha Vijnana

subject investigated the existence of regional variations for the consumption of Sugar in India dividing each region into rural and urban. He, too, ignored effect of household size on consumption. Besides this, there is the work done by Radha Krishna[23] who has worked out Engel curves for all the states of India by using different mathmatical forms. Devendra Gupta has compared the consumption pattern of rural and urban areas in Utter Pradesh and Tamil Nadu by making extensive use of the method of covariance analysis. There are many other articles published in Journals, but a review of all or even most of them is beyond the scope of this study.

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23. Radha Krishna and T.Subba Rao:"A Large Sample Test Of Regional Homogeniety,"Journal of Regional Sciences, Vol.8,No1,1908

CHAPTER - II

ANALYTICAL FRAMEWORK AND DATA BASE

CHAPTER - II

ANALYTICAL FRAMEWORK AND DATA BASE

The purpose of this chapter is to outline the analytical framework of the study.The objectives of the study have been explained briefly in the first section.The next two sections contain hypotheses and data base of the study. Also the methodology is outlined in three sub-sections at the end of this chapter.

II.1 OBJECTIVES & SCOPE OF STUDY:-

The basic objective of the study is to analyse the consumption behaviour of households in different states both in urban and rural areas. This is done by finding out share of diffeent commodity groups in total expenditure, estimating the elasticities of demand for the various commodities and concentration of expenditure in different states. This study attempts to highlight the differences between rural and urban areas and also between states.The Consumption theory explains that income is the main determinant of consumption changes with response to change in income. Besides there are other factors such as prices, rapid urbanisation, growth of population which act and interact frequently to affect consumption patterns. Thus this study is an attempt to workout a relationship betwen total consumption expenditure and specific expenditure i.e., on various commodities or commodity groups. Due to lack of income data per capita total expenditure has been considered as a proxy variable for per capita income which has been a practice in all the studies on consumer expenditure.

There is no particular algebric function which suits all the states and all the commodities. Hence eight formulations of Engel functions have been considered so as to fit to different commodities and states. Also a verification of Engel's law regarding the relationship between rising expenditures and the proportion of those expenditure on food (cereals) will be attempted.

II.2 HYPOTHESES :-

Four important hypotheses are to be tested in the study. They are as follows :-

1. Income elasticity of demand for cereals is less than unity
2. Income elasticity of demand for clothing is higher than unity.
3. (a) Rural-Urban differentials in consumption patterns for cereals are less than that of clothing.
   (b) These differentials are prominent in less developed states as compared to developed states.
4. (a) With increase in household size per capita expenditure on cereals remains constant.
   (b) With increase in household size per capita expenditure on clothing decreases.
   (c) Effect of household size on consumption of clothing is more than that of cereals.

II.3 THE DATA BASE AND UNITS OF STUDY:-

The Data

This study is based on the consumer expenditure data collected by the National Sample Survey Organisation of India (NSSO) during the thirty eighth round. The data are collected through multistage stratified sampling method where villages are taken as first stage unit in rural areas and urban blocks as first stage units in urban areas. The Households Constitute Second Stage units for both rual and urban areas. The entire rural and urban sectors of India are divided into a number of strata and from each stratum required number of villages or urban blocks are selected with probability proportional to the size of the selected unit. From each selected village or urban block a number of households are selcted as second stage units. From 1977 onwards NSS is conducting survey on Household Consumer expenditure and employment together in the same set of Sample Households once in every five years. Between various rounds of NSS there are slight adjustments of items into various groups. The per capita expenditure for 30 days are classified into 13 expenditure clases.

The precise definitions of various concepts used by the NSS during the collection of data on consumer expenditure are given below :-

Household :- A household is a group of persons normally living together and taking food from a common kitchen. A boarding house, a hotel or a hostel is treated as a cluster of households where each individual is treated as a separate household. Households maintained and fed directly by government. Such as those in prisons, police quarters, cantonments, hospitals are excluded from the Scope of Survey.

Household Size :- The total number of members in a household is considered to be the size of the household.

Household consumer expenditure :- Consumer expenditure comprises all expenditure incurred by the household, exclusively on domestic account, including consumption out of home-grown produce or transfer receipts like gift, loan etc. The expenditure on household enterprises and transfer payments of all kinds are excluded. Monetary value of food articles consumed during the reference period is taken to represent consumer expenditure on food articles. For semi-durable and durable goods, the actual expenditure incurred towards purchase of these articles acquired during the reference period is considered as the consumer expenditure of the articles. For items of clothing and foot-wear, the monetary value of the articles acquired and brought into first use during the reference period is taken as the consumer expendure on the articles concerned.

Reference period :- The reference period for collection of data on all items of consumers expenditure is last 30 days (ending on the day preceeding the date of enquiry). In addition for items of clothing and footwear, durable goods and services, data have been collected for a reference period of last 365 days also.

But finally data publihed are based on data of 30 days reference period only.

Monthly per capita expenditure class :

Data on consumer expenditure based on 14 per capita expenditure classes out of which last class is average of all expenditure classes.

These classes are as follows :-

1. 0 - 30	6. 70 - 80	11. 200 - 250
2. 30 - 40	7. 85 - 100	12. 250 - 300
3. 40 - 50	8. 100 - 125	13. 300 & above
4. 50 - 60	9. 125 - 150	14. All expenditure class
5. 60 - 70	10. 150 - 200	

The groups 0 - 30, 30 - 40 etc. stand for Rs. 0 to less than Rs. 30=00, Rs. 30=00 to less than Rs. 40=00 and so on.

Commodity groups :- The groups of items of consumption as used for analysis are defined in terms of their constituents.

1. CEREALS ;- Rice, Wheat, Jowar, Bajra, Maiza, Barely, Ragi and their products.
2. GRAM :- Bengal gram and its products.
3. CEREAL SUBSTITUTES :- Several suhstitutes like topioca, pea etc.
4. PULSES :- Arhar, tur, gram, moong, masoor, urd, khesari, soyabin and other pulses.
5. MILK AND PRODUCTS :- Liquid, milk (cow, buffalow, goat and others), ghee butter, dahi, ghol, lassi and other milk

products.

6. EDIBLE OIL ;- Vanaspati, mustard oil, cocoanut oil, gingelly oil, groundnut oil, linseed oil, refined oil, other oil and oil seeds.

7. MEAT, EGG, FISH :- Meat (goat, mutton, beef, porkete) egg, poultry, fish, bird and others.

8. VEGETABLES :- Potato, onion, tomato, brinjal, cabbage, cauliflower, root vegetable etc.

9. FRUITS AND NUTS :- Banana, orange, lemon, mango, cocounut, guava, pineapple, raisin etc.

10. SALT :- Sea salt, rock salt and other salt.

11. SUGAR :- Sugar (factory), Khandasari, gur, Candy other Sugars.

12. SPICES :- Turmeric, black pepper, pepper, dry chillies, tamarind, ginger, curry powder, other spices.

13. BEVERAGES AND REFRESHMENTS :- Tea, coffee, other drinking beverages, biscuits, prepared sweets, pickle, sauce, jams etc.

14. TOTAL FOOD :- Sum of all item from 1 to 13 items groups.

15. PAN, TABACCO AND INTOXICATS :- Pan leaf. pan finished, supari, biri, cigarettes, hookah tobacco saauff, zardah, surti, opiom, ganja, liquor etc.

16. FUEL AND LIGHT :- Coke, coal, electricity gas, dung cake, chavcoal, kerosene, candle, matches etc.

17. CLOTHING :- Cotton (mill made, power loom, hand loom, khadi), wool, silk rayon, synthetic textiles, pure silk etc.

18. FOOT WEAR :- Boot, shoe, slipper, sandle, chappal, wooden sandle, etc.

19. MISCALENEOUS GOODS AND SERVICES :- Amuesement (Cinema, theature), education, medicine, toilet articles, sondry articles, conveyances etc.

20. DURABLE GOODS :- Gold, precious metals, radio, t.v. and other luxury items.

21. NON FOOD TOTAL :- Sum of all items from 15 to 20 items groups.

22. TOTAL EXPENDITURE :- Sum of all the item groups above shown from 1 to 20 (Except 14) or sum of Food and Non-food (14 + 21).

COMMODITY GROUPS SELECTED FOR STUDY

19 Commodity groups have been considered out of which 13 are food groups and 6 are non-food groups. But for engel elasticities two commodity groups cereals and clothing have been chosen because cereals is the most dominant group in food items and clothing in non-food items.

States :-

The study is carried out for 16 major states in India and also at all India level. Union territories and minor states have not been considered in the analysis.

II.4 METHODOLOGY :-

Various statistical methods used for analysis are described below in three sections.

I

This section contains method of ordinary least squares which has been used to estimate the parameters of Engel fucntions.

A lines regression of y on k independent vaiables, that is X1, X2, ...Xn is considered - A model for a sample of N observations may be written as :-

Y1	=	X11	X21 ....XK1	B1		U1	
Y2	=	X12	X22 ....XK2	B2	+	U2	
:		:		:		:	
Yn	=	X1n	X2n ....XKn	Bn		Un	...(1)

In matrix form it can be written as :

Y = XB + U where B is (NX1) vector of the coefficients and U is a vector of n disturbances. The least square estimator b of B of this model is given by b = (X' X) X'Y ......(ii)

This estimate is best linear unbiased estimated (BLUE) under the following assumptions :-

(i) E(u) = 0

(ii) E(uu') = I

(iii) E(Ut Ut-1) = 0

(iv) Rank of X = $K(\leq n)$

(v) The X variables are non-Stochastic.

In case of a two variable linear model, that is,

$$Yi = A + BXi + Ui \quad i = 1,2 \; \ldots \; n$$

the estimate of B = b is given by

$$b = \frac{\Sigma(X - \bar{X})(Y-\bar{Y})}{\Sigma(X - \bar{X})^2}$$

In the present study two variable linear,non-linear and logarithmic model are used and elasticities are calculated. Following table gives different models used in the study and the formula for calculating elasticities and coefficients.

SL NO.	FUNCTION	ALGEBRIC FORM	MPC	ELASTICITY COEFFICIENT
1.	Linear	Y = a+bX	b	b(X/Y)
2.	Quadratic	$Y = a+bX+cX^2$	b+2cX	$\frac{bX+2cX2}{Y}$
3.	Hyperbolic	Y = a - b/X	b/X	b/XY
4.	Semi log	Y = a+blogX	b/X	b/Y
5.	Log inverse Log	$Y = a-\frac{b}{X}$	b(Y/X2)	b/X
6.	Log-log inv.Log	Y = a+blogX-c/X	Y(b/X+c/X)	b + c/X
7.	Log linear Log	Y = a + blogX	b(Y/X)	b
8.	Log quad. Log	$Y = a+b\log X - c(\log X)^2$	Y(b-2clogX)	b-2clogX

The merits and demerits of each of these Engel functions are analysed briefly in Ch.III.2. However, after proper scrutinisation it was possible to settle down to these eight algebraic formulations of Engel functions for the present study.

II

THE TEST OF GOODNESS OF FIT OF ENGEL FUNCTIONS

After the estimation of parameters and the determination of the least square regression line, it is required to know how 'good' is the fit of this line to the Sample observations of the variables. This knowledge is essential, because the closer the observations to the line, the better the goodness of bit, i.e., the better is the explanation of the variations of dependent variable by the changes in the independent variables.

The two most commonly used tests of goodness of fit are the following :- The first is the square of the correlation coefficient i.e R, which is used for judging the explanatory power of the regression. The second test is based on the standard errors of the parameter estimates and is applied for judging the statistical reliablity of the estimates of the regression coefficients. It provides a measure of the degree of confidence that may attributed to the estimates of regression coefficients.

This study has used first method at different parts of analysis. It can be proved that a measure of the goodness of fit is the square of the correlation coefficient, R2, which shows the percentage of the total variation of the dependent variable that can be explained by the independent variables.

If $\hat{Y} = \hat{a} + \hat{b}X$ is the estimated equation of $y = a+bx$, the deviation of the regressed (that is the estimated from the line) values from the mean value is given by $\hat{Y}i = \hat{Y}i-\bar{Y}i$. This is the part of the total variation of yi which is explained by the regression line. Thus the sum of squares of these deviations is the total variation explained by the regression line of the dependent variable.

$$\text{Explained variation} = \sum_{i=1} Y_i^2 = \sum_{i=1} (Yi-\bar{Y})^2$$

The residual, is the difference Yi - Yi, that is the part of the variation of the dependent variable which is not explained by the regression line and is atributed to the existence of the disturbance variable Ui. Thus the sum of the squared residuals gives the total unexplained variation of the depdnent variable Y around its mean.

$$\text{Unexplained variation} = \sum_{i=1} ei^2 = \sum_{i=1} (Yi - \hat{Y}i)^2$$

$$\text{Total variation} = \sum_{i=1} Y_i^2 = \sum_{i=1} (Yi-\bar{Y})^2$$

Now $$ei = Yi - \hat{Y}i$$

$$Yi = \hat{Y}i + ei$$

$$\Sigma Y_i^2 = \Sigma(\hat{Y}i + ei)^2$$

$$= \Sigma \hat{Y}_i^2 + \Sigma e_i^2 + 2\Sigma Yiei$$

we know, $\Sigma \hat{Y}iei = 0$

Now, $$\Sigma Y_i^2 = \Sigma \hat{Y}_i^2 + \Sigma e_i^2$$

But $$\hat{Y}i = \hat{b}x$$

Substituting, $\Sigma Y_i^2 = \Sigma(bx)^2 + \Sigma e_i^2$

dividing both sides by ΣY_i^2

We get

$$1 = \frac{\Sigma(bx)^2}{\Sigma Y_i^2} + \frac{\Sigma e_i^2}{\Sigma Y_i^2}$$

We know

$$\frac{\Sigma Y_i^2}{\Sigma Y_i^2} = \frac{\Sigma(bx)^2}{\Sigma Y_i^2} = R^2$$

Hence $$1 = R^2 + \frac{\Sigma e_i^2}{\Sigma Y_i^2}$$

i.e. $$R^2 = 1 - \frac{\Sigma e_i^2}{\Sigma Y_i^2}$$

$$= 1 - R.S.S.$$

R^2 is also called coefficient of determination. When R^2 increases, R.S.S. decreases and vice versa. Hene R^2 determines the proportion of the variation in Y which is explained by the variation in X.

III

This section contains use of Dummuy variables and tests for analysing rural urban differentials in consumption patterns. In regression equations sometimes there are Some explanatory variables which are only qualitative like, sex differences or rural-urban differences. In such cases dummy variable method is used to take into account these effects. The implicit assumption is that the regression lines for different groups differ only in the intercept terms or in Slope coefficients or in both. In the present study the differences in rural and urban areas in consumption pattern has been analysed using dummy variable technique.

The basic methodology behind this dummy variable is briefly outlined below.

First homogeneity of slopes but heterogeneity of intercepts between rural and urban regions are considered. Hence, in case rural - urban consumption of different commodities, let us say, the equations are :

$$Y = a_1 + bX + u \text{ ....(1). for rural}$$

and $$Y = a_2 + bX + u\text{.....(2) for urban}$$

These two equations can be combined into one single equation by using dummy variable.

$$Y = a_1 + (a_2-a_1) D + bX + U \text{ ......(3)}$$

where D = 1 for urban

= 0 for rural

using equation (3) we can find the estimate of (a_2-a_1). If it is significant, it may be concluded that there exists significant rural urban differences in consumption patterns.

Assuming homogenity of intercepts, to test slope differences, the equation can be written as :

$$Y = a + (b_2 - b_1)\ DX + b_1 X + u$$

where $D = 1$ for urban

$= 0$ for rural

If the estimate of $(b_2 - b_1)$ is significant, then there exists significant difference in slope coefficients, i.e. marginal propensity to consume between both regions.

Similarly for testing overall differeness in both intercept and slope coefficients simultaneously following regression equation can be used.

$$Y = a_1 + (a_2 - a_1)\ D + b_1 X + (b_2 - b_1)\ DX + u$$

The estimates of $(a_2 - a_1)$ and $(b_2 - b_1)$ can be used to find out overall differences.

CHAPTER - III

INTER-STATE AND RURAL-URBAN VARIATIONS IN CONSUMPTION PATTERNS

CHAPTER - III

INTER-STATE AND RURAL-URBAN VARIATIONS IN CONSUMPTION PATTERNS

In this chapter inter-state and rural-urban variations in consumption patterns have been analysed in three sections. Section -1 contains distribution of monthly per capita total consumer expenditure in 22 major commodity groups in all the states in rural and urban areas. Section - II & III analyses excess of urban expenditure over rural expenditure of all commodity groups in all the states and rural urban differentials in autonomous & induced consumption.

III.1 DISTRIBUTION OF PER CAPITA EXPENDITURE ON MAJOR COMMODITY GROUPS

Commodity-wise distribution of average monthly per capita expenditure clearly shows that food items account for 65.56 & 58.69 percent of total per capita expenditure in India in rural and urban areas respectively. Among food items cereals is the most dominant commodity group accounting for 32.24 & 19.21 percent and Clothing accounts for 8.58 & 7.72 percent of total expenditure in India in rural and urban areas. Distribution of expenditure shows people in rural areas spend more on food items relatively to that of urban areas whereas urban people spend more on non-food items than that of rural areas. This shows that there is a wide gap between rural and urban areas in consumption of cereals at All India level. There are wide variations in these propertions of expenditure on cereals and clothing across different states in rural and urban areas.

The states where percentage of expenditure on food items is more than All India percentage are Assam, Bihar, J.K. Orissa, U.P. (Urban) and West Bengal. These states are less developed states having low percapita income compared to other states. The states having percent of expenditure on non food items more than that of All India are Andhra Pradesh, Haryana, Karnataka, Kerela, Maharashtra, Punjab, Rajasthan, Tamilnadu and Uttar Pradesh (Rural only). All these states are developed states except Rajsthan. From these results it is clear that in less developed states higher percent of total expenditure goes to food items and lower percentage of total expenditure on non food items compared to developed states. The percentage of total expenditure on cereals are 50.74 and 31.48 in Orissa, 47.56 and 31.72 in Bihar, 45.03 and 22.00 in West Bengal in rural and urban areas respectively compared to 32.24 and 19.21 of All India. In case of clothing there is no such particular trend with regard to development of the states. The states where percentage of expenditure on clothing are more than All India's figure (8.58 for rural and 7.72 for urban) are Andhra Pradesh, Haryana, Jammu & Kashmir, Karnataka, Madhya Pradesh (rural), Maharashtra (rural), Orissa (urban), Punjab (urban), Rajasthan and Uttar Pradesh (rural).

The commodity group which shows most wide variations among states is milk & milk products. This group accounts for 24.07 and 17.14 percent in Haryana and 18.13 and 15.73 percent in punjab in rural and urban areas respectively where as these shares for All India are 7.57 and 9.21 percent.

A detailed picture of distribution of per capita expenditure of different commodities in various states can be had fromthe tables. Few other important points on the distribution of expenditure are given below.

(1) Milk and milk products which is the second major commodity group in food items after cereals shows wide variation among states. In most of the states urban

TABLE - I

DISTRIBUTION OF PER CAPITA CONSUMER EXPENDITURE IN DIFFERENT COMMODITY GROUPS

COMMODITY GROUPS	ALL INDIA RURAL	ALL INDIA URBAN	ANDHRA PRADESH RURAL	ANDHRA PRADESH URBAN	ASSAM RURAL	ASSAM URBAN	BIHAR RURAL	BIHAR URBAN
1.CEREALS	32.24	19.21	29.86	19.94	40.96	28.79	47.56	31.72
2.GRAM	0.26	0.19	0.02	0.02	0.08	0.09	0.42	0.62
3.CEREAL SUBST.	0.19	0.08	0.06	0.00	0.01	0.01	0.19	0.01
4.PULSES	3.54	3.21	3.37	3.13	2.66	2.56	3.52	3.33
5.MILK & PRODUCTS	7.57	9.21	4.48	6.65	4.61	5.89	4.45	6.36
6.EDIBLE OIL	4.03	4.81	4.13	4.34	3.71	3.82	3.69	4.55
7.MEAT,EGG,FISH	3.00	3.58	4.58	4.42	7.76	7.00	2.39	3.75
8.VEGETABLES	4.73	4.93	3.85	4.02	6.32	5.65	6.28	6.18
9.FRUITS&NUTS	1.37	2.10	1.18	1.48	0.74	0.70	0.53	0.90
10.SUGAR	2.83	2.45	1.51	1.63	2.05	2.03	1.31	1.81
11.SALT	0.17	0.11	0.16	0.12	0.32	0.24	0.26	0.16
12.SPICES	2.34	2.03	3.37	2.56	1.35	1.15	1.56	1.51
13.BEVERAGES	3.29	6.79	3.68	6.19	2.80	5.84	1.48	5.21
14.FOOD TOTAL (1-13)	65.56	58.69	60.24	54.55	73.37	63.77	73.63	66.10
15.PAN,TOBACCO	2.98	2.44	4.76	3.00	4.26	2.79	2.09	2.18
16.FUEL & LIGHT	7.05	6.88	5.94	6.10	7.81	7.16	6.69	6.42
17.CLOTHING	8.58	7.72	10.62	9.75	5.05	4.39	6.64	7.94
18.FOOT WEAR	0.99	1.11	0.67	0.90	0.75	0.99	0.44	0.79
19.MISC.GOODS	3.61	20.42	14.96	21.37	7.05	14.61	9.57	14.47
20.DURABLE GOODS	2.32	2.74	2.81	4.32	1.72	6.29	0.94	2.82
21.NONFOOD TOT. (15-20)	34.44	41.31	39.76	45.43	26.63	36.23	26.37	33.90
22.TOTAL EXP.	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

TABLE -2

DISTRIBUTION OF PER CAPITA CONSUMER EXPENDITURE IN DIFFERENT COMMODITY GROUPS

COMMODITY GROUPS	GUJRAT RURAL	GUJRAT URBAN	HARYANA RURAL	HARYANA URBAN	JAMMU&KASHMIR RURAL	JAMMU&KASHMIR URBAN	KARNATAKA RURAL	KARNATAKA URBAN
1.CEREALS	22.05	15.26	19.02	14.19	31.89	22.23	30.13	19.91
2.GRAM	0.17	0.22	0.21	0.26	0.09	0.11	0.30	0.23
3.CEREAL SUBST.	0.02	0.03	0.00	0.00	0.00	0.03	0.03	0.00
4.PULSES	4.41	3.97	2.66	2.77	2.98	2.15	4.00	3.54
5.MILK & PROD.	12.75	12.70	24.07	17.14	11.58	12.99	5.01	6.97
6.EDIBLE OIL	7.24	8.23	2.30	3.50	5.18	6.13	3.00	3.69
7.MEAT,EGG,FISH	0.94	1.50	0.89	0.11	3.97	5.54	2.99	3.97
8.VEGETABLES	6.47	6.58	3.73	4.71	4.50	5.09	3.61	3.76
9.FRUITS&NUTS	1.19	1.65	0.98	3.42	0.46	0.89	3.75	2.96
10.SUGAR	0.62	3.56	4.96	3.55	1.90	1.65	3.03	2.39
11.SALT	0.09	0.06	0.10	0.10	0.27	0.23	0.14	0.11
12.SPICES	2.38	2.01	1.84	1.73	2.22	2.23	3.18	2.40
13.BEVERAGES	4.20	5.98	3.27	5.07	4.42	4.78	5.05	8.57
14.FOOD TOTAL (1 -13)	66.73	61.75	64.03	68.67	69.46	64.02	63.31	57.88
15.PAN,TOBACCO	2.96	2.02	2.43	2.30	2.05	3.60	3.65	2.68
16.FUEL & LIGH	7.09	6.96	6.59	6.82	8.23	9.42	8.25	7.11
17.CLOTHING	7.02	7.27	8.85	9.04	7.73	5.74	8.97	8.76
18.FOOT WEAR	0.96	1.12	2.28	1.84	1.80	1.56	0.56	0.98
19.MISC.GOODS	13.32	19.32	14.09	20.87	9.71	15.18	13.00	20.34
20.DURABLE GOOD	1.93	1.57	1.73	1.33	1.03	0.46	2.26	2.25
21.NON-FOOD TOT. (15-20)	33.27	38.25	35.97	42.20	30.54	35.96	36.59	42.12
22.TOTAL EXP.	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

TABLE-3

DISTRIBUTION OF PER CAPITA CONSUMER EXPENDITURE IN DIFFERENT COMMODITY GROUPS

COMMODITY GROUPS	KERALA RURAL	KERALA URBAN	MADHYA PRADESH RURAL	MADHYA PRADESH URBAN	MAHARASTRA RURAL	MAHARASTRA URBAN	ORISSA RURAL	ORISSA URBAN
1.CEREALS	24.15	19.28	30.07	20.73	25.33	14.71	50.74	31.48
2.GRAM	0.17	0.20	0.50	0.20	0.14	0.13	0.05	0.00
3.CEREAL SUBS	1.62	0.43	0.16	0.08	0.58	0.35	0.08	0.01
4.PULSES	1.62	1.72	4.98	4.35	4.78	3.51	2.05	2.84
5.MILK & PROD.	4.10	5.13	6.75	9.36	5.33	9.91	1.51	3.98
6.EDIBLE OIL	2.73	2.84	4.30	5.42	5.18	5.70	2.69	3.87
7.MEAT,EGG,FISH	6.17	6.54	1.41	1.75	3.28	3.39	3.32	4.72
8.VEGETABLES	2.84	2.80	4.06	4.97	4.04	4.71	5.87	6.53
9.FRUITS&NUTS	5.60	5.51	1.00	1.50	2.31	2.92	0.99	1.10
10.SUGAR	2.02	1.91	3.05	3.13	3.68	2.61	1.57	1.90
11.SALT	0.10	0.09	0.16	0.12	0.14	0.10	0.28	0.14
12.SPICES	2.42	2.12	2.18	1.89	2.80	1.90	1.76	1.76
13.BEVERAGES	8.06	10.34	2.33	5.47	0.70	7.59	2.80	1.80
14.FOOD TOTAL (1-13)	61.64	58.96	65.95	58.99	61.32	57.53	73.72	65.13
15.PAN,TOBACCO	3.10	2.37	3.06	2.68	2.19	1.94	2.65	2.53
16.FUEL & LIGH	5.82	5.74	7.00	7.16	8.19	6.94	7.50	6.88
17.CLOTHING	6.41	8.04	9.91	7.51	10.42	7.68	6.18	7.80
18.FOOT WEAR	0.66	0.95	1.14	1.06	0.87	1.01	0.29	0.91
19.MISC.GOODS	16.43	19.51	10.74	19.15	14.27	22.44	7.20	14.44
20.DURABLE GOODS	5.94	4.42	2.21	3.46	2.02	2.46	0.02	2.31
21.NON FOOD TOT2 (15-20)	38.36	41.04	34.05	41.01	38.68	42.47	26.28	44.87
22.TOTAL EXP.	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

TABLE-4

DISTRIBUTION OF PER CAPITA CONSUMER EXPENDITURE
IN DIFFERENT COMMODITY GROUPS

COMMODITY GROUPS	PUNJAB		RAJSTHAN		TAMIL NADU		UTTAR PRADESH	
	RURAL	URBAN	RURAL	URBAN	RURAL	URBAN	RURAL	URBAN
1.CEREALS	14.40	11.97	24.06	16.85	35.02	23.49	29.40	19.42
2.GRAM	0.20	0.23	0.36	0.13	0.08	0.07	0.55	0.28
3.CEREAL SUB.	0.01	0.01	0.02	0.01	0.09	0.01	0.04	0.01
4.PULSES	2.97	2.78	2.37	2.47	3.43	3.17	4.71	3.89
5.MILK & PROD	18.13	15.73	16.44	14.68	3.32	6.03	9.39	11.17
6.EDIBLE OIL	3.56	4.76	3.62	5.35	3.33	3.44	4.49	5.02
7.MEAT,EGG,FI.	1.06	1.29	0.78	1.62	3.81	3.96	1.69	2.68
8.VEGETABLES	4.16	4.89	2.56	3.79	1.71	2.13	5.23	5.17
9.FRUITS&NUT	0.62	1.95	0.71	1.71	1.71	2.13	0.78	1.63
10.SUGAR	6.36	4.06	4.67	3.72	1.60	1.64	3.23	3.02
11.SALT	0.09	0.11	0.10	0.09	0.15	0.10	0.14	0.12
12.SPICES	1.93	1.76	2.20	2.16	3.57	2.69	2.20	1.94
13.BEVERAGES	4.84	6.40	2.55	5.02	5.29	8.09	1.70	4.80
14.FOOD TOT. (1-13)	58.67	55.92	60.52	57.58	65.17	58.40	63.54	59.13L
15.PAN,TOBAC.	2.40	2.13	2.97	2.79	3.42	2.21	2.42	2.62
16.FUEL & LIG.	6.82	7.68	6.22	6.73	6.85	6.51	7.81	8.03
17.CLOTHING	11.69	9.61	11.54	9.61	7.19	7.13	9.55	7.10
18.FOOT WEAR	2.56	1.72	2.31	1.72	0.42	0.69	1.09	1.18
19.MISC.GOOD	15.15	7.70	11.98	17.80	13.68	21.75	13.67	19.48
20.DURABLE	0.59	3.63	4.46	3.46	3.27	3.31	1.92	2.46
21.NON-FOOD (15-20)	41.33	44.08	39.48	42.42	34.83	41.60	36.46	40.87
22.TOTAL EXP	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

TABLE -5

DISTRIBUTION OF PER CAPITA CONSUMER EXPENDITURE IN DIFFERENT COMMODITY GROUPS

COMMODITY GROUPS	WEST RURAL	BENGAL URBAN
1.CEREALS	45.03	22.00
2.GRAM	0.05	0.14
3.CEREAL SUBST.	0.10	0.04
4.PULSES	2.00	2.08
5.MILK & PRODUCTS	3.46	6.28
6.EDIBLE OIL	4.01	4.27
7.MEAT,EGG,FISH	5.43	7.47
8.VEGETABLES	6.84	6.21
9.FRUITS&NUTS	0.87	1.44
10.SUGAR	1.65	1.64
11.SALT	0.27	0.16
12.SPICES	1.79	1.54
13.BEVERAGES	2.46	7.62
14.FOOD TOTAL(1-13)	73.94	60.90
15.PAN,TOBACCO	2.44	2.78
16.FUEL & HIGHT	6.23	6.81
17.CLOTHING	5.69	6.53
18.FOOT WEAR	0.53	1.04
19.MISC.GOODS	9.94	20.45
20.DURABLE GOODS	1.23	1.48
21.NON-FOOD TOTAL (15-20)	26.06	39.10
22.TOTAL EXP.	100.00	100.00

people spent more on milk and its products than rural people. In Haryana, milk and milk products has a share of 24.07 and 17.14 percent of total expenditure where as in Punjab these are 18.13 and 15.73 percent which is significant enough among all the states.In Orissa these shares are as low as 1.51 and 3.98 percent in rural and urban areas respectively.

(2) Miscellaneous commodity group account for a major share in non-food group and this share is significantly high in urban areas.

(3) In Haryana, share of all food items in total expenditure in rural area is 64.03 percent where as in urban areas, it is 68.67 percent which is an exception compared to other states.

(4) In food items first, second and third priorities are on cereals, milk and its products and vegetables or edible oil. In non-food items, poriorities are on clothing, fuel & light and on miscellaneous goods.

To conclude, in rural areas consumers commodity basket is dominated by cereals and in urban areas,s it is dominated by miscellaneous goods which contains serviceslike education,health care etc.

III.2 RURAL-URBAN DIFFERENTIALS IN MONTHLY PER CAPITA EXPENDITURE

In this section an attempt has been made to examine rural-urban differentials in per capita expenditure and its commodity-wise variations. This has been calculated by following formula :

$$E = \frac{(U - R)}{R} * 100$$

Where E is excess of urban expenditure

U is per capita urban expenditure

R is per capita rural expenditure

The limitations of this exercise is that this excess is not real excess of urban expenditure in the sense that urban and rural commodity expenditure are in urban and rural prices separately. Real excess of urban expenditure in urban prices and calculating the excess using alone formula. However, this was beyond the scope of study. Hence only excess of urban expenditures are analysed below :

The magnitude of excess of urban expenditure varies a lot from state to state but the direction is almost same. In case of cereals. rural expenditure is significantly higher than urban expenditure in all states. Total expenditure on food items in rural areas is more than urban areas in Gujrat, Haryana. But in all other states urban expenditure on cereals is more than that of rural expenditures. Urban expenditure on non-food items is significantly more than rural expenditure in all the states. Rural expenditure on milk and milk products is more than urban expenditure in Haryana and Punjab only. These two states are agriculturally highly developed in terms of per capita income of the people. In all other food items except some minor items like cereal substitutes etc., urban expenditure is more than rural expenditures.

In non-food items, clothing which has been considered in analysis for elasticites shows that urban expenditure or it is higher than rural expenditure in all states. In case of durable goods rural expenditure is more than urban expenditure in Haryana, Kerela, and Rajasthan. In case of Pan, Tobacco rural expenditure is more than urban expenditure in Andhra Pradesh, Assam, Gujrat, Kereka, Punjab and Tamilnadu. In all other items urban expenditure is more

TABLE -6
RURAL URBAN DIFFERENTIALS IN PER CAPITA MONTHLY EXPENDITURE

commodity groups	ALL INDIA per capita expenditure RURAL	URBAN	EXCESS(%)	ANDHRA PRADESH per capita expenditure RURAL	URBAN	EXCESS(%)
1.Cereals	36.21	31.85	-12.04	34.51	31.82	-7.79
2.Gram	0.29	0.31	6.90	0.02	0.03	50.00
3.Cereal sub.	0.21	0.13	-38.10	0.07	0.00	-100.00
4.Pulses	3.98	5.32	33.67	3.89	5.08	28.53
5.Milk&prod.	8.50	15.27	79.65	5.18	10.61	104.83
6.edible oil	4.53	7.98	76.16	4.77	6.93	45.28
7.Meat etc.	3.37	5.93	75.96	5.29	7.06	33.46
8.Vegetable	5.31	8.17	53.86	4.45	6.42	44.27
9.Fruits etc.	1.54	3.48	125.97	1.36	2.36	73.53
10.Sugar	3.18	4.06	27.67	1.75	2.60	48.57
11.Salt	0.19	0.19	0.00	0.19	0.19	0.00
12.Spices	2.63	3.36	27.76	3.89	4.08	4.88
13.Beverages	3.69	11.26	205.15	4.25	9.88	132.47
14.Food total	73.63	97.31	32.16	69.62	87.06	25.05
15.Pan etc.	3.35	4.05	20.90	5.50	4.78	-13.09
16.Fuel etc.	7.92	11.40	43.94	6.86	9.73	41.84
17.Clothing	9.64	12.80	32.78	12.28	15.56	26.71
18.Foot wear	1.11	1.84	65.77	0.78	1.43	83.33
19.Mis.good	4.06	33.85	733.74	17.29	34.10	97.22
20.Durables	2.60	4.55	75.00	3.25	6.89	112.00
21.Non-food tot.	38.65	68.49	7.71	45.96	72.49	57.72
22.Total exp.	112.31	165.80	47.63	115.58	159.55	38.04

TABLE -7
RURAL URBAN DIFFERENTIALS IN PER CAPITA MONTHLY EXPENDITURE

commodity groups	ASSAM per capita expenditure RURAL	URBAN	EXCESS(%)	BIHAR per capita expenditure RURAL	URBAN	EXCESS(%)
1.Cereals	46.30	46.21	-0.19	44.59	44.28	-0.70
2.Gram	0.09	0.14	55.56	0.39	0.86	120.51
3.Cereal sub.	0.01	0.01	0.00	0.18	0.01	-94.44
4.Pulses	3.01	4.11	36.54	3.30	4.65	40.91
5.Milk&prod.	5.21	9.45	81.38	4.17	8.88	112.95
6.edible oil	4.19	6.13	46.30	3.46	6.35	83.53
7.Meat etc.	8.77	11.24	28.16	2.24	5.23	133.48
8.Vegetable	7.14	9.06	26.89	5.89	8.62	46.35
9.Fruits etc.	0.84	1.13	34.52	0.50	1.25	150.00
10.Sugar	2.32	3.26	40.52	1.23	2.53	105.69
11.Salt	0.36	0.38	5.56	0.24	0.22	-8.33
12.Spices	1.53	1.85	20.92	1.46	2.11	44.52
13.Beverages	3.16	9.37	196.52	1.39	7.27	423.02
14.Food total	82.93	102.34	23.41	69.04	92.26	33.63
15.Pan etc.	4.81	4.48	-6.86	1.96	3.04	55.10
16.Fuel etc.	8.83	11.49	30.12	6.27	8.96	42.90
17.Clothing	5.71	7.04	23.29	6.23	11.08	77.85
18.Foot wear	0.85	1.59	87.06	0.41	1.10	168.29
19.Mis.good	7.96	23.45	194.60	8.97	20.20	125.20
20.Durables	1.94	10.09	420.10	0.88	2.94	347.73
21.Non-food tot	30.10	58.14	93.16	24.72	47.32	91.42
22.Total exp.	13.03	160.48	41.98	93.76	139.58	48.87

TABLE -8

RURAL URBAN DIFFERENTIALS IN PER CAPITA MONTHLY EXPENDITURE

commodity groups	GUJRAT per capita expenditure RURAL	URBAN	EXCESS(%)	HARYANAN per capita expenditure RURAL	URBAN	EXCESS(%)
1.Cereals	26.29	25.04	-4.75	28.37	26.19	-7.97
2.Gram	0.20	0.36	80.00	0.31	0.48	54.84
3.Cereal sub.	0.02	0.05	150.00	0.00	0.00	0.00
4.Pulses	5.26	6.52	23.95	3.96	5.10	28.79
5.Milk&prod.	15.21	20.84	37.02	35.90	31.54	-12.14
6.edible oil	8.63	13.50	56.43	3.43	8.43	87.46
7.Meat etc.	1.12	2.46	119.64	1.33	2.05	54.14
8.Vegetable	7.72	10.79	39.77	5.57	8.86	55.48
9.Fruits etc.	1.42	2.71	90.85	1.46	4.45	204.79
10.Sugar	0.74	5.84	689.19	7.40	6.53	-11.76
11.Salt	0.11	0.10	-9.09	0.15	0.19	26.67
12.Spices	2.84	3.29	15.85	2.74	3.18	16.06
13.Beverages	5.01	9.81	95.81	4.87	9.33	91.58
14.Food total	97.57	101.31	81.23	95.49	106.33	99.65
15.Pan etc.	3.53	3.32	-5.95	3.63	4.24	16.80
16.Fuel etc.	8.45	11.42	35.15	9.83	12.54	27.57
17.Clothing	8.37	11.93	42.53	13.20	16.64	26.06
18.Foot wear	1.14	1.84	61.40	3.40	3.39	-0.29
19.Mis.good	15.89	31.66	99.24	21.01	38.39	82.72
20.Durables	2.30	2.58	12.17	2.58	2.44	-5.43
21.Non-food tot	39.68	62.75	58.14	53.65	77.64	44.72
22.Total exp.	119.25	164.06	37.58	149.14	183.97	23.35

TABLE -9

RURAL URBAN DIFFERENTIALS IN PER CAPITA MONTHLY EXPENDITURE

commodity groups	JAMMU & KASHMIR per capita expenditure RURAL	URBAN	EXCESS(%)	KARNATAKA per capita expenditure RURAL	URBAN	EXCESS(%)
1.Cereals	40.85	34.49	-15.57	35.59	33.47	-5.96
2.Gram	0.12	0.17	41.67	0.36	0.38	5.56
3.Cereal sub.	0.00	0.04	0.00	0.03	0.00	-100.00
4.Pulses	3.82	3.34	-12.57	4.72	5.95	26.06
5.Milk&prod.	14.84	20.16	35.85	5.92	11.71	97.80
6.edible oil	6.63	9.51	43.44	3.64	6.20	70.33
7.Meat etc.	5.08	8.59	69.09	3.53	6.68	89.24
8.Vegetable	5.77	7.90	36.92	4.26	6.32	48.36
9.Fruits etc.	0.59	1.38	133.90	3.25	4.97	52.92
10.Sugar	2.44	2.56	4.92	3.58	4.02	12.29
11.Salt	0.34	0.36	5.88	0.17	0.19	11.76
12.Spices	2.84	3.46	21.83	3.76	4.04	7.45
13.Beverages	5.66	7.41	30.92	5.97	14.41	141.37
14.Food total	88.98	99.35	11.65	74.78	97.31	30.13
15.Pan etc.	2.62	5.59	113.36	4.31	4.50	4.41
16.Fuel etc.	10.54	14.62	38.71	9.75	11.95	22.56
17.Clothing	9.90	8.91	-10.00	10.60	14.73	38.96
18.Foot wear	2.31	2.42	4.76	0.66	1.65	150.00
19.Mis.good	12.44	23.56	89.39	15.35	34.19	122.74
20.Durables	1.32	0.71	-46.21	2.67	3.78	41.57
21.Non-food tot	39.13	55.81	42.63	43.34	70.80	63.36
22.Total exp.	128.11	155.16	21.11	118.12	168.11	42.32

TABLE -10

RURAL URBAN DIFFERENTIALS IN PER CAPITA MONTHLY EXPENDITURE

commodity groups	KERALA per capita expenditure RURAL	URBAN	EXCESS(%)	MADHYA PRADESH per capita expenditure RURAL	URBAN	EXCESS(%)
1.Cereals	35.08	34.48	-2.00	35.69	30.76	-13.81
2.Gram	0.25	0.36	44.00	0.51	0.29	-43.14
3.Cereal sub.	2.36	0.77	-67.37	0.13	6.12	-30.77
4.Pulses	2.36	3.06	29.66	5.07	6.46	27.42
5.Milk&prod.	5.96	9.15	53.52	6.87	13.89	102.18
6.edible oil	3.97	5.06	27.46	4.38	8.05	83.79
7.Meat etc.	8.96	11.67	30.25	1.44	2.62	81.94
8.Vegetable	4.13	4.99	20.82	4.13	7.38	78.69
9.Fruits etc.	8.13	9.82	20.79	1.02	2.22	117.65
10.Sugar	2.94	3.40	15.65	3.10	4.64	49.68
11.Salt	0.15	0.16	6.67	0.16	0.18	12.50
12.Spices	3.52	3.78	7.39	2.22	2.81	26.58
13.Beverages	11.71	18.43	57.39	2.37	8.11	242.19
14.Food total	89.52	105.13	17.44	67.12	87.53	30.41
15.Pan etc.	4.50	4.23	-6.00	3.11	3.98	27.97
16.Fuel etc.	8.48	10.24	20.99	7.12	10.63	49.30
17.Clothing	9.31	14.33	53.92	10.09	11.15	10.51
18.Foot wear	0.96	1.70	77.08	1.16	1.57	35.34
19.Mis.good	23.87	34.79	45.75	10.93	28.41	159.93
20.Durables	8.62	7.89	-8.47	2.25	5.12	128.44
21.Non-food tot	55.72	73.18	31.34	34.66	60.86	75.59
22.Total exp.	145.24	178.31	22.77	101.78	148.39	45.79

TABLE -11

RURAL URBAN DIFFERENTIALS IN PER CAPITA MONTHLY EXPENDITURE

commodity groups	MAHARASTRA per capita expenditure RURAL	URBAN	EXCESS(%)	ORISSA per capita expenditure RURAL	URBAN	EXCESS(%)
1.Cereals	28.11	27.59	-1.85	49.46	47.65	-3.66
2.Gram	0.16	0.24	50.00	0.05	0.08	60.00
3.Cereal sub.	0.64	0.65	1.56	0.08	0.01	-87.50
4.Pulses	5.31	6.58	23.92	2.00	4.30	115.00
5.Milk&prod.	5.92	18.58	213.85	1.47	6.02	309.52
6.edible oil	5.75	10.69	85.91	2.62	5.85	123.28
7.Meat etc.	3.64	6.36	74.73	3.24	7.15	120.68
8.Vegetable	4.48	8.87	97.10	5.74	9.88	71.78
9.Fruits etc.	2.58	5.47	112.02	0.97	1.66	71.13
10.Sugar	4.05	4.89	20.00	1.53	2.88	88.24
11.Salt	0.16	0.18	12.50	0.27	0.21	-22.22
12.Spices	3.11	3.57	14.79	1.72	2.66	54.65
13.Beverages	4.11	14.23	246.23	2.73	2.17	-93.77
14.Food total	68.05	107.90	58.56	71.86	98.57	37.17
15.Pan etc.	3.23	3.63	12.38	2.58	3.83	48.45
16.Fuel etc.	9.09	13.01	43.12	7.31	10.42	42.54
17.Clothing	11.56	14.41	24.65	6.03	11.81	95.85
18.Foot wear	0.97	1.90	95.88	0.21	1.37	514.29
19.Mis.good	15.84	42.09	165.72	7.02	21.86	198.58
20.Durables	2.24	4.62	106.25	1.49	3.49	134.23
21.Non-food tot	42.93	79.66	85.63	25.62	52.78	106.01
22.Total exp.	110.98	187.56	69.00	97.48	151.35	55.26

TABLE -12
RURAL URBAN DIFFERENTIALS IN PER CAPITA MONTHLY EXPENDITURE

commodity groups	PUNJAB per capita expenditure RURAL	URBAN	EXCESS(%)	RAJSTHAN per capita expenditure RURAL	URBAN	EXCESS(%)
1.Cereals	24.52	22.07	-9.99	30.68	26.95	-12.16
2.Gram	0.34	0.42	23.53	0.46	0.20	-56.52
3.Cereal sub.	0.01	0.01	0.00	0.03	0.01	-66.67
4.Pulses	5.06	5.12	1.19	3.02	3.95	30.79
5.Milk&prod.	30.88	29.00	-6.09	20.97	23.48	11.97
6.edible oil	6.06	8.78	44.88	4.61	8.55	85.47
7.Meat etc.	1.80	2.37	31.67	1.00	2.59	159.00
8.Vegetable	7.09	9.01	27.08	3.26	6.06	85.89
9.Fruits etc.	1.60	3.59	124.38	0.90	2.73	203.33
10.Sugar	10.84	7.49	-30.90	5.95	5.95	0.00
11.Salt	0.17	0.20	17.65	0.13	0.15	15.38
12.Spices	3.29	3.24	1.52	2.91	3.45	18.56
13.Beverages	8.25	11.80	43.03	3.25	8.03	147.08
14.Food total	99.91	103.10	3.19	77.17	92.10	19.35
15.Pan etc.	4.09	3.93	-3.91	3.79	4.46	17.68
16.Fuel etc.	11.62	14.16	21.86	7.93	10.77	35.81
17.Clothing	19.92	13.13	-34.09	14.71	15.37	4.49
18.Foot wear	4.36	3.17	-29.59	2.95	3.25	10.17
19.Mis.good	25.80	40.20	-44.96	15.28	28.48	86.39
20.Durables	4.50	6.69	48.67	5.69	5.53	-2.81
21.Non-food tot	70.39	81.28	15.47	50.35	67.86	34.78
22.Total exp.	170.30	184.38	8.27	127.52	159.96	25.44

TABLE -13
RURAL URBAN DIFFERENTIALS IN PER CAPITA MONTHLY EXPENDITURE

commodity groups	TAMIL NADU per capita expenditure RURAL	URBAN	EXCESS(%)	UTTAR PRADESH per capita expenditure RURAL	URBAN	EXCESS(%)
1.Cereals	39.29	38.56	-1.86	30.65	26.77	-12.66
2.Gram	0.09	0.12	33.33	0.57	0.38	-33.33
3.Cereal sub.	0.10	0.01	-90.00	0.04	0.01	-75.00
4.Pulses	3.85	5.21	35.32	4.91	5.36	9.16
5.Milk&prod.	3.73	9.90	165.42	9.79	15.40	57.30
6.edible oil	3.74	5.65	51.07	4.68	6.92	47.86
7.Meat etc.	4.21	5.87	39.43	1.76	3.70	110.23
8.Vegetable	4.27	6.50	52.22	5.45	7.12	30.64
9.Fruits etc.	1.92	3.49	81.77	0.81	2.25	177.78
10.Sugar	1.80	2.70	50.00	3.37	4.16	23.44
11.Salt	0.17	0.16	-5.88	0.15	0.16	6.67
12.Spices	4.00	4.41	10.25	2.29	2.67	16.59
13.Beverages	5.94	13.28	123.57	1.77	6.61	273.45
14.Food total	73.11	95.86	31.12	66.24	81.51	23.05
15.Pan etc.	3.84	3.62	-5.73	2.52	3.61	43.25
16.Fuel etc.	7.68	10.68	39.06	8.14	11.01	36.00
17.Clothing	8.07	11.71	45.11	9.94	9.97	-1.71
18.Foot wear	0.47	1.14	142.55	1.14	1.67	42.11
19.Mis.good	15.35	35.71	67.49	14.25	26.85	88.42
20.Durables	3.67	5.43	47.96	2.00	3.39	69.50
21.Non-food tot	39.08	68.29	74.74	38.01	56.33	48.20
22.Total exp.	112.19	164.15	46.31	104.25	137.84	32.22

TABLE -14
RURAL URBAN DIFFERENTIALS IN PER CAPITA MONTHLY EXPENDITURE

commodity groups	WEST BENGAL per capita expenditure RURAL	URBAN	EXCESS(%)
1.Cereals	47.10	37.39	-20.62
2.Gram	0.05	0.23	360.00
3.Cereal sub.	0.10	0.06	-40.00
4.Pulses	2.09	3.54	69.38
5.Milk&prod.	3.62	10.67	194.75
6.edible oil	4.19	7.26	73.27
7.Meat etc.	5.68	12.70	123.59
8.Vegetable	7.15	10.56	47.69
9.Fruits etc.	0.91	2.45	169.23
10.Sugar	1.75	2.78	60.00
11.Salt	0.28	0.28	0.00
12.Spices	1.87	2.62	40.11
13.Beverages	2.57	12.95	14.79
14.Food total	77.34	103.49	33.81
15.Pan etc.	2.55	4.72	85.10
16.Fuel etc.	8.52	11.58	59.39
17.Clothing	5.95	11.10	85.04
18.Foot wear	0.55	1.77	221.82
19.Mis.good	10.40	34.76	234.23
20.Durables	1.29	2.52	95.35
21.Non-food tot.	27.26	66.45	107.08
22.Total exp.	104.60	169.94	62.47

*excess= $\frac{\text{(urban exp.-rural exp.)}}{\text{rural exp.}}$100 (in rupees)

*Real excess of urban expenditure can be calculated by deflating rural expenditure in urban prices and taking differences than rural expenditure. Expenditure on miscellaneous goods in urban areas is sufficiently higher than rural areas in all the states. The states where maximum difference exists between urban and rural total expenditure are Maharashtra, Orissa and West Bengal. In all other commodity groups the excess of urban expenditures are clear from the tables.

III.3 RURAL URBAN VARIATIONS IN CONSUMPTION PATTERNS

In the analysis it is assumed that there exists differences in consumption pattern between rural and urban regions of each state. Inter state variations in engel elasticities and also between rural and urban regions have already been analysed in previous chapters. This chapter is intended to examine rural-urban variations in atonomous and induced parts of consumption.

Consumption economics explains that total consumption can be splited into autonomous consumption and income iinduced consumption. Autonomous consumption usually means consumption of essential commodities which does not depend on changes in income. For example, basic clothes and food are essential in life for existance of human being and even if there is no income one has to spend to get these things for living. Induced consumption is function of income and when income changes, this induced consumption changes and the rate of change depends on marginal propensity to consume Mathematically.

$$Ct = Co + c.Yt$$

When Ct is total consumption at time t, Co is autonomous consumption, c is marginal propensity to consume and Yt is income at time t, c.Yt is induced consumption. In this chapter rural-urban variations in induced and autonomous consumption has been analysed with the help of dummy variables. The basic method of this dummy analysis has been described in Methodology (Ch.2). The empirical results obtained fom applying dummy variables , first for cereals and then for clothing, are presented below. The analysis has been carried out in three steps. Rural-Urban variations in intercept(autonomus consuption),slope (induced consumption) and total consumption. Dummy variable which has been used in the regression takes zero for rural areas and one for urban. If the regression coefficient turns out to be negative, the coefficient is higher for rural areas than urban areas. If it is positive, the coefficient for urban areas are higher than rural areas.

In all the cases the rural-urban differentials in consumption have been tested at 5% level of significance. In states, where rural-urban differentials in autonomous consumption in cereals are significant are Andhra Pradesh, Bihar, Jammu Kashmir, Karnataka, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Tamilnadu, U.P. and West Bengal. At All India level this difference is significant too. Autonomous consumption is higher in rural areas than urban areas which is indicated by negative signs of d valuesin the tables. Assam has very negligible differences in autnomous consumption of its rural and urban consumption compared to other states. Gujrat, Haryana, Kerela are other states where rural-urban differentials in autonomous consumption is not significant. In clothing differences in autonomous consumption between rural and urban areas is significant in Gujrat, Jammu and Kashmir, Karnataka, Madhya Pradesh, Orissa, Maharashtra, Punjab, Rajasthan, Tamilnadu and Uttar Pradesh. All negative values of d in the table implies autonomous consumption in rural areas for clothing is higher than urban areas in all the states. In Kerela there are very negligible differences in autonomous consumption between rural and urban regions. In Andhra pradesh,Assam, Bihar, Haryana and West Bengal these differences are insignificant too.

In both cereals and clothing, Kerela and Haryana are two states having negligible differences between rural and urban regions in autonomous consumption. Haryana is agriculturally developed and there is not much differences in income level of rural and urban populations. Kerela is a very small state having most of its population engaged in business trading etc. and there is insignificant differences in autonomous consumption between rural and urban regions.

Induced consumption is the important part of total consumption because it shows changes in consumption due to changes in income. It is generally assumed that rural-urban differential in induced consumption is more significant in luxury items(clothing) than cereals. Our results confirm this assumption. In case of cereals rural-urban differences in induced consumption is significant at 5percent level of significance in all the states except Kerela. The d values are all negative in all the states which implies induced consumption for cereals is higher in rural areas than urban areas. The interesting point to note here is that very few values of d in induced consumption and very high values of d in autonomous consumption shows that rural urban differences are high enough in autonomous consumpton than induced cosumption. This unique

TABLE -15 REGRESSION COEFFICIENTS,T VALUES,F VALUES & COEFFICIENTS OF DETERMINATION IN INTERCEPT DUMMY REGRESSION FOR CEREALS

	a	b	t(b)	d	t(d)	f	R^2
ALL INDIA	25.358	0.075*	7.398	-8.274*	-3.565	33.097	0.726
ANDHRA PRADESH	22.966	0.081*	7.295	-6.455*	-2.578	29.866	0.705
ASSAM	36.519	0.064	3.624	-5.014	-1.174	6.683	0.413
BIHAR	30.927	0.131*	8.177	-8.819*	-2.535	36.468	0.745
GUJRAT	18.949	0.046*	6.885	-2.448	-1.678	24.006	0.686
HARYANA	17.299	0.058*	6.876	-2.861*	-1.558	23.972	0.676
JAMMU & KASHMIR	20.555	0.133*	8.361	-9.431	-2.862	36.839	0.762
KARNATAKA	21.628	0.102*	5.680	-10.740*	-2.647	18.974	0.613
KERELA	19.652	0.087*	9.282	-3.206	-1.317	43.822	0.778
MADHYA PRADESH	28.186	0.062*	6.583	-7.989*	-3.711	27.015	0.684
MAHARASHTRA	18.361	0.072*	8.424	-5.255	-2.826	38.515	0.755
ORISSA	8.679	0.098*	3.905	-2.335*	-2.250	8.794	0.444
PUNJAB	7.050	0.045*	3.844	-1.656*	-2.544	10.912	0.522
RAJASTHAN	22.747	0.052*	9.025	-6.012*	-4.444	50.798	0.803
TAMIL NADU	25.679	0.109*	7.903	-9.731*	-2.964	34.731	0.735
UTTER PRADESH	22.586	0.059*	7.505	-6.134*	-3.270	33.890	0.731
WEST BENGAL	32.855	0.130*	6.586	-19.485*	-4.544	30.766	0.711

TABLE -16 REGRESSION COEFFICIENTS,T VALUES,F VALUES & COEFFICIENTS OF DETERMINATION IN INTERCEPT DUMMY REGRESSION FOR CLOTHING

	a	b	t(b)	d	t(d)	f	R^2
ALL INDIA	-7.131	0.172*	19.354	-6.071*	-3.023	190.550	0.938
ANDHRA PRADESH	-10.859	0.229*	18.893	-4.545*	-1.663	179.750	0.935
ASSAM	-0.894	0.019*	5.669	-9.068*	-1.946	16.445	0.634
BIHAR	-10.002	0.204*	18.155	-5.149*	-2.109	166.751	0.930
GUJRAT	-14.485	0.232*	14.578	-9.168*	-2.611	106.506	0.906
HARYANA	-11.270	0.185*	13.887	-4.437	-1.546	96.421	0.893
JAMMU & KASHMIR	-9.987	0.193*	14.314	-8.524*	-3.049	103.512	0.900
KARNATAKA	-9.566	0.193*	19.746	-5.689*	-2.599	196.364	0.942
KERELA	-8.952	0.137*	18.598	-0.316	-0.165	172.939	0.933
MADHYA PRADESH	-4.043	0.185*	15.376	-10.907*	-3.958	122.470	0.907
MAHARASHTRA	-3.664	0.162*	15.318	-9.366*	-4.108	123.271	0.908
ORISSA	-0.393	0.088*	11.481	-0.847*	-2.678	66.019	0.857
PUNJAB	-1.609	0.138*	23.173	-0.801*	-2.379	273.100	0.965
RAJASTHAN	-7.823	0.191*	26.347	-4.831*	-2.875	351.615	0.966
TAMIL NADU	-8.138	0.162*	19.316	-4.843*	-2.425	187.911	0.938
UTTER PRADESH	-6.038	0.169*	20.394	-6.249	-3.193	214.103	0.945
WEST BENGAL	-6.017	0.122	23.541	-2.125	-1.886	277.449	0.957

* Significant at 5 percent level of significance

TABLE -17 REGRESSION COEFFICIENTS,T VALUES,F VALUES & COEFFICIENTS OF DETERMINATION IN SLOPE DUMMY REGRESSION FOR CEREALS

	a	b	t(b)	d	t(d)	f	R^2
ALL INDIA	21.168	0.103*	8.799	-0.052*	-4.208	39.140	0.758
ANDHRA PRADESH	19.532	0.103*	7.854	-0.041*	-2.956	32.664	0.723
ASSAM	31.632	0.111*	4.589	-0.057*	-2.711	11.427	0.546
BIHAR	26.702	0.168*	10.685	-0.076*	-4.490	57.985	0.823
GUJRAT	18.011	0.054*	7.624	-0.019*	-2.689	30.238	0.733
HARYANA	15.844	0.074*	8.217	-0.028*	-3.255	35.366	0.755
JAMMU & KASHMIR	15.482	0.179*	13.707	-0.085*	-6.764	95.040	0.892
KARNATAKA	16.638	0.140*	7.464	-0.079*	-3.988	27.861	0.699
KERALA	18.045	0.098*	8.908	-0.022*	-1.832	47.236	0.791
MADHYA PRADESH	24.225	0.088*	8.138	-0.051*	-4.462	33.266	0.727
MAHARASHTRA	15.645	0.093*	9.792	-0.038*	-3.936	50.119	0.800
ORISSA	6.975	0.182*	6.615	-0.116*	-4.791	21.883	0.665
PUNJAB	6.114	0.072*	6.199	-0.050*	-4.184	19.628	0.662
RAJASTHAN	19.880	0.065*	8.601	-0.027*	-3.252	37.825	0.752
TAMIL NADU	20.704	0.145*	9.905	-0.069*	-4.467	50.348	0.801
UTTAR PRADESH	19.659	0.077*	8.913	-0.038*	-3.921	39.983	0.762
WEST BENGAL	22.270	0.212*	12.702	-0.146	-8.613	81.199	0.967

TABLE -18 REGRESSION COEFFICIENTS,T VALUES,F VALUES & COEFFICIENTS OF DETERMINATION IN SLOPE DUMMY REGRESSION FOR CLOTHING

	a	b	t(b)	d	t(d)	f	R^2
ALL INDIA	-10.245	0.198*	23.753	-0.049*	-5.653	326.303	0.963
ANDHRA PRADESH	-13.345	0.251*	18.631	-0.042*	-2.907	219.122	0.946
ASSAM	-9.147	0.186*	8.443	-0.093*	-4.872	39.157	0.805
BIHAR	-12.456	0.228*	21.287	-0.051*	-4.419	258.516	0.954
GUJRAT	-17.972	0.261*	16.203	-0.066*	-4.031	144.965	0.929
HARYANA	-13.188	0.193*	11.546	-0.016*	-0.992	90.439	0.887
JAMMU & KASHMIR	-14.326	0.227*	16.085	-0.063*	-4.618	146.331	0.927
KARNATAKA	-12.213	0.212*	19.757	-0.039*	-3.467	232.044	0.951
KERALA	-9.105	0.135*	15.171	0.003*	0.338	173.583	0.933
MADHYA PRADESH	-9.508	0.227*	19.791	0.081*	-6.655	217.487	0.946
MAHARASHTRA	-8.537	0.201*	24.260	-0.074*	-8.718	314.933	0.962
ORISSA	-0.921	0.109*	10.870	-0.030*	-3.450	78.526	0.877
PUNJAB	-2.065	0.153*	27.568	-0.027*	-4.746	459.187	0.979
RAJASTHAN	10.051	0.207*	28.430	-0.036*	-4.391	472.149	0.974
TAMIL NADU	-10.579	0.177*	17.233	-0.027*	-2.530	191.298	0.938
UTTAR PRADESH	-8.968	0.192*	25.925	-0.048*	-5.897	372.361	0.968
WEST BENGAL	-7.131	0.128	19.746	-0.012	-1.762	272.864	0.956

* Significant at 5 percent level of significance

TABLE - 19 REGRESSION COEFFICIENTS,T VALUES,F VALUES & COEFFICIENTS OF DETERMINATION IN INTERCEPT & SLOPE DUMMY REGRESSION FOR CEREALS

	a	b	t(b)	d1	t(d1)	d2	t(d2)	F	R^2
ALL INDIA	22.655	0.096*	6.874	-0.039*	-2.008	-2.974	-0.867	26.085	0.765
ANDHRA PRADESH	20.764	0.097*	6.086	-0.031*	-1.414	-2.363	-0.623	21.371	0.728
ASSAM	25.503	0.146*	4.655	-0.105*	-2.960	10.381	1.641	9.195	0.605
BIHAR	25.132	0.175*	9.306	-0.091*	-3.353	3.225	0.694	38.017	0.826
GUJRAT	17.494	0.056*	6.916	-0.025*	-2.041	1.399	0.601	19.694	0.738
HARYANA	14.221	0.082*	7.861	-0.045*	-3.108	3.673	1.402	25.221	0.775
JAMMU & KASHMIR	12.919	0.191*	13.140	-0.110*	-5.695	5.576	1.642	68.933	0.904
KARNATAKA	16.180	0.143*	6.325	-0.084*	-2.576	0.995	0.171	17.832	0.699
KERALA	18.038	0.098*	7.443	-0.022	-1.206	0.015	0.004	30.231	0.791
MADHYA PRADESH	25.641	0.082*	6.447	-0.038*	-2.205	-2.992	-0.958	22.411	0.737
MAHARASHTRA	15.774	0.092*	7.950	-0.037*	-2.339	-0.257	-0.094	32.091	0.800
ORISSA	5.601	0.221*	6.685	-0.178*	-4.475	2.560	1.922	17.607	0.716
PUNJAB	5.903	0.076*	5.122	-0.057*	-2.858	0.380	0.420	12.605	0.666
RAJASTHAN	22.463	0.055*	6.775	-5.396*	-2.523	-0.004	-0.376	32.750	0.804
TAMIL NADU	20.762	0.146*	8.181	-0.069*	-2.817	-0.117	-0.026	32.224	0.801
UTTAR PRADESH	20.665	0.074*	7.115	-0.029*	-1.947	-2.064	-0.752	26.381	0.767
WEST BENGAL	22.237	0.212*	0.277	-0.146*	-5.305	0.064	0.019	52.160	0.876

TABLE - 20 REGRESSION COEFFICIENTS,T VALUES,F VALUES & COEFFICIENTS OF DETERMINATION IN INTERCEPT & SLOPE DUMMY REGRESSION FOR CLOTHING

	a	b	t(b)	d1	t(d1)	d2	t(d2)	f	R^2
ALL INDIA	-11.091	0.202*	20.094	-0.057*	-4.103	1.693	0.688	213.166	0.964
ANDHRA PRADESH	-14.561	0.257*	15.586	-0.052*	-2.312	2.333	0.598	142.447	0.947
ASSAM	-17.471	0.232*	9.082	-0.158*	-5.452	14.099*	2.729	37.441	0.862
BIHAR	-14.443	0.237*	18.958	-0.069*	-3.863	4.079	1.321	178.068	0.957
GUJRAT	18.817	0.264*	14.238	-0.076*	-2.668	2.288	0.432	93.131	0.930
HARYANA	-10.601	0.180*	9.262	-5.856*	-1.195	0.009	0.361	61.894	0.894
JAMMU & KASHMIR	-14.357	0.227*	13.671	-0.063*	-2.861	0.066	0.017	93.314	0.927
KARNATAKA	-11.958	0.211*	16.418	-0.037*	-1.993	-0.553	-0.168	148.440	0.951
KERALA	-8.224	0.132*	12.450	0.010	0.679	-1.768	-0.613	112.960	0.934
MADHYA PRADESH	-9.153	0.226*	16.476	-0.077*	-4.121	-0.732	-0.224	139.499	0.946
MAHARASHTRA	-9.329	0.205*	20.372	-0.081*	-5.912	1.586	0.668	205.453	0.968
ORISSA	-0.895	0.108*	8.265	-0.029*	-1.849	-0.048	-0.091	49.994	0.877
PUNJAB	-2.321	0.158*	22.889	-0.035*	-3.805	0.462	1.096	309.592	0.980
RAJASTHAN	-10.124	0.207*	23.810	-0.037*	-2.820	0.153	0.066	302.232	0.974
TAMIL NADU	-9.365	0.171*	14.019	-0.017	-1.023	-2.444	-0.794	125.857	0.940
UTTAR PRADESH	-9.542	0.194*	21.969	-0.054*	-4.146	1.176	0.500	240.875	0.968
WEST BENGAL	-6.389	0.125*	15.725	-1.439	-0.789	-0.005	-0.483	179.370	0.957

* Significant at 5 percent level of significance

characterstic of Kerela is really interesting in this context because insignificant difference between rural and urban in both autonomous and induced consumption is comparatively more significant than all other states.

In clothing there is significant rural-urban differences in induced consumption in all the states except Haryan, Kerela and West Bengal. Induced consumption for clothing is higher in rural areas than rural areas in all the states. The differences is very high in automonous part than induced part of consumption in clothing too.

Most significant difference exists in Assam, Madhya Pradesh and Maharashtra. Assam and Maharashtra are culturally advanced and have lot of imitation for foreign dresses etc. which may be the cause for such rural-urban differentials in induced consumption. When rural urban differentials are tested simultaneously total consumption in one equation, positive values of d2 implies in some states shows higher total consumption in urban areas than rural areas. In cereals, positive values of d2 are obtained in all states except Andhra Pradesh, Madhya Pradesh, Maharashtra, Rajasthan, Tamilnadu and Uttar Pradesh. In clothing states where urban total expenditure are lower (d2 vlue negative) than rural areas in clothing are Karnataka, Kerela, Madhya Pradesh, Orissa, Tamilnadu and West Bengal. To conclude, in rural areas changes in autonomous consumpton and induced consumption are rapid and significant when income changes, than urban areas thus, all the analysis confirms high rural urban variations between rural and urban areas in consumption patterns in India.

CHAPTER - IV

THE FORMS OF ENGEL FUNCTIONS, THEIR SUITABILITY AND EXPENDITURE ELASTICITIES

CHAPTER - IV

FORMS OF ENGEL FUNCTIONS, THEIR SUITABILITY AND EXPENDITURE ELASTICITIES.

This chapter analyses suitability of various Engel functions for cereals and clothing in rural & urban areas of different states in section-1. Section-2 contains analysis of expenditure elasticities calculated from eight types of functions for cereals and clothing &it's inter-state variations.

IV.I THE FORM OF ENGEL FUNCTIONS AND THEIR SUITABILITY

Empirical investigations on consumer behaviour in India start with the customary procedure of first determining suitable relationships between income (Total Expenditure) and particular item expenditure. These investigations are carried out in this study separately on rural and urban households of each state in India. Out of different mathematical forms of Engel functions, this study is based on eight different algebric formulationsas explained in chapter II. Relative merits of various forms are extensively discussed in econometric literature and it is beyond the purview of this study to repeat the details. It is, however, important to note that research workers, experimenting with a number of engel functions, have derived a whole lot of differing results. No single form turns out to be adequate for all commodities, for all times and for all areas or states. The field is still wide open to experimentation. In the study functional relationship for cereals and clothing have been found out from the results obtained from the regression analysis.

In determining suitable relationships from several ones one has to strike a balance between number of factors. This involves several economic and statistical considerastions. A basic condition which any function should meet in order to qualify itself is that it should be valid over the whole or at least a greater part of the income studies. A linear relationship may not meet this condition especially for necessities (Foodgrains).

Out of different statistical criteria as discussed in the methodology for comparing different functions the square of correlation coefficient R^2 asociated with each form i.e., coefficient of determination for judging the suitability of functions have been used. Greater the value of R^2 the function is more suitable than others. But strictly speaking, the R^2 obtained from the eight functional forms are not comparable unless the dependent variable is suitably transferred, say, on the lines of the BOX-COX Transformation. However, in actual practice, such an adjustment has a very negligible effect on the value of R^2. On the otherhand R^2 value of two functional forms fitted from different number of observations are not comparable. However, in this study number of observations are same for all cases and the suitability of functions are judged from the value of R^2. The results are explained below for cereals and clothing for different states.

A look at the results presented in tables immediately shows that in most states the behaviour of consumption of cereals and total expenditure are well described by log-inverse function. The behaviour of the function (6) i.e., log-log inverse which Sinha (1966), Maitra (1989) and Bhattacharya and Maitra (1970) found as most suitable for various food items, is also found suitable for cereals in this study. According to this function (6) the income elasity is increasing if c is greater than zero. Function (8) was found to be suitable in most of the states for cereals and according to this function, income elasticity is proportional to the logarithm of total expenditure and thus changes in it are expected to be slow. Function (1), (2), (3), and (7) are unsuitable for cereals in almost all states which are evident from the values of R^2. The suitability of functions are analysed in detail (state-wise and commodity-wise) below.

CEREALS - RURAL REGIONS

From a perusal of the values of the square of correlation coefficients listed in tables, it is observed that functions (4), (5), (6) and (8) are suitable functions for rural regions for cereals. But in some of the states function (2) is found to be suitable in rural areas which is in contrast with the earlier study done by D.B.Gupta. Function (8) appears to be the most suitable function for cereals in rural areas. Function (7) is most suitable in Punjab and function (4) is most suitable in Haryana, Assam, Maharashtra, Rajasthan. To conclude log quadratic function i.e., (8) is most prefered for cereals in rural areas.

CEREALS - URBAN REGIONS

In urban regions for cereals function (2) is suitable for Assam, Karnataka, Kerala, Punjab and most suitable for Jammu & Kashmir and Madhya Pradesh. Functions (4), (5), (6), (8) are suitable in some of the states. Function (5) is not suitable for Gujarat and Orissa whereas function (5) is suitable for Madhya Pradesh and Jammu & Kashmir. On the whole function (8) is most suited for cereals in urban areas too.

CLOTHING - RURAL REGIONS

In India clothing is still a luxury item and it is expected that with the increase in income, expenditure on clothing remains constant or increases over time. So functions giving constant marginal propensity to consume are found to be suitable in this case. Function (3), (4), (5) are unsuitable in all the states for clothing and function (3) is the function giving lowest value of R^2 for clothing. Functions (1), (2), (8) and (7) are suitable. In most cases function (6) is also suitable. Function (8) is most suitable for clothing in rural regions in most of the states. Function (7) is found to be unsuitable in Madhya Pradesh.

CLOTHING : - URBAN REGIONS

Urban regions depict the same picture as rural regions for clothing. Functions (3), (4), (5) are unsuitable and function (3) is the most unsuitable function which gives very low value of coefficient of variation. Functions (1), (2) and (8) are suitable and function (2) is the most suitable for urban regions. Functions (6), (7) are also suitable.

From above analysis it may be concluded that log-quadratic function(8) may be used as the best fit function for cereals in both rural and urban areas. Function (2) i.e., is, quadratic function may be used in urban areas function (8) in rural areas for clothing.

IV.2 ELASTICITIES FOR CEREALS AND CLOTHING

In most of the work on consumer behaviour researchers are interested in finding out income elasticities of demand for different commodities. This elasticity is usually called expenditure elasticity because total expenditure is used as proxy for income.It shows the degree of responsiveness of the consumer for various commodities when their income changes. Since this elasticity is one of the most important factor in determining future demand, these elasticities have been calculated for cereals and clothing for all the states and in rural and urban regions separately.

Eight different kinds of algebric functions have been fitted to data to find out elasticities and values of a,b,c,i.e. regression coefficients, their t values, R^2 and value of elasticities are shown in the tables . A survey of these tables shows that :-

i) The magnitudes of expenditure elasticities depend on the type of function estimated.

ii) The expenditure elasticitis obtained from the same mathematical expression for valrious states are different.

iii) In all the states usually elasticities are less than unity for cereals and greater than unity for clothing.

iv) Urban elasticities in general are smaller than the rural ones, specially for cereals.

Before going into the details of the study, some basic reasons for this variations may be outlined. Firstly different mathematical forms make different assumptions in regard to the behaviour of elasticity for instance function (1) assumes constant marginal propensity to consume. Function (4) i.e., semi-log assumes an inverse relationship between elasticity and particular expendiyture, function (7) i.e., log-linear assumes constant elasticity while other functions make more complex assumptions. Thus differences in elasticities based on different functions are not surprising. Also, the mean expenditures at which regional elasticities are calculated are not equal and thus some differences in elasticities of different states are bound to appear because, the values of elasticities depend on the level of total expenditure. Inter-state differences may also arise when certain basic differences, such as household size exist between regions. The third type of variation is caused by the differences in the nature of two commodities. Cereals which is a staple commodity in India is a necessity and hence, the generally low elasticities observed for it. Clothing, on the other hand, is still a luxury in India and thus elasticities for it are usually high. Rural and urban differences are the result of these differencess in levels of per capita total expenditure and the relative importance

TABLE-21 REGRESSION COEFFICIENTS, ELASTICITIES, COEFFICIENTS OF DETERMINATION AND T VALUES OF VARIOUS ENGEL FUNCTIONS FOR CEREALS FOR **ALL INDIA**

RURAL

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	22.6552	0.0962*	6.851	--	--	0.3613	0.796
2. Quadratic	14.4587	0.2218*	6.805	-0.0003*	-4.022	0.1848	0.918
3. Hyperbolic	49.1776	1008.8260*	9.320	--	--	0.2132	0.879
4. Semi-log	-34.2097	15.1843*	25.990	--	--	0.4278	0.983
5. Log -inverse	3.9622	34.0041	13.481	--	--	0.2551	0.938
6. Log-log-inv.	2.8766	0.1982*	2.371	21.0408*	3.583	0.3560	0.959
7. Log-linear	1.3113	0.4770*	11.094	--	--	0.4770	0.911
8. Log Quadratic	-1.8984	1.9006*	9.319	0.1534*	7.012	0.4923	0.984

URBAN

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	19.6807	0.0573*	4.274	--	--	0.2878	0.603
2. Quadratic	11.4908	0.1785*	6.829	-0.0003*	-4.864	0.1600	0.874
3. Hyperbolic	36.5944	627.4573*	11.236	--	--	0.1636	0.913
4. Semi-log	19.0013	10.1030*	12.893	--	--	0.3656	0.933
5. Log-inverse	3.6885	30.5976*	15.415	--	--	0.2204	0.952
6. Log-log-inv.	3.3937	0.0543*	0.713	27.5105*	5.758	0.2525	0.954
7. Log-linear	1.1687	0.4512*	7.285	--	--	0.4512	0.816
8. Log Quadratic	-3.2965	2.4502*	12.174	0.2168*	9.983	0.4469	0.982

TABLE-22 REGRESSION COEFFICIENTS, ELASTICITIES, COEFFICIENTS OF DETERMINATION AND T VALUES OF VARIOUS ENGEL FUNCTIONS FOR CEREALS FOR **ANDHRA PRADESH**

RURAL

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	20.8017	0.0878*	4.859	---	---	0.3821	0.663
2. Quadratic	16.5698	0.1504*	2.479	-0.0002	-1.080	0.9850	0.695
3. Hyperbolic	43.0595	730.2932*	5.107	---	---	0.1480	0.685
4. Semi-log	-27.6876	13.0627*	6.815	---	---	0.3879	0.795
5. Log -inverse	3.8197	29.6954*	7.583	---	---	0.2026	0.827
6. Log-log-inv.	3.0990	0.1331*	0.746	22.2557	2.071	0.2849	0.836
7. Log-linear	1.2012	0.4762*	6.366	---	---	0.4762	0.772
8. Log Quadratic	-2.4105	2.1084*	3.765	0.1785	2.931	0.4341	0.872

URBAN

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	18.4013	0.0667*	4.010	--	--	0.3254	0.573
2. Quadratic	7.8018	0.2167*	6.721	-0.0003*	-4.881	0.2291	0.865
3. Hyperbolic	37.7294	664.8690*	8.941	--	--	0.1831	0.869
4. Semi-log	-27.8141	12.0786*	15.092	--	--	0.4427	0.950
5. Log -inverse	3.9597	52.6602*	13.279	--	--	0.3957	0.936
6. Log-log-inv.	4.7629	-0.1496*	-0.977	60.3437*	5.093	0.3038	0.941
7. Log-linear	-0.4549	0.4864*	5.182	--	--	0.4864	0.699
8. Log Quadratic	-8.3644	4.1465*	8.359	0.4084*	6.938	0.4218	0.943

*Means significant at 5 percent level of significance

TABLE-23 REGRESSION COEFFICIENTS, ELASTICITIES, COEFFICIENTS OF DETERMINATION AND T VALUES OF VARIOUS ENGEL FUNCTIONS FOR CEREALS FOR **ASSAM**

RURAL

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	22.1006	0.1634*	5.281	--	--	0.4853	0.717
2. Quadratic	-5.3225	0.6575*	30.831	-0.0016*	-23.654	0.7284	0.995
3. Hyperbolic	60.9200	1557.3330*	6.688	--	--	0.2842	0.803
4. Semi-log	-61.6874	22.4842*	10.483	--	--	0.5324	0.909
5. Log -inverse	4.1983	44.7222*	7.058	--	--	0.3499	0.819
6. Log-log-inv.	1.6357	0.4694*	1.963	11.9471	0.678	0.5630	0.869
7. Log-linear	0.7833	0.6229*	8.340	--	--	0.6229	0.863
8. Log Quadratic	-7.3785	4.2069*	12.863	0.3859*	10.983	0.6180	0.990

URBAN

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	35.8884	0.0403*	2.470	--	--	0.1631	0.404
2. Quadratic	20.8032	0.2032*	4.769	-0.0002*	-3.936	0.1671	0.797
3. Hyperbolic	53.4336	1161.1850*	4.402	--	--	0.1560	0.683
4. Semi-log	-14.3307	11.6707*	4.400	--	--	0.2722	0.683
5. Log -inverse	3.9944	28.8889*	4.399	--	--	0.1664	0.682
6. Log-log-inv.	3.2749	0.126*	0.890	17.8102	1.262	0.2288	0.711
7. Log-linear	2.3389	0.2842*	4.120	--	--	0.2842	0.653
8. Log Quadratic	2.7303	2.2889*	3.193	0.1943	2.804	0.3847	0.825

TABLE-24 REGRESSION COEFFICIENTS, ELASTICITIES, COEFFICIENTS OF DETERMINATION AND T VALUES OF VARIOUS ENGEL FUNCTIONS FOR CEREALS FOR **BIHAR**

RURAL

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	25.1321	0.1751*	9.157	--	--	0.4791	0.875
2. Quadratic	13.4923	0.3566*	8.201	-0.0004*	-4.347	0.3479	0.954
3. Hyperbolic	71.0101	1677.3780*	7.098	--	--	0.2633	0.808
4. Semi-log	73.6429	26.6132*	30.826	--	--	0.5516	0.988
5. Log -inverse	4.3377	41.6183*	12.148	--	--	0.3153	0.925
6. Log-log-inv.	2.3907	0.3570*	4.486	18.6394	3.361	0.7433	0.973
7. Log-linear	1.0065	0.6040*	14.519	--	--	0.6040	0.946
8. Log Quadratic	-2.2950	2.0614*	11.926	0.1563*	8.467	0.6296	0.993

URBAN

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	28.3567	0.0844*	4.421	--	--	0.2846	0.620
2. Quadratic	16.2733	0.2715*	7.332	-0.0040	-5.273	0.2485	0.892
3. Hyperbolic	52.8115	970.3237*	9.236	--	--	0.1831	0.877
4. Semi-log	-26.3633	14.3380*	11.185	--	--	0.3617	0.912
5. Log -inverse	4.0180	28.7510*	9.529	--	--	0.2150	0.883
6. Log-log-inv.	3.1180	0.1645*	1.490	18.2324	2.392	0.3009	0.903
7. Log-linear	1.7447	0.4091*	8.323	--	--	0.4091	0.852
8. Log Quadratic	-2.1505	2.1311*	8.501	0.1850*	6.897	0.4291	0.972

*Means significant at 5 percent level of significance

TABLE-25 REGRESSION COEFFICIENT, ELASTICITIES, COEFFICIENTS OF DETERMINATION AND T VALUES OF VARIOUS ENGEL FUNCTIONS FOR CEREALS FOR **GUJRAT**

RURAL

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	17.4943	0.0564*	5.972	--	--	0.3018	0.748
2. Quadratic	11.3817	0.1494*	8.158	-0.0002*	-5.299	0.3194	0.929
3. Hyperbolic	33.3232	609.2324*	9.736	--	--	0.1814	0.888
4. Semi-log	-17.3327	9.2076*	19.931	--	--	0.3675	0.971
5. Log -inverse	3.5561	28.2946*	12.666	--	--	0.2111	0.930
6. Log-log-inv.	2.6509	0.1653*	2.199	17.6829*	3.398	0.2972	0.952
7. Log-linear	1.3197	0.4024*	10.444	--	--	0.4024	0.901
8. Log Quadratic	-1.3934	1.5989*	6.823	0.1283*	5.128	0.4185	0.971

URBAN

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	15.8855	0.0425*	4.216	--	--	0.2782	0.618
2. Quadratic	9.5887	0.1326*	5.677	-0.0002*	-4.016	0.1151	0.854
3. Hyperbolic	28.9329	599.3810*	6.447	--	--	0.1888	0.791
4. Semi-log	-13.5961	7.5513*	8.022	--	--	0.3429	0.854
5. Log -inverse	3.4017	30.6111*	5.197	--	--	0.2124	0.711
6. Log-log-inv.	1.9454	0.2603*	1.486	10.8088	0.748	0.3353	0.763
7. Log-linear	1.2508	0.3812*	5.739	--	--	0.3812	0.750
8. Log Quadratic	-2.7280	2.0863*	2.783	0.1785	2.281	0.4012	0.835

TABLE-26 REGRESSION COEFFICIENT, ELASTICITIES, COEFFICIENTS OF DETERMINATION AND T VALUES OF VARIOUS ENGEL FUNCTIONS FOR CEREALS FOR **HARYANA**

RURAL

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	14.2210	0.0819*	8.164	--	--	0.4336	0.847
2. Quadratic	9.0229	0.1662*	6.462	-0.0002*	-3.418	0.4462	0.926
3. Hyperbolic	35.0739	734.2905*	7.241	--	--	0.2199	0.814
4. Semi-log	26.8038	11.2783*	15.786	--	--	0.4491	0.954
5. Log -inverse	3.6105	34.3029*	7.575	--	--	0.2580	0.827
6. Log-log-inv.	1.3215	0.4158*	2.632	6.6593	0.598	0.4659	0.894
7. Log-linear	0.8210	0.5049*	9.876	--	--	0.5049	0.890
8. Log Quadratic	-1.1789	1.4084*	2.785	0.0991	1.794	0.4967	0.915

URBAN

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	17.8945	0.0366*	3.450	--	--	0.2429	0.543
2. Quadratic	15.9032	0.0627*	1.605	-0.0001	-0.695	0.4148	0.567
3. Hyperbolic	28.8712	525.3750*	3.816	--	--	0.1423	0.593
4. Semi-log	-7.3433	6.4379*	4.435	--	--	0.2726	0.663
5. Log -inverse	3.4029	27.3750*	4.174	--	--	0.1752	0.635
6. Log-log-inv.	2.6879	0.1283*	0.780	17.6049	1.239	0.2409	0.658
7. Log-linear	1.6465	0.3083*	3.873	--	--	0.3083	0.600
8. Log Quadratic	-2.1649	1.9292	2.237	0.1685	1.886	0.3027	0.713

*Means significant at 5 percent level of significance

TABLE-27 REGRESSION COEFFICIENTS, ELASTICITIES, COEFFICIENTS OF DETERMINATION AND T VALUES OF VARIOUS ENGEL FUNCTIONS FOR CEREALS FOR **JAMMU&KASHMIR**

RURAL

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	12.5184	0.1946*	12.321	--	--	0.6704	0.927
2. Quadratic	11.7572	0.2071*	3.370	-0.0001	-0.211	0.5529	0.927
3. Hyperbolic	60.6100	1759.6660*	5.646	--	--	0.3540	0.727
4. Semi-log	-77.5583	25.0793*	9.248	--	--	0.6603	0.877
5. Log -inverse	4.1710	51.6889*	10.184	--	--	0.3949	0.896
6. Log-log-inv.	0.9847	0.5743*	4.297	9.6614	0.938	0.6481	0.961
7. Log-linear	0.3123	0.6933*	16.584	--	--	0.6933	0.958
8. Log Quadratic	-1.4907	1.4927*	3.182	0.0863	1.710	0.6970	0.967

URBAN

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	20.2503	0.0739*	6.188	--	--	0.3597	0.793
2. Quadratic	13.2899	0.1641*	4.486	-0.0002	-2.554	0.1312	0.880
3. Hyperbolic	42.8825	1125.3330*	6.206	--	--	0.2311	0.794
4. Semi-log	1.8563	6.4304*	3.339	--	--	0.2033	0.527
5. Log -inverse	3.7975	39.0000	5.510	--	--	0.2533	0.752
6. Log-log-inv.	3.3824	0.0759*	1.280	32.6571*	3.857	0.2880	0.790
7. Log-linear	2.4349	0.2101	2.824	--	--	0.2101	0.444
8 Log Quadratic	2.4077	-0.0385	-0.519	-0.0498*	-4.229	0.4226	0.814

TABLE-28 REGRESSION COEFFICIENTS, ELASTICITIES, COEFFICIENTS OF DETERMINATION AND T VALUES OF VARIOUS ENGEL FUNCTIONS FOR CEREALS FOR **KARNATAKA**

RURAL

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	16.1800	0.1429*	11.240	--	--	0.5428	0.913
2. Quadratic	8.8809	0.2538*	8.347	-0.0002*	-3.806	0.6191	0.959
3. Hyperbolic	53.2298	1313.8300*	6.189	--	--	0.2762	0.761
4. Semi-log	-61.5642	21.0856*	18.382	--	--	0.5958	0.966
5. Log -inverse	4.0367	43.3901	10.894	--	--	0.3228	0.908
6. Log-log-inv.	1.4976	0.4722*	0.412	12.6061	2.440	0.5659	0.981
7. Log-linear	0.5089	0.6391*	19.742	--	--	0.6391	0.970
8. Log Quadratic	-1.7115	1.6219	7.875	0.1057*	4.793	0.6516	0.990

URBAN

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	17.8941	0.0793*	5.633	--	--	0.3911	0.743
2. Quadratic	8.9606	0.2093*	8.246	-0.0003*	-5.361	0.2161	0.934
3. Hyperbolic	40.5879	856.7798*	9.329	--	--	0.2012	0.888
4. Semi-log	-30.3725	12.7684*	20.268	--	--	0.4345	0.974
5. Log -inverse	3.7373	35.0872*	8.839	--	--	0.2429	0.877
6. Log-log-inv.	2.6913	0.1888*	1.201	22.6687	2.052	0.3452	0.892
7. Log-linear	0.9821	0.4907*	7.795	--	--	0.4907	0.847
8. Log Quadratic	-2.9706	2.2559	5.730	0.1912*	4.505	0.4663	0.949

*Means significant at 5 percent level of significance

TABLE-29 REGRESSION COEFFICIENTS, ELASTICITIES, COEFFICIENTS OF DETERMINATION AND T VALUES OF VARIOUS ENGEL FUNCTIONS FOR CEREALS FOR **KERALA**

RURAL

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	18.0381	0.0983*	7.715	--	--	0.4369	0.832
2. Quadratic	8.3079	0.2315*	13.800	-0.0002*	-8.306	0.5275	0.977
3. Hyperbolic	47.4354	1134.2370*	7.301	--	--	0.2486	0.816
4. Semi-log	-47.4772	17.1854*	38.958	--	--	0.5364	0.992
5. Log -inverse	3.9319	42.0415*	12.193	--	--	0.2952	0.925
6. Log-log-inv.	1.9602	0.3562*	5.345	18.1934*	3.752	0.4839	0.979
7. Log-linear	0.6488	0.5862*	15.541	--	--	0.5862	0.953
8. Log Quadratic	-2.0185	1.7559*	11.474	0.1244*	7.683	0.6039	0.993

URBAN

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	18.0537	0.0759*	5.621	--	--	0.3789	0.725
2. Quadratic	7.9863	0.2136*	12.816	-0.0003*	-8.666	0.2278	0.965
3. Hyperbolic	42.0551	956.4813*	7.619	--	--	0.2267	0.829
4. Semi-log	-35.5106	13.9256*	18.626	--	--	0.4790	0.967
5. Log -inverse	3.7989	38.3942*	9.676	--	--	0.2645	0.886
6. Log-log-inv.	1.8757	0.3459*	3.817	14.9205	2.219	0.4487	0.951
7. Log-linear	0.8200	0.5299*	12.554	--	--	0.5299	0.929
8. Log Quadratic	-2.0584	1.7923*	7.218	0.1341*	5.107	0.5478	0.979

TABLE-30 REGRESSION COEFFICIENTS, ELASTICITIES, COEFFICIENTS OF DETERMINATION AND T VALUES OF VARIOUS ENGEL FUNCTIONS FOR CEREALS FOR **MADHYA PRADESH**

RURAL

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	25.6410	0.0823*	5.089	--	--	0.2847	0.683
2. Quadratic	23.9997	0.1118	1.973	-0.0001	-0.545	0.2325	0.692
3. Hyperbolic	39.1901	473.3766	1.311	--	--	0.1065	0.125
4. Semi-log	-1.1975	8.3837*	3.581	--	--	0.2338	0.517
5. Log -inverse	3.6269	25.3233	1.273	--	--	0.2042	0.119
6. Log-log-inv.	0.5063	0.5082*	5.099	-17.1439*	-3.423	0.3699	0.738
7. Log-linear	2.4238	0.2490*	3.191	--	--	0.2490	0.459
8. Log Quadratic	4.6994	-0.8649	-1.692	-0.1295	-2.198	0.4137	0.624

URBAN

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	22.7546	0.0436*	5.753	--	--	0.2105	0.734
2. Quadratic	17.1493	0.1238*	14.134	-0.0002*	-9.586	0.1356	0.972
3. Hyperbolic	36.2070	574.4333*	7.929	--	--	0.1432	0.840
4. Semi-log	16.9040	2.7298	2.172	--	--	0.0947	0.282
5. Log -inverse	3.6020	20.4889*	8.463	--	--	0.1472	0.856
6. Log-log-inv.	3.6040	-0.0004	-0.017	20.5175*	6.750	0.1470	0.856
7. Log-linear	2.9330	0.0929*	2.064	--	--	0.0929	0.262
8. Log Quadratic	2.7621	-0.0134	-0.673	-0.0288*	-9.065	0.2383	0.913

*Means significant at 5 percent level of significance

TABLE-31 REGRESSION COEFFICIENTS, ELASTICITIES, COEFFICIENTS OF DETERMINATION AND T VALUES OF VARIOUS ENGEL FUNCTIONS FOR CEREALS FOR **MAHARASTRA**

RURAL

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	15.7745	0.0924*	8.002	--	--	0.4325	0.842
2. Quadratic	8.8679	0.2036*	7.923	-0.0003*	-4.506	0.5276	0.945
3. Hyperbolic	39.7818	882.8715*	9.020	--	--	0.2440	0.871
4. Semi-log	-34.2871	13.5646*	33.147	--	--	0.4879	0.989
5. Log -inverse	3.7627	38.5145*	14.336	--	--	0.2959	0.945
6. Log-log-inv.	2.4114	0.2477*	2.919	22.4781*	3.821	0.4204	0.969
7. Log-linear	0.7209	0.5503*	12.406	--	--	0.5503	0.928
8. Log Quadratic	-2.6578	2.0568*	10.566	0.1633*	7.773	0.5609	0.989

URBAN

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	15.5904	0.0552*	4.968	--	--	0.3306	0.673
2. Quadratic	8.6115	0.1605*	8.010	0.0002*	-5.507	0.4132	0.913
3. Hyperbolic	32.1161	650.2946*	11.882	--	--	0.2001	0.922
4. Semi-log	-19.7430	9.2845*	14.807	--	--	0.3986	0.948
5. Log -inverse	3.5534	34.9875*	13.680	--	--	0.2508	0.940
6. Log-log-inv.	2.9766	0.1044*	1.150	28.1586*	4.363	0.3063	0.946
7. Log-linear	0.9035	0.4693*	8.349	--	--	0.4693	0.853
8. Log Quadratic	-3.7683	2.5357*	10.440	0.2218*	8.541	0.4818	0.987

TABLE-32 REGRESSION COEFFICIENTS, ELASTICITIES, COEFFICIENTS OF DETERMINATION AND T VALUES OF VARIOUS ENGEL FUNCTIONS FOR CEREALS FOR **ORISSA**

RURAL

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	29.6166	0.1587*	4.946	--	--	0.4110	0.690
2. Quadratic	8.1041	0.5291*	13.258	-0.0009*	-9.621	0.3060	0.970
3. Hyperbolic	74.5475	1731.0180*	10.320	--	--	0.2640	0.906
4. Semi-log	-59.7497	24.1027*	13.706	--	--	0.4790	0.945
5. Log -inverse	4.4521	45.4928*	34.236	--	--	0.3490	0.991
6. Log-log-inv.	4.1800	0.0492*	1.040	42.1477*	12.115	0.3720	0.992
7. Log-linear	1.1625	0.5809*	8.552	--	--	0.5810	0.868
8. Log Quadratic	-4.4369	3.0981*	40.639	0.2744*	33.151	0.5920	0.999

URBAN

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	29.9117	0.0830*	3.784	--	--	0.2690	0.566
2. Quadratic	17.1096	0.2931*	6.165	-0.0005*	-4.595	0.2060	0.860
3. Hyperbolic	56.0797	1106.5470*	9.013	--	--	0.2040	0.881
4. Semi-log	-22.6769	13.8886*	7.881	--	--	0.3390	0.850
5. Log -inverse	4.0869	31.0589*	10.236	--	--	0.2340	0.905
6. Log-log-inv.	3.7376	0.0626*	0.567	26.4920*	3.064	0.2620	0.908
7. Log-linear	1.9297	0.3782*	7.116	--	--	0.3780	0.822
8. Log Quadratic	-1.6956	1.9896*	5.060	0.1738*	4.114	0.3980	0.934

*Means significant at 5 percent level of significance

TABLE-33 REGRESSION COEFFICIENTS, ELASTICITIES, COEFFICIENTS OF DETERMINATION AND T VALUES OF VARIOUS ENGEL FUNCTIONS FOR CEREALS FOR **PUNJAB**

RURAL

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	10.5991	0.0685*	6.767	--	--	0.4650	0.806
2. Quadratic	5.9928	0.1413*	4.900	-0.0002	-2.632	0.4310	0.886
3. Hyperbolic	30.6461	791.6919*	9.228	--	--	0.2970	0.886
4. Semi-log	-28.5321	10.5456*	16.238	--	--	0.5320	0.960
5. Log -inverse	3.6529	59.1660	13.618	--	--	0.4400	0.944
6. Log-log-inv.	4.4857	-0.1494*	-1.009	69.9872*	6.051	0.3710	0.949
7. Log-linear	-0.2768	0.6806*	5.953	--	--	0.6800	0.763
8. Log Quadratic	-7.5744	3.9155	4.564	0.3479*	3.786	0.7260	0.903

URBAN

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	13.1213	0.0447*	6.010	--	--	0.3300	0.783
2. Quadratic	8.0415	0.1178*	8.254	-0.0002*	-5.322	0.3140	0.948
3. Hyperbolic	27.5876	689.1969*	7.143	--	--	0.2430	0.836
4. Semi-log	-16.2143	7.6183*	12.025	--	--	0.3890	0.935
5. Log -inverse	3.3653	37.4556*	10.245	--	--	0.2590	0.913
6. Log-log-inv.	1.9733	0.2423*	2.782	15.6430	1.877	0.3500	0.953
7. Log-linear	1.0689	0.3961*	11.986	--	--	0.3960	0.935
8. Log Quadratic	-0.8348	1.2088	3.405	0.0847	2.296	0.4130	0.959

TABLE-34 REGRESSION COEFFICIENTS, ELASTICITIES, COEFFICIENTS OF DETERMINATION AND T VALUES OF VARIOUS ENGEL FUNCTIONS FOR CEREALS FOR **RAJASTHAN**

RURAL

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	22.4633	0.0547*	7.629	--	--	0.2515	0.829
2. Quadratic	18.0474	0.1181*	7.369	-0.0001*	-4.136	0.2996	0.933
3. Hyperbolic	38.2526	606.9294*	8.712	--	--	0.1465	0.863
4. Semi-log	-11.9653	9.1037*	24.726	--	--	0.3032	0.981
5. Log -inverse	3.6692	21.9419*	12.605	--	--	0.1589	0.930
6. Log-log-inv.	2.6875	0.1785*	4.798	10.2671*	3.883	0.2529	0.977
7. Log-linear	1.9348	0.3115*	14.522	--	--	0.3115	0.946
8. Log Quadratic	0.7822	0.8168	4.773	0.0538	2.967	0.3208	0.970

URBAN

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	17.0670	0.0502*	5.210	--	--	0.2870	0.693
2. Quadratic	11.5709	0.1338*	6.426	-0.0002*	-4.206	0.3193	0.882
3. Hyperbolic	31.0774	499.4207*	12.519	--	--	0.1557	0.929
4. Semi-log	-13.2814	8.0822*	17.029	--	--	0.3376	0.960
5. Log -inverse	3.5037	26.5061	20.176	--	--	0.1936	0.971
6. Log-log-inv.	3.0929	0.0757*	1.552	22.1591*	7.233	0.2376	0.977
7. Log-linear	1.2916	0.3981*	8.761	--	--	0.3981	0.865
8. Log Quadratic	-1.7494	1.7736	8.958	0.1505*	6.985	0.3859	0.975

*Means significant at 5 per cent level of significance

TABLE-35 REGRESSION COEFFICIENTS, ELASTICITIES, COEFFICIENT OF DETERMINATION AND T VALUES OF VARIOUS ENGEL FUNCTIONS FOR CEREALS FOR **TAMIL NADU**

RURAL

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	20.7626	0.1456*	9.172	--	--	0.4859	0.875
2. Quadratic	10.2469	0.3030*	10.610	-0.0003*	-5.758	0.5439	0.969
3. Hyperbolic	60.1305	1453.7180*	7.075	--	--	0.2668	0.807
4. Semi-log	62.6348	22.4445*	31.281	--	--	0.5555	0.988
5. Log -inverse	4.1816	43.9087*	12.635	--	--	0.3256	0.930
6. Log-log-inv.	2.1269	0.3737*	4.499	18.9332*	3.180	0.5140	0.975
7. Log-linear	0.7395	0.6200*	15.557	--	--	0.6200	0.953
8. Log Quadratic	-2.1754	1.9154*	12.726	0.1397*	8.649	0.6329	0.996

URBAN

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	20.6451	0.0767*	4.155	--	--	0.3492	0.590
2. Quadratic	9.2665	0.2309*	-5.497	0.0003*	-3.849	0.4932	0.825
3. Hyperbolic	42.3049	780.1478*	5.047	--	--	0.1703	0.680
4. Semi-log	-32.1469	13.7026*	7.423	--	--	0.4319	0.821
5. Log -inverse	3.8063	32.9385*	6.912	--	--	0.2280	0.799
6. Log-log-inv.	2.5197	0.2373	1.441	19.6263	1.904	0.3732	0.831
7. Log-linear	0.9428	0.5185*	6.437	--	--	0.5185	0.775
8. Log Quadratic	-2.2239	1.9297*	2.998	0.1524	2.206	0.5093	0.844

TABLE-36 REGRESSION COEFFICIENTS, ELASTICITIES, COEFFICIENTS OF DETERMINATION AND T VALUES OF VARIOUS ENGEL FUNCTIONS FOR CEREALS FOR **UTTAR PRADESH**

RURAL

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	21.2189	0.0822*	5.634	--	--	0.3144	0.726
2. Quadratic	15.6732	0.1688*	3.440	-0.0002	-1.834	0.3244	0.790
3. Hyperbolic	43.1872	856.5557*	6.952	--	--	0.2345	0.801
4. Semi-log	-27.2938	12.9556*	8.594	--	--	0.4186	0.860
5. Log -inverse	3.8343	32.1482*	10.828	--	--	0.4286	0.860
6. Log-log-inv.	3.1009	0.1365	1.469	23.7738*	3.734	0.3373	0.922
7. Log-linear	1.3645	0.4472*	7.495	--	--	0.4472	0.824
8. Log Quadratic	-1.3877	1.6640*	3.289	0.1312	2.417	0.4858	0.885

URBAN

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	18.6016	0.0441*	4.179	--	--	0.2442	0.593
2. Quadratic	12.3621	0.1380*	6.119	-0.0002*	-4.361	0.3729	0.851
3. Hyperbolic	31.5775	488.1314*	14.407	--	--	0.1456	0.945
4. Semi-log	-10.6323	7.6656*	11.948	--	--	0.3116	0.922
5. Log -inverse	3.5203	25.5671*	17.460	--	--	0.1876	0.962
6. Log-log-inv.	3.4405	0.0147	0.243	24.7195*	6.503	0.1961	0.962
7. Log-linear	1.4329	0.3747*	7.332	--	--	0.3747	0.817
8. Log Quadratic	-2.0083	1.9281*	10.827	0.1697*	8.773	0.3702	0.977

*Means significant at 5 per cent level of significance

TABLE-37 REGRESSION COEFFICIENTS, ELASTICITIES, COEFFICIENTS OF DETERMINATION AND T VALUES OF VARIOUS ENGEL FUNCTIONS FOR CEREALS FOR **WEST BENGAL**

RURAL

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	22.2373	0.2124*	10.555	--	--	0.5527	0.903
2. Quadratic	8.4138	0.4360*	15.216	-0.0006*	-8.161	0.6376	0.986
3. Hyperbolic	75.1211	1872.3980*	7.866	--	--	0.2912	0.838
4. Semi-log	-85.2739	29.4708*	30.849	--	--	0.5932	0.988
5. Log -inverse	4.4127	46.3071*	15.355	--	--	0.3579	0.952
6. Log-log-inv.	0.5027	0.3502*	4.579	23.6906*	4.493	0.5333	0.983
7. Log-linear	0.7079	0.6721*	15.559	--	--	0.6721	0.953
8. Log Quadratic	-2.6389	2.1688*	11.534	0.1627*	7.994	0.6784	0.993

URBAN

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	22.3019	0.0659*	3.514	--	--	0.2908	0.507
2. Quadratic	11.3187	0.2290*	5.832	-0.0004*	-4.356	0.4374	0.819
3. Hyperbolic	43.7838	968.1204*	10.361	--	--	0.2079	0.899
4. Semi-log	-24.6090	12.1397*	8.715	--	--	0.3858	0.864
5. Log -inverse	3.9071	14.3154*	9.710	--	--	0.2904	0.887
6. Log-log-inv.	4.1821	-0.0495	-0.295	43.7158*	3.556	0.2654	0.888
7. Log-linear	1.0099	0.5088*	6.150	--	--	0.5088	0.759
8. Log Quadratic	-4.8768	3.1474*	10.265	0.2866*	8.650	0.4992	0.969

TABLE-38 REGRESSION COEFFICIENTS, ELASTICITIES, COEFFICIENTS OF DETERMINATION AND T VALUES OF VARIOUS ENGEL FUNCTIONS FOR CLOTHING FOR **ALL INDIA**

RURAL

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	-11.0914	0.2017*	20.905	--	--	1.7027	0.973
2. Quadratic	-7.3898	0.1450*	4.780	0.0001	1.952	1.2356	0.980
3. Hyperbolic	34.4295	1372.6970*	3.150	--	--	0.6514	0.453
4. Semi-log	-98.1017	24.8152*	5.698	--	--	1.5706	0.730
5. Log -inverse	3.5211	142.3983*	8.547	--	--	1.0676	0.859
6. Log-log-inv.	-7.9906	2.1015*	8.652	4.9341	0.289	2.1385	0.982
7. Log-linear	-8.3576	2.1669*	25.434	--	--	2.1669	0.982
8. Log Quadratic	-10.8889	3.2897*	3.730	0.1209	1.279	2.1798	0.984

URBAN

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	-9.3980	0.1446*	14.458	--	--	1.8792	0.946
2. Quadratic	-2.2669	0.0399*	4.239	0.0002*	12.010	1.7281	0.996
3. Hyperbolic	21.1869	735.7866	2.315	--	--	0.4973	0.309
4. Semi-log	-66.1452	16.6401*	4.445	--	--	1.5595	0.622
5. Log -inverse	2.7898	127.6829*	5.977	--	--	0.9208	0.749
6. Log-log-inv.	-11.5764	2.6464*	10.342	-22.7599	-1.417	2.4822	0.972
7. Log-linear	-9.7356	2.3181*	20.513	--	--	2.3181	0.972
8. Log Quadratic	-9.2884	2.1179	1.820	-0.0217	-0.173	2.3184	0.972

*Means significant at 5 percent level of significance

TABLE-39 REGRESSION COEFFICIENTS, ELASTICITIES, COEFFICIENTS OF DETERMINATION AND T VALUES OF VARIOUS ENGEL FUNCTIONS FOR CLOTHING FOR **ANDHRA PRADESH**

RURAL

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	-14.5613	0.2568*	18.978	--	--	1.7507	0.968
2. Quadratic	-9.5111	0.1777	4.206	0.0002	1.9560	2.4098	0.976
3. Hyperbolic	25.1790	2538.9738*	1.195	--	--	0.9895	0.106
4. Semi-log	-116.4036	29.6616	5.301	--	--	1.3743	0.701
5. Log -inverse	2.0719	156.0523*	1.734	--	--	1.1798	0.200
6. Log-log-inv.	-11.0840	2.7246*	17.660	-7.5129	-1.0440	2.6677	0.973
7. Log-linear	-10.6348	2.6441*	19.717	--	--	2.6441	0.970
8. Log Quadratic	-16.3801	5.2248	4.942	0.2814	2.4550	2.6471	0.981

URBAN

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	-12.2284	0.2049*	11.699	--	--	1.8119	0.919
2. Quadratic	-5.8149	0.1144	2.151	0.0002	1.7890	1.8477	0.938
3. Hyperbolic	27.6473	801.8301*	1.184	--	--	0.4003	0.215
4. Semi-log	-88.0563	22.6000	3.957	--	--	1.5017	0.566
5. Log -inverse	2.4026	84.6214*	2.348	--	--	0.6358	0.315
6. Log-log-inv.	-19.8973	4.1539*	5.680	-128.6828	-3.0580	3.1870	0.826
7. Log-linear	-8.7704	2.1579	5.023	--	--	2.1579	0.678
8. Log Quadratic	2.3956	-3.0090	-0.965	-0.5765	-1.6700	2.2487	0.743

TABLE-40 REGRESSION COEFFICIENTS, ELASTICITIES, COEFFICIENTS OF ETERMINATION AND T VALUES OF VARIOUS ENGEL FUNCTIONS FOR CLOTHING FOR **ASSAM**

RURAL

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	-17.4711	0.2324*	7.195	--	--	2.2459	0.838
2. Quadratic	7.3814	-0.1803*	-1.484	0.0013*	3.4540	2.7362	0.930
3. Hyperbolic	35.5558	2158.8330*	4.092	--	--	1.1421	0.626
4. Semi-log	-117.3198	27.6637*	4.570	--	--	1.9802	0.676
5. Log -inverse	3.5958	199.0000*	7.982	--	--	1.4708	0.864
6. Log-log-inv.	-11.0094	2.6527*	9.346	-2.6038	-0.1130	2.6334	0.987
7. Log-linear	-10.8406	2.6226	27.891	--	--	2.6226	0.987
8. Log Quadratic	-4.2812	4.7214	1.905	-0.2933	-1.8070	2.6142	0.998

URBAN

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	-3.5865	0.0741*	11.168	--	--	1.3874	0.933
2. Quadratic	-7.4238	0.1155*	4.514	-0.0001	-1.6670	1.0388	0.950
3. Hyperbolic	21.4989	1345.2780*	3.875	--	--	0.8361	0.625
4. Semi-log	-68.9756	15.9624*	7.801	--	--	1.7219	0.871
5. Log -inverse	2.9941	166.6481*	5.887	--	--	0.9601	0.794
6. Log-log-inv.	-4.6650	1.3438*	3.126	48.7186	1.1390	1.6245	0.907
7. Log-linear	-7.2254	1.7758	8.628	--	--	1.7758	0.892
8. Log Quadratic	-17.0473	5.6601	2.113	0.3765	1.4540	1.9704	0.915

*Means significant at 5 percent level of significance

TABLE-41 REGRESSION COEFFICIENTS, ELASTICITIES, COEFFICIENTS OF DETERMINATION AND T VALUES OF VARIOUS ENGEL FUNCTIONS FOR CLOTHING FOR **BIHAR**

RURAL

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	-14.4426	0.2372*	17.546	--	--	1.8561	0.962
2. Quadratic	-5.0672	0.0909*	4.326	0.0003*	7.0860	1.7658	0.993
3. Hyperbolic	37.5711	2525.3980*	2.831	--	--	1.1339	0.400
4. Semi-log	-114.9600	28.7837*	5.199	--	--	1.7062	0.693
5. Log -inverse	3.6022	155.0042*	9.856	--	--	1.1742	0.892
6. Log-log-inv.	-7.1504	1.9717*	12.673	28.0972	2.5912	0.1845	0.993
7. Log-linear	-9.2369	2.3439*	32.332	--	--	2.3439	0.989
8. Log Quadratic	-14.4721	4.6550*	10.609	0.2479*	5.2890	2.3842	0.997

URBAN

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	-12.5822	0.1768*	14.804	--	--	1.8952	0.956
2. Quadratic	-4.7387	0.0725*	2.183	0.0002*	3.2470	1.7464	0.980
3. Hyperbolic	34.8092	2074.8330*	3.719	--	--	0.9791	0.580
4. Semi-log	-111.4466	26.1565*	5.747	--	--	1.8603	0.768
5. Log -inverse	3.9225	252.8334*	5.663	--	--	1.6775	0.762
6. Log-log-inv.	-11.2810	2.6957*	2.721	25.9490	0.2870	2.8679	0.870
7. Log-linear	-12.7998	2.9581*	8.123	--	--	2.9581	0.868
8. Log Quadratic	-45.5023	16.5291*	4.895	1.3822*	4.0280	3.2876	0.953

TABLE-42 REGRESSION COEFFICIENTS, ELASTICITIES, COEFFICIENTS OF DETERMINATION AND T VALUES OF VARIOUS ENGEL FUNCTIONS FOR CLOTHING FOR **GUJRAT**

RURAL

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	-20.9407	0.2731*	12.630	--	--	2.1683	0.935
2. Quadratic	-4.2188	0.0374*	1.167	0.0005*	7.6300	2.1003	0.991
3. Hyperbolic	45.1140	2357.1510*	2.883	--	--	0.9245	0.430
4. Semi-log	-151.9281	36.1016*	4.673	--	--	2.0146	0.665
5. Log -inverse	3.7095	206.8254*	7.684	--	--	1.4536	0.843
6. Log-log-inv.	-10.7577	2.5951*	5.620	11.1195	0.2970	2.6732	0.962
7. Log-linear	-11.4850	2.7225	4.320	--	--	2.7225	0.962
8. Log Quadratic	-13.6619	3.6483	1.745	0.0963	0.4440	2.7421	0.963

URBAN

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	-16.5288	0.1884*	14.383	--	--	2.1660	0.945
2. Quadratic	-3.7357	0.0309*	1.121	0.0003*	5.8930	1.9604	0.990
3. Hyperbolic	34.4589	2231.7780*	3.123	--	--	0.9668	0.520
4. Semi-log	-127.7202	28.9518*	4.966	--	--	2.0432	0.733
5. Log -inverse	3.3296	200.7593*	4.175	--	--	1.2323	0.659
6. Log-log-inv.	-14.1690	3.0758*	5.723	-49.1814	-1.0000	2.7739	0.933
7. Log-linear	-11.2312	2.5984	10.520	--	--	2.5984	0.925
8. Log Quadratic	-11.5363	2.7233	0.621	0.0125	0.0290	2.6008	0.925

*Means significant at 5 percent level of significance

TABLE-43 REGRESSION COEFFICIENTS, ELASTICITIES, COEFFICIENTS OF DETERMINATION AND T VALUES OF VARIOUS ENGEL FUNCTIONS FOR CLOTHING FOR **HARYANA**

RURAL

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	-13.1123	0.1912*	10.303	--	--	1.8407	0.914
2. Quadratic	-11.9588	0.1754*	2.256	0.0001	0.2100	2.1049	0.914
3. Hyperbolic	38.6050	3300.3330*	4.474	--	--	1.4087	0.667
4. Semi-log	-118.3646	27.8468*	6.017	--	--	1.7850	0.784
5. Log -inverse	3.9283	232.3333*	6.849	--	--	1.6329	0.824
6. Log-log-inv.	-10.2045	2.5062*	3.930	24.7375	0.4330	2.6709	0.935
7. Log-linear	-11.6812	2.7617*	11.891	--	--	2.7617	0.934
8. Log Quadratic	-31.9562	11.2413	4.273	0.8718*	3.2300	2.8546	0.967

URBAN

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	-23.8569	0.2173*	8.998	--	--	2.3496	0.920
2. Quadratic	2.1102	-0.0472	-1.142	0.0005*	6.5620	2.3942	0.990
3. Hyperbolic	41.1200	3515.8330*	2.405	--	--	1.0402	0.452
4. Semi-log	-190.0736	40.6476*	4.415	--	--	2.2999	0.736
5. Log -inverse	3.4330	214.6667*	2.772	--	--	1.1229	0.523
6. Log-log-inv.	-13.5708	2.9797*	6.800	-51.5194	-1.0660	2.7102	0.945
7. Log-linear	-11.2939	2.6014	10.024	--	--	2.6014	0.935
8. Log Quadratic	-22.4290	6.9235	1.281	0.4151	0.8010	2.6812	0.941

TABLE-44 REGRESSION COEFFICIENTS, ELASTICITIES, COEFFICIENTS OF DETERMINATION AND T VALUES OF VARIOUS ENGEL FUNCTIONS FOR CLOTHING FOR **JAMMU&KASHMIR**

RURAL

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	-21.2405	0.2566*	11.025	--	--	1.9897	0.938
2. Quadratic	-26.6693	0.3229*	2.788	-0.0002	-0.5850	1.8208	0.941
3. Hyperbolic	49.8155	3544.4440*	4.537	--	--	0.9926	0.720
4. Semi-log	-196.1018	43.8015*	7.409	--	--	2.0411	0.873
5. Log -inverse	3.9767	251.3333*	4.630	--	--	1.5104	0.728
6. Log-log-inv.	-14.3534	3.2735*	4.795	-7.4588	-0.1230	3.2286	0.937
7. Log-linear	-13.9247	3.1992*	10.856	--	--	3.1992	0.936
8. Log Quadratic	-47.5799	16.7188	6.744	1.3417*	5.4620	3.3823	0.988

URBAN

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	-16.6203	0.1706*	13.866	--	--	2.1985	0.960
2. Quadratic	-4.6713	0.0410*	1.609	0.0003*	5.2270	2.4713	0.992
3. Hyperbolic	31.6017	2259.8330*	3.011	--	--	0.9593	0.531
4. Semi-log	-131.9276	29.1192*	5.290	--	--	2.1538	0.778
5. Log -inverse	3.2506	207.4440*	3.825	--	--	1.1906	0.646
6. Log-log-inv.	-13.8998	3.0316*	6.554	-39.7796	-0.9140	2.8033	0.950
7. Log-linear	-11.7475	2.6704*	11.673	--	--	2.6704	0.945
8. Log Quadratic	-11.5838	2.6275	7.582	-0.0023	0.1740	2.6504	0.945

*Means significant at 5 percent level of significance

TABLE-45 REGRESSION COEFFICIENTS, ELASTICITIES, COEFFICIENTS OF DETERMINATION AND T VALUES OF VARIOUS ENGEL FUNCTIONS FOR CLOTHING FOR **KARNATAKA**

RURAL

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	-12.1315	0.2103*	18.602	--	--	1.7384	0.966
2. Quadratic	-9.1699	0.1656*	4.351	0.0001	1.2280	1.3689	0.971
3. Hyperbolic	36.1466	2453.8050*	3.176	--	--	1.1010	0.457
4. Semi-log	-103.7860	20.0824*	5.687	--	--	1.2230	0.729
5. Log -inverse	3.6528	172.0996*	8.256	--	--	1.2679	0.850
6. Log-log-inv.	-9.7039	2.4297*	5.953	12.9913	0.4520	2.5254	0.965
7. Log-linear	-10.6702	2.6011*	17.895	--	--	2.6011	0.964
8. Log Quadratic	-16.5932	6.3092*	4.059	0.3972	2.5324	2.6629	0.923

URBAN

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	-10.4132	0.1374*	14.325	--	--	1.5207	0.947
2. Quadratic	-1.5173	0.0145	0.983	0.0004*	11.6660	1.7872	0.995
3. Hyperbolic	28.1159	1725.2060	2.194	--	--	0.9391	0.325
4. Semi-log	-18.9632	7.2524*	1.906	--	--	0.5278	0.267
5. Log -inverse	2.7953	148.7353*	2.854	--	--	0.9781	0.489
6. Log-log-inv.	-0.2553	0.6783*	5.755	149.6729*	5.8950	1.6580	0.882
7. Log-linear	-1.4825	0.6738*	2.733	--	--	0.6738	0.428
8. Log Quadratic	-0.0378	-1.6889*	-7.245	-0.4088*	-10.6350	1.9980	0.958

TABLE-46 REGRESSION COEFFICIENTS, ELASTICITIES, COEFFICIENTS OF DETERMINATION AND T VALUES OF VARIOUS ENGEL FUNCTIONS FOR CLOTHING FOR **KERALA**

RURAL

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	-9.7792	0.1371*	25.684	--	--	1.7947	0.985
2. Quadratic	-6.1384	0.0942*	6.096	0.0001	2.8830	1.9315	0.992
3. Hyperbolic	30.8642	1856.3330*	3.358	--	--	0.9373	0.530
4. Semi-log	-100.0778	23.2668*	5.902	--	--	1.8916	0.777
5. Log -inverse	3.5517	213.6667*	7.729	--	--	1.3270	0.856
6. Log-log-inv.	-7.5223	1.9399*	5.913	43.2726	1.3650	2.2086	0.971
7. Log-linear	-9.9219	2.3472*	16.482	--	--	2.3472	0.964
8. Log Quadratic	-21.9349	7.2655*	8.491	0.4935*	5.7670	2.4983	0.992

URBAN

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	-11.0407	0.1455*	10.457	--	--	1.9662	0.909
2. Quadratic	-0.0688	0.0066	0.308	0.0003*	6.7370	2.2179	0.983
3. Hyperbolic	26.7491	1328.6510*	2.319	--	--	0.7539	0.328
4. Semi-log	-86.3951	20.6157*	4.090	--	--	1.8052	0.603
5. Log -inverse	3.0931	163.4682*	4.996	--	--	1.0593	0.694
6. Log-log-inv.	-12.2752	2.7129*	6.240	-52.8798	-1.3920	2.3702	0.937
7. Log-linear	-9.0437	2.1605*	11.679	--	--	2.1605	0.925
8. Log Quadratic	-11.4862	3.1926	1.404	0.1063	0.4560	2.1848	0.927

*Means significant at 5 percent level of significance

TABLE-47 REGRESSION COEFFICIENTS, ELASTICITIES, COEFFICIENTS OF DETERMINATION AND T VALUES OF VARIOUS ENGEL FUNCTIONS FOR CLOTHING FOR **MADHYA PRADESH**

RURAL

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	-9.1533	0.2259*	14.224	--	--	1.4856	0.944
2. Quadratic	-4.0454	0.1340*	2.769	0.0002	1.9850	1.4678	0.959
3. Hyperbolic	28.3380	1491.3796*	1.648	--	--	0.6375	0.184
4. Semi-log	-73.5949	20.9245*	4.155	--	--	1.1095	0.590
5. Log -inverse	2.3738	87.5307*	1.418	--	--	0.7057	0.144
6. Log-log-inv.	-14.1082	3.2122*	10.534	-91.1316*	-7.1170	2.4774	0.923
7. Log-linear	-3.9151	1.3031*	3.965	--	--	1.3031	0.567
8. Log Quadratic	9.4407	8.2352*	3.175	-0.7604*	-4.0010	2.7329	0.824

URBAN

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	-11.0556	0.1552*	20.868	--	--	1.8321	0.978
2. Quadratic	-4.4904	0.0739*	8.582	0.0002*	9.7850	1.9904	0.998
3. Hyperbolic	32.2358	1894.8330*	3.282	--	--	0.9087	0.519
4. Semi-log	-103.6402	24.2212*	5.514	--	--	1.8225	0.757
5. Log -inverse	3.6017	206.6667*	6.162	--	--	1.3173	0.792
6. Log-log-inv.	-9.4269	2.2894*	4.446	9.0159	0.1850	2.3469	0.935
7. Log-linear	-9.9379	2.3766*	11.947	--	--	2.3766	0.935
8. Log Quadratic	-19.7263	6.4117*	2.865	0.4087	1.8090	2.4637	0.952

TABLE-48 REGRESSION COEFFICIENTS, ELASTICITIES, COEFFICIENTS OF DETERMINATION AND T VALUES OF VARIOUS ENGEL FUNCTIONS FOR CLOTHING FOR **MAHARASTRA**

RURAL

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	-9.3295	0.2052*	20.465	--	--	1.5373	0.972
2. Quadratic	-10.4263	0.2228*	5.985	-0.0001	0.4940	1.3588	0.973
3. Hyperbolic	36.7539	1428.4980*	3.711	--	--	0.6319	0.534
4. Semi-log	-97.8211	25.1659*	6.874	--	--	1.4488	0.797
5. Log -inverse	3.6572	136.9004*	7.810	--	--	1.0520	0.836
6. Log-log-inv.	-7.6199	2.0669*	5.243	3.0690	0.1120	2.0905	0.953
7. Log-linear	-7.8508	2.1083*	15.592	--	--	2.1083	0.953
8. Log Quadratic	-10.7366	3.3949	2.234	0.1394	0.8850	2.1179	0.956

URBAN

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	-7.7437	0.1237*	13.102	--	--	1.8140	0.935
2. Quadratic	-1.0852	0.0232*	2.580	0.0002*	11.6960	2.0132	0.995
3. Hyperbolic	20.2322	798.0042*	2.691	--	--	1.5306	0.645
4. Semi-log	-57.9572	14.5562*	4.667	--	--	1.5306	0.645
5. Log -inverse	2.9084	103.0913*	6.724	--	--	0.9327	0.790
6. Log-log-inv.	-9.8554	2.3113*	11.086	-21.0262	-1.4200	2.1605	0.983
7. Log-linear	-8.3074	2.0389	24.013	--	--	2.0389	0.980
8. Log Quadratic	0.1111	1.9501	1.927	-0.0093	-0.0860	2.0362	0.980

*Means significant at 5 percent level of significance

TABLE-49 REGRESSION COEFFICIENTS, ELASTICITIES, COEFFICIENTS OF DETERMINATION AND T VALUES OF VARIOUS ENGEL FUNCTIONS FOR CLOTHING FOR **ORISSA**

RURAL

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	-7.3893	0.1501*	20.173	--*	--	1.6070	0.974
2. Quadratic	-2.9873	0.0742*	4.596	0.0002*	4.8630	1.7030	0.992
3. Hyperbolic	24.9970	915.5376*	2.709	--	--	0.5770	0.400
4. Semi-log	-65.7070	17.0566*	5.695	--	--	1.4010	0.747
5. Log -inverse	3.1767	111.6677*	5.918	-- *	--	0.8560	0.761
6. Log-log-inv.	-8.8902	2.1877*	13.972	-36.6703*	-3.1940	1.9060	0.988
7. Log-linear	-6.2647	1.7252*	21.365	--	--	1.7250	0.976
8. Log Quadratic	-2.5358	0.0489	0.062	-0.1827	-2.1350	2.4560	0.984

URBAN

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	-10.8992	-0.1574*	15.898	--*	--	1.8430	0.966
2. Quadratic	-3.8100	0.0587*	2.600	0.0002*	4.5110	1.9140	0.990
3. Hyperbolic	33.9000	2068.4110*	3.144	--	--	1.0570	0.523
4. Semi-log	-96.4965	22.8314*	5.709	--	--	1.7670	0.784
5. Log -inverse	3.8731	225.3586*	6.777	--	--	1.4890	0.836
6. Log-log-inv.	-10.5085	2.4579*	3.749	-35.1841	-0.4840	2.2250	0.941
7. Log-linear	-8.7369	2.1543*	11.753	--	--	2.1540	0.939
8. Log Quadratic	-7.5872	1.6750	0.560	-0.0490	-0.1600	2.6110	0.939

TABLE-50 REGRESSION COEFFICIENTS, ELASTICITIES, COEFFICIENTS OF DETERMINATION AND T VALUES OF VARIOUS ENGEL FUNCTIONS FOR CLOTHING FOR **PUNJAB**

RURAL

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	-21.3646	0.2583*	16.904	-- *	--	2.0170	0.973
2. Quadratic	-11.0908	0.1305*	2.859	0.0003*	2.8850	2.0350	0.988
3. Hyperbolic	60.7772	4443.5670*	3.187	--	--	1.2890	0.559
4. Semi-log	-185.0378	42.0978*	5.804	--	--	2.0030	0.808
5. Log -inverse	5.3288	414.7072*	21.786	-- *	--	2.5780	0.983
6. Log-log-inv.	2.5717	0.4607*	0.839	358.5745*	5.1480	2.6460	0.985
7. Log-linear	-13.9241	3.1753*	10.149	-- *	--	3.1750	0.928
8. Log Quadratic	-44.3390	15.5217*	5.436	1.2325*	4.3320	3.4560	0.980

URBAN

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	-10.4055	0.1300*	9.533	--*	--	1.9590	0.919
2. Quadratic	0.2814	-0.0066	-0.317	0.0003*	6.8070	2.0550	0.989
3. Hyperbolic	26.7182	1659.7530*	2.317	--	--	0.9370	0.402
4. Semi-log	-82.3356	19.1565*	4.123	--	--	1.7670	0.680
5. Log -inverse	3.5538	243.6637	4.034	--	--	1.4910	0.670
6. Log-log-inv.	-13.9889	2.9790*	2.053	-75.4743	-0.4612	2.5170	0.794
7. Log-linear	-10.1734	2.3429*	5.453	--	--	2.3430	0.788
8. Log Quadratic	-7.1198	1.0795	0.166	-0.1282	-0.1940	2.3270	0.789

*Means significant at 5 percent level of significance

TABLE-51 REGRESSION COEFFICIENTS, ELASTICITIES, COEFFICIENTS OF DETERMINATION AND T VALUES OF VARIOUS ENGEL FUNCTIONS FOR CLOTHING FOR **RAJASTHAN**

RURAL

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	-10.1242	0.2076*	22.353	--	--	1.5457	0.977
2. Quadratic	-10.5018	0.2131*	6.430	-0.0001	-0.1710	1.2244	0.977
3. Hyperbolic	39.7502	1562.9630*	3.251	--	--	0.6070	0.468
4. Semi-log	-111.4351	28.1851*	6.317	--	--	1.5202	0.769
5. Log -inverse	3.5953	135.2365*	5.853	--	--	0.9797	0.741
6. Log-log-inv.	-9.8531	2.4456*	5.327	-24.6955	-0.7570	2.2666	0.928
7. Log-linear	-8.0428	2.1257*	12.056	--	--	2.1257	0.924
8. Log Quadratic	-10.8746	3.3671	1.821	0.1322	0.6740	2.1491	0.927

URBAN

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	-12.2555	0.1805*	23.881	--	--	1.7788	0.983
2. Quadratic	-7.2549	0.1163*	5.744	0.0001*	3.2930	1.9275	0.992
3. Hyperbolic	37.6208	2188.8330*	3.851	--	--	0.8976	0.597
4. Semi-log	-116.9524	27.5042*	6.352	--	--	1.7485	0.801
5. Log -inverse	3.6342	178.0000*	5.639	--	--	1.1482	0.761
6. Log-log-inv.	-9.3309	2.2876*	4.911	-14.9921	-0.3470	2.1909	0.935
7. Log-linear	-8.4673	2.1395*	11.907	--	--	2.1395	0.934
8. Log Quadratic	-9.2218	2.4522	0.889	0.0318	0.1140	2.1456	0.934

TABLE-52 REGRESSION COEFFICIENTS, ELASTICITIES, COEFFICIENTS OF DETERMINATION AND T VALUES OF VARIOUS ENGEL FUNCTIONS FOR CLOTHING FOR **TAMIL NADU**

RURAL

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	-9.3654	0.1714*	15.585	--	--	1.6809	0.953
2. Quadratic	-8.4250	0.1574*	3.995	0.0001	0.3730	2.0015	0.954
3. Hyperbolic	30.4412	1229.7760*	3.156	--	--	0.6632	0.454
4. Semi-log	-85.3221	21.5813*	5.524	--	--	1.5695	0.718
5. Log -inverse	3.3075	145.4482*	7.021	--	--	1.0786	0.804
6. Log-log-inv.	-8.8572	2.2127*	4.413	-2.4179	-0.0670	2.1948	0.929
7. Log-linear	-8.6799	2.1813*	12.560	--	--	2.1813	0.929
8. Log Quadratic	-8.3033	2.0138	1.100	-0.0181	-0.0920	1.8476	0.929

URBAN

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	-14.8485	0.1654*	13.971	--	--	2.2166	0.951
2. Quadratic	-3.3661	0.0332*	2.101	0.0002*	8.6520	2.5379	0.995
3. Hyperbolic	31.5812	2113.2200*	2.747	--	--	1.0577	0.430
4. Semi-log	-119.6542	27.0167*	4.812	--	--	2.2127	0.698
5. Log -inverse	3.3620	245.9491*	4.647	--	--	1.5031	0.684
6. Log-log-inv.	-13.9009	3.0320*	4.382	-22.8727	-0.3320	2.8922	0.899
7. Log-linear	-12.6950	2.8279*	9.371	--	--	2.8279	0.898
8. Log Quadratic	-25.5947	8.0660	2.111	0.5228	1.3750	2.9634	0.916

*Means significant at 5 percent level of significance

TABLE-53 REGRESSION COEFFICIENTS, ELASTICITIES, COEFFICIENTS OF DETERMINATION AND T VALUES OF VARIOUS ENGEL FUNCTIONS FOR CLOTHING FOR **UTTAR PRADESH**

RURAL

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	-5.6604	0.1971*	5.647	--	--	1.3206	0.727
2. Quadratic	-0.7274	0.1200	0.910	0.0002	0.6070	1.3668	0.735
3. Hyperbolic	38.3374	1446.5190*	2.816	--	--	0.6915	0.398
4. Semi-log	-94.6849	24.9922*	3.888	--	--	1.4144	0.558
5. Log -inverse	3.9163	153.2407*	8.072	--	--	1.2944	0.844
6. Log-log-inv.	-0.3715	0.7982	1.322	104.2782*	2.5210	1.6790	0.866
7. Log-linear	-7.9877	2.1609*	6.683	--	--	2.1609	0.788
8. Log Quadratic	-19.4279	7.2190	2.385	0.5455	1.3800	2.3234	0.831

URBAN

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	-10.2205	0.1481*	21.052	--	--	1.8099	0.978
2. Quadratic	-4.5353	0.0753*	5.704	0.0002*	5.7110	1.9721	0.995
3. Hyperbolic	30.5825	1796.3330*	3.594	--	--	0.9229	0.506
4. Semi-log	-97.5171	22.8854*	6.099	--	--	1.8134	0.788
5. Log -inverse	3.6167	208.1667*	7.772	--	--	1.3497	0.858
6. Log-log-inv.	-6.7581	1.8311*	3.854	51.9118	1.1770	2.1677	0.946
7. Log-linear	-9.7521	2.3454*	12.316	--	--	2.3454	0.938
8. Log Quadratic	-21.5908	7.2357*	2.968	0.4956	2.0100	2.4630	0.957

TABLE-54 REGRESSION COEFFICIENTS, ELASTICITIES, COEFFICIENTS OF DETERMINATION AND T VALUES OF VARIOUS ENGEL FUNCTIONS FOR CLOTHING FOR **WEST BENGAL**

RURAL

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	-6.3893	0.1253*	23.079	--	--	1.6509	0.978
2. Quadratic	-3.1905	0.0729*	5.814	0.0001*	4.3420	1.5125	0.992
3. Hyperbolic	22.7606	806.8881*	3.359	--	--	0.6358	0.485
4. Semi-log	-56.7689	14.5459*	5.796	--	--	1.4828	0.749
5. Log -inverse	3.1662	140.8797*	11.025	--	--	1.0890	0.910
6. Log-log-inv.	-6.0992	1.6989*	8.200	31.1715	2.1820	1.9398	0.987
7. Log-linear	-9.5093	1.5762*	4.980	--	--	1.5762	0.934
8. Log Quadratic	-12.5390	6.0292*	3.952	0.4659*	6.9520	1.7616	0.957

URBAN

Function	a	b	t(b)	c	t(c)	E.C.	R^2
1. Linear	-8.7891	0.1239*	14.423	--	--	1.9236	0.950
2. Quadratic	-2.0817	0.0326*	3.412	0.0002*	9.9760	2.1578	0.995
3. Hyperbolic	22.5031	1124.8020*	2.987	--	--	0.7994	0.448
4. Semi-log	-69.3704	16.6608*	4.901	--	--	1.7501	0.686
5. Log -inverse	3.3162	204.2699*	9.018	--	--	1.3821	0.881
6. Log-log-inv.	-8.7906	2.1515*	6.879	37.9890	1.4540	2.4085	0.979
7. Log-linear	-11.2209	2.5722*	22.636	--	--	2.5722	0.975
8. Log Quadratic	-22.1357	7.2228*	11.256	0.4845*	7.2710	2.6297	0.996

*Means significant at 5 percent level of significance

of home grown goods in the rural sector.

A look at the tables reveals that elasticities for cereals are generally high for states with low levels of mean expenditure and conversely low for others. On the other hand for clothing there is no such difinite behaviour. However in middle ranges of incomes, it is observed that elasticities are more or less constant indicating the appropriateness of using constant elasticity relationships or other relationships which show slow changes in elasticity with changes in total expenditure.

To give a detail picture the elasticities of different states and commodities are analysed below.

In all the functions total expenditure which has been used as a proxy for income as explanatory variable affect expenditure on items significantly. In almost all eight types of functions the regression coefficient are significant at 5 percent level of significance. Only in hyperbolic function, (3) which is the most unsuitable function for clothing, the regression coefficients are not significant at 5 percent level of significance. This proves significantly high positive correlation between total expenditure and commodity expenditure.

Elasticity for cereals in all the states are found to be positive and less than unity which implies that with increase in income or total expenditure, expenditure on cereals increases at a decreasing rate. In rural areas the elasticity for cereals are in the range of 0.15 to 0.60 in all the states. But in urban areas elasticities for cereals fall in the range of 0.15 to 0.45. This implies that elasticites for cereals in rural areas is more than urban areas. This is because urban areas have higher per capita expenditure due to comparatively higher income. The elasticity for cereals are found to be relatively higher in Bihar, Jammu & Kashmir, Karnataka, Kerela, Orissa, Punjab, and Tamilnadu on rural areas. Rajasthan and Gujrat are the only two exceptions. In urban areas, higher elasticities are found in Kerela, Maharashtra, Tamilnadu and West Bengal. These states are industrially advanced states and tertiary sector is highly developed. Madhya Pradesh, Rajasthan and Uttar Pradesh are three states where elasticities for cereals are relatively lower in urban areas.

Elasticity for clothing is positive and higher than unity in all the states which implies that with increase in total expenditure, specific commodity expenditure increases at increasing rate than that of total expenditure. Elasticities are found for clothing in the range of 1.0 to 3.5 and are slightly higher in rural areas than urban areas. States having higher elasticities in urban areas are Bihar, Tamilnadu, Haryana and relatively lower elasticities are found in Assam, Karnataka and Punjab. In rural areas, elasticity for clothing is higher in Jammu & Kashmir, Punjab, Madhya Pradesh, Haryana and lower elasticities are found in Bihar, Orissa, West Bengal.

It may be concluded that the Engel's low that expenditure on food items increases at a decreasing rate when level of income increases. This is valid in the present study where elasticity for cereals in all the states are found to be positive and less than unity.

CHAPTER - V

DISPARITY IN TOTAL EXPENDITURE AND IT'S INTER-STATE VARIATIONS

CHAPTER - V

DISPARITY IN TOTAL EXPENDITURE AND IT'S INTER-STATE VARIATIONS

This chapter seeks to analyse distribution of population (consumers) and total expenditure in various Expenditure Classes. From the distribution an atempt has been made to investigate concentration of expenditure and extent of disparity in upper and lower decile population groups.

V.1 INCOME CLASS WISE DISTRIBUTION OF POPULATION AND TOTAL EXPENDITURE & CONCENTRATION RATIOS

In the study 13 expenditure classes have been considered for distribution of population and expenditure in different states. It is very important for any regional analysis to know the extent of disparity in the distribution of per capita expenditure. A visual impression of this can be had from the concentration curves and actual disparity is clear from the concentraion ratios presented in the tables.

In all the states middle expenditure classes like, 70-80,85-100, 100-125 and 125-150 account for about 50% of total population. Lower and upper expenditure clases account for a lower share of population in urban areas than that of rural areas. There exists state-wise variations on the distribution of population too. In developed states population is more concentrated in upper expenditure classes where as in poor states distribution of population is more lower-expenditure class oriented. The highest expenditure class (300 & above) has share of total population within range of 2 to 6 percentage in rural areas where it falls within the range of 6 to 13 percent. Share of population in this expenditure class in urban areas is 12.35 in Haryana, 11.68 in Kerela, 14.68 in Maharashtra, 13.18 in Punjab.

Similarly in case of distribution of total expenditure (per capita expenditure multiplied by percentage of population) is more concentrated in upper expenditure classes. Since distribution of total expenditure depends on percentage of population in each expenditure class, any particular trend could not be found in distribution of total expenditure. In most of the states the expenditure class (100 - 125) has got highest share in total expenditure rural areas where as in urban areas expenditure class (Rs. 300 &

above) has highest share in almost all states. In urban areas this expenditure class has percentage of total expenditure as high as 30.16 in Haryana, 35.21 in Kerala, 34.93 in Maharashtra, 31.77 in Punjab which are more than All India share of 26.51. All these states are most developed and other states where this highest expenditure class has a share of less than that All India are less developed. Two things are clear from the above analysis.

i) In urban areas, shares of total expenditure and population are more in upper expenditure classes compared to lower expenditure classes.

ii) In developed states, shares of total expenditure and population are more in higher expenditure classes and less in lower expenditure classes than less developed states.

A look at concentration ratios of rural and urban areas in all the states gives a clear-cut picture of disparity in level of living indicated by their per capita expenditure.

CONCENTRATION RATIOS

		RURAL	URBAN
1.	ANDHRA PRADESH	0.2994	0.3271
2.	ASSAM	0.1867	0.2761
3.	BIHAR	0.2558	0.3012
4.	GUJRAT	0.2566	0.2679
5.	HARYANA	0.2716	0.3132
6.	JAMMU&KASHMIR	0.2226	0.2377
7.	KARNATAKA	0.3031	0.2922
8.	KERALA	0.3301	0.3754
9.	MADHYA PRADESH	0.2948	0.3053
10.	MAHARASTRA	0.2848	0.3369
11.	ORISSA	0.2671	0.2978
12.	PUNJAB	0.2793	0.3184
13.	RAJSTHAN	0.3425	0.3044
14.	TAMILNADU	0.3248	0.3336
15.	UTTER PRADESH	0.2899	0.3266
16.	WEST BENGAL	0.2864	0.3266
	ALL INDIA	0.2976	0.3305

Kerela, both rural and urban areas have high concentration ratios (0.3301 and 0.3754) which imply that the disparity in expenditure between poor and rich people is very high than any other state. It is obvious because in Kerela contribution of agriculture sector to states domestic product is the least compared to other states. Since more people depend on manufacturing and tertiary sector, disparity has to be more in this state. This is because it is a time-tested truth that as development takes place in developing countries at early phases, disparity increases. Rural areas of Assam has the lowest concentration ratio (0.1867) which in turn, means that there exist very little difference in total expenditure of rural people.

In most of the states, concentration ratio lies between 0.27 to 0.32. There is no such state-wise significant difference in concentration of total expenditure except Assam and Kerela which have been explained above. From the table it is clear that Urban areas have higher concentration ratio than rural areas. Only in Karnataka concentration ratios is higher in rural areas (o.3031) than urban areas (0.2922) and in Rajasthan it is 0.3425 in rural areas compared to 0.3044 in urban areas. The States where concentration ratios are higher than that of All India (0.2976) are Andhra Pradesh (0.2994), Karnataka (0.3031), Kerala (0.3301), Rajasthan (0.3425), Tamilnadu (0.3248) in

TABLE -55

PERCENTAGE OF POPULATION AND TOTAL EXPENDITURE IN DIFFERENT EXPENDITURE CLASSES & CONCENTRATION RATIOS

ALL INDIA	RURAL		URBAN	
Monthly per capita expenditure class	% of population	% of expenditure	% of population	% of expenditure
1.(0 - 30)	0.91	0.20	0.21	0.03
2.(30 - 40)	2.48	0.79	0.51	0.11
3.(40 - 50)	5.10	2.06	1.38	0.38
4.(50 - 60)	7.98	3.92	2.92	0.98
5.(60 - 70)	9.75	5.66	4.91	1.93
6.(70 - 85)	15.35	10.57	9.56	4.47
7.(85 -100)	13.61	11.18	10.58	5.91
8.(100-125)	16.97	16.85	17.12	11.57
9.(125-150)	9.95	12.07	13.11	10.85
10.(150-200)	9.74	14.85	16.28	16.88
11.(200-250)	3.89	7.67	8.77	11.78
12.(250-300)	1.80	4.36	5.22	8.60
13.300&above	2.47	9.80	9.43	26.51
ALL CLASSES TOTAL	100.00	100.00	100.00	100.00
CONCENTRATION RATIO:	0.2976		0.3305	

TABLE -56

PERCENTAGE OF POPULATION AND TOTAL EXPENDITURE IN DIFFERENT EXPENDITURE CLASSES & CONCENTRATION RATIOS

ANDHRA PRADESH	RURAL		URBAN	
Monthly per capita expenditure class	% of population	% of expenditure	% of population	% of expenditure
1.(0 - 30)	0.67	0.12	0.27	0.03
2.(30 - 40)	1.76	0.54	0.56	0.13
3.(40 - 50)	4.39	1.69	1.33	0.38
4.(50 - 60)	6.98	3.30	3.05	1.06
5.(60 - 70)	9.44	5.25	5.27	2.16
6.(70 - 85)	16.04	10.57	9.48	4.62
7.(85 -100)	13.45	10.56	11.68	6.77
8.(100-125)	17.03	16.17	17.93	12.57
9.(125-150)	10.23	11.90	13.96	12.00
10.(150-200)	8.23	11.99	16.27	17.67
11.(200-250)	7.01	13.20	7.68	10.69
12.(250-300)	2.09	4.84	5.08	8.68
13.300&above	2.68	9.88	7.44	23.29
ALL CLASSES TOTAL	100.00	100.00	100.00	100.00
CONCENTRATION RATIO:	0.2994		0.3271	

TABLE - 57

PERCENTAGE OF POPULATION AND TOTAL EXPENDITURE IN DIFFERENT EXPENDITURE CLASSES & CONCENTRATION RATIOS

ASSAM	RURAL		URBAN	
Monthly per capita expenditure class	% of population	% of expenditure	% of population	% of expenditure
1.(0 - 30)	0.00	0.00	0.00	0.00
2.(30 - 40)	0.32	0.10	0.00	0.00
3.(40 - 50)	0.94	0.38	0.51	0.15
4.(50 - 60)	2.24	1.11	2.89	1.02
5.(60 - 70)	5.41	3.15	1.74	0.60
6.(70 - 85)	15.77	10.92	7.13	3.46
7.(85 -100)	20.18	16.60	11.29	6.45
8.(100-125)	28.11	27.92	17.77	12.60
9.(125-150)	13.59	16.51	16.21	13.96
10.(150-200)	8.63	13.11	23.93	25.32
11.(200-250)	2.97	5.81	10.90	15.11
12.(250-300)	1.06	2.53	3.52	5.98
13.300&above	0.78	1.87	4.11	15.26
ALL CLASSES TOTAL	100.00	100.00	100.00	100.00
CONCENTRATION RATIO:	0.1867		0.2761	

TABLE - 58

PERCENTAGE OF POPULATION AND TOTAL EXPENDITURE IN DIFFERENT EXPENDITURE CLASSES & CONCENTRATION RATIOS

BIHAR	RURAL		URBAN	
Monthly per capita expenditure class	% of population	% of expenditure	% of population	% of expenditure
1.(0 - 30)	0.80	0.22	0.03	0.01
2.(30 - 40)	3.13	1.20	0.80	0.20
3.(40 - 50)	7.63	3.69	1.82	0.59
4.(50 - 60)	11.36	6.67	4.25	1.71
5.(60 - 70)	11.77	8.18	6.96	3.30
6.(70 - 85)	17.72	14.58	12.46	7.00
7.(85 -100)	14.38	14.13	12.99	8.65
8.(100-125)	16.10	19.10	16.87	13.61
9.(125-150)	7.61	11.03	14.00	12.87
10.(150-200)	6.19	11.18	13.68	17.09
11.(200-250)	1.94	4.59	7.38	11.87
12.(250-300)	0.59	1.75	3.58	7.01
13.300&above	0.78	3.67	5.18	16.10
ALL CLASSES TOTAL	100.00	100.00	100.00	100.00
CONCENTRATION RATIO:	0.2558		0.3012	

TABLE - 59

PERCENTAGE OF POPULATION AND TOTAL EXPENDITURE IN DIFFERENT EXPENDITURE CLASSES & CONCENTRATION RATIOS

GUJRAT	RURAL		URBAN	
Monthly per capita expenditure class	% of population	% of expenditure	% of population	% of expenditure
1.(0 - 30)	0.19	0.04	0.00	0.00
2.(30 - 40)	1.33	0.40	0.09	0.02
3.(40 - 50)	1.68	0.65	0.03	0.01
4.(50 - 60)	4.66	2.16	0.74	0.25
5.(60 - 70)	7.61	4.17	2.02	0.81
6.(70 - 85)	16.17	10.57	6.70	2.89
7.(85 -100)	14.47	11.22	9.58	5.45
8.(100-125)	21.46	20.11	21.43	14.74
9.(125-150)	12.90	14.71	17.63	14.80
10.(150-200)	11.94	17.26	19.53	20.27
11.(200-250)	3.71	6.87	9.68	13.17
12.(250-300)	1.81	4.14	5.68	9.42
13.300&above	2.07	7.70	6.89	18.17
ALL CLASSES TOTAL	100.00	100.00	100.00	100.00
CONCENTRATION RATIO:	0.2566		0.2679	

TABLE - 60

PERCENTAGE OF POPULATION AND TOTAL EXPENDITURE IN DIFFERENT EXPENDITURE CLASSES & CONCENTRATION RATIOS

HARYANA	RURAL		URBAN	
Monthly per capita expenditure class	% of population	% of expenditure	% of population	% of expenditure
1.(0 - 30)	0.12	0.02	0.00	0.00
2.(30 - 40)	0.06	0.01	0.32	0.06
3.(40 - 50)	1.26	0.39	0.00	0.00
4.(50 - 60)	1.80	0.67	0.81	0.24
5.(60 - 70)	4.01	1.76	2.11	0.77
6.(70 - 85)	10.69	5.61	9.09	3.89
7.(85 -100)	10.99	6.87	9.37	4.69
8.(100-125)	19.49	14.66	17.22	10.54
9.(125-150)	16.60	15.20	13.71	10.20
10.(150-200)	16.72	19.36	17.51	16.32
11.(200-250)	8.05	11.90	10.41	12.46
12.(250-300)	4.46	8.21	7.10	10.67
13.300&above	5.75	15.33	12.35	30.16
ALL CLASSES TOTAL	100.00	100.00	100.00	100.00
CONCENTRATION RATIO:	0.2716		0.3132	

TABLE - 61

PERCENTAGE OF POPULATION AND TOTAL EXPENDITURE IN DIFFERENT EXPENDITURE CLASSES & CONCENTRATION RATIOS

JAMMU & KASHMIR	RURAL		URBAN	
Monthly per capita expenditure class	% of population	% of expenditure	% of population	% of expenditure
1.(0 - 30)	0.06	0.01	0.00	0.00
2.(30 - 40)	0.18	0.05	0.00	0.00
3.(40 - 50)	0.37	0.13	0.08	0.02
4.(50 - 60)	2.41	1.04	0.66	0.25
5.(60 - 70)	3.23	1.65	1.87	0.78
6.(70 - 85)	12.23	7.40	5.39	2.69
7.(85 -100)	16.78	12.11	9.97	6.00
8.(100-125)	26.15	22.75	23.47	17.06
9.(125-150)	14.78	16.06	21.83	19.22
10.(150-200)	14.78	19.60	20.10	22.23
11.(200-250)	5.16	8.83	7.47	10.72
12.(250-300)	1.37	2.93	4.44	7.73
13.300&above	2.51	7.43	4.72	13.30
ALL CLASSES TOTAL	100.00	100.00	100.00	100.00
CONCENTRATION RATIO:	0.2226		0.2377	

TABLE - 62

PERCENTAGE OF POPULATION AND TOTAL EXPENDITURE IN DIFFERENT EXPENDITURE CLASSES & CONCENTRATION RATIOS

KARNATAKA	RURAL		URBAN	
Monthly per capita expenditure class	% of population	% of expenditure	% of population	% of expenditure
1.(0 - 30)	0.66	0.15	0.20	0.04
2.(30 - 40)	2.97	0.92	0.86	0.23
3.(40 - 50)	3.43	1.37	5.63	1.98
4.(50 - 60)	8.89	4.26	7.83	3.34
5.(60 - 70)	9.93	5.59	8.26	4.17
6.(70 - 85)	13.45	9.08	0.04	5.37
7.(85 -100)	13.56	10.85	10.25	7.35
8.(100-125)	19.12	18.54	14.27	12.39
9.(125-150)	11.91	14.10	12.62	13.45
10.(150-200)	6.54	9.76	15.35	20.52
11.(200-250)	4.35	8.47	10.27	17.70
12.(250-300)	2.23	5.29	3.92	8.36
13.300&above	2.98	11.63	1.49	5.11
ALL CLASSES TOTAL	100.00	100.00	100.00	100.00
CONCENTRATION RATIO:	0.3031		0.2922	

TABLE -63

PERCENTAGE OF POPULATION AND TOTAL EXPENDITURE IN DIFFERENT EXPENDITURE CLASSES & CONCENTRATION RATIOS

KERALA	RURAL		URBAN	
Monthly per capita expenditure class	% of population	% of expenditure	% of population	% of expenditure
1.(0 - 30)	0.21	0.04	0.47	0.07
2.(30 - 40)	0.87	0.22	1.00	0.20
3.(40 - 50)	2.52	0.79	1.68	0.43
4.(50 - 60)	3.90	1.50	2.77	0.78
5.(60 - 70)	6.57	2.95	4.99	1.83
6.(70 - 85)	12.66	6.78	9.65	4.19
7.(85 -100)	12.86	8.18	11.54	6.00
8.(100-125)	17.36	13.36	14.94	9.38
9.(125-150)	13.57	12.84	14.21	11.02
10.(150-200)	13.50	15.99	14.85	14.37
11.(200-250)	7.19	10.92	8.42	10.60
12.(250-300)	3.30	6.21	3.80	5.91
13.300&above	5.49	20.22	11.68	35.21
ALL CLASSES TOTAL	100.00	100.00	100.00	100.00
CONCENTRATION RATIO:	0.3301		0.3754	

TABLE -64

PERCENTAGE OF POPULATION AND TOTAL EXPENDITURE IN DIFFERENT EXPENDITURE CLASSES & CONCENTRATION RATIOS

MADHYA PRADESH	RURAL		URBAN	
Monthly per capita expenditure class	% of population	% of expenditure	% of population	% of expenditure
1.(0 - 30)	0.85	0.22	0.03	0.01
2.(30 - 40)	4.15	1.46	0.24	0.06
3.(40 - 50)	6.71	2.99	0.78	0.24
4.(50 - 60)	9.99	5.44	3.27	1.21
5.(60 - 70)	11.69	7.49	5.84	2.56
6.(70 - 85)	17.12	12.96	11.48	5.96
7.(85 -100)	13.33	12.08	12.04	7.49
8.(100-125)	14.29	15.63	21.16	15.90
9.(125-150)	7.82	10.52	13.78	13.22
10.(150-200)	8.07	13.61	15.44	17.83
11.(200-250)	2.67	5.81	6.23	9.29
12.(250-300)	1.33	3.58	3.66	6.61
13.300&above	1.98	8.23	6.05	19.63
ALL CLASSES TOTAL	100.00	100.00	100.00	100.00
CONCENTRATION RATIO:	0.2948		0.3053	

TABLE -65

PERCENTAGE OF POPULATION AND TOTAL EXPENDITURE IN DIFFERENT EXPENDITURE CLASSES & CONCENTRATION RATIOS

MAHARASTRA	RURAL		URBAN	
Monthly per capita expenditure class	% of population	% of expenditure	% of population	% of expenditure
1.(0 - 30)	0.29	0.06	0.22	0.03
2.(30 - 40)	1.57	0.51	0.41	0.08
3.(40 - 50)	5.37	2.24	1.35	0.33
4.(50 - 60)	8.20	4.16	2.21	0.65
5.(60 - 70)	10.56	6.29	4.68	1.63
6.(70 - 85)	16.29	11.53	7.55	3.10
7.(85 -100)	13.65	11.53	8.35	4.13
8.(100-125)	16.93	15.75	14.77	8.84
9.(125-150)	10.02	12.56	11.59	8.48
10.(150-200)	8.86	13.93	17.03	15.69
11.(200-250)	4.09	8.30	10.93	13.00
12.(250-300)	2.00	4.95	6.23	9.11
13.300&above	2.17	8.18	14.68	34.93
ALL CLASSES TOTAL	100.00	100.00	100.00	100.00
CONCENTRATION RATIO:	0.2848		0.3369	

TABLE -66

PERCENTAGE OF POPULATION AND TOTAL EXPENDITURE IN DIFFERENT EXPENDITURE CLASSES & CONCENTRATION RATIOS

ORISSA	RURAL		URBAN	
Monthly per capita expenditure class	% of population	% of expenditure	% of population	% of expenditure
1.(0 - 30)	1.50	0.37	0.11	0.02
2.(30 - 40)	4.16	1.51	0.29	0.06
3.(40 - 50)	7.20	3.29	1.52	0.46
4.(50 - 60)	9.12	5.16	2.77	0.84
5.(60 - 70)	10.16	6.79	4.61	1.98
6.(70 - 85)	15.19	12.06	10.30	5.36
7.(85 -100)	16.35	15.47	11.96	7.29
8.(100-125)	16.04	18.26	17.33	13.05
9.(125-150)	9.03	12.52	15.94	14.49
10.(150-200)	7.50	13.04	16.42	18.81
11.(200-250)	1.98	4.55	6.77	9.84
12.(250-300)	0.64	1.82	4.19	7.65
13.300&above	1.31	5.16	7.39	20.15
ALL CLASSES TOTAL	100.00	100.00	100.00	100.00
CONCENTRATION RATIO:	0.2671		0.2978	

TABLE -67

PERCENTAGE OF POPULATION AND TOTAL EXPENDITURE IN DIFFERENT EXPENDITURE CLASSES & CONCENTRATION RATIOS

PUNJAB	RURAL		URBAN	
Monthly per capita expenditure class	% of population	% of expenditure	% of population	% of expenditure
1.(0 - 30)	0.07	0.01	0.00	0.00
2.(30 - 40)	0.12	0.03	0.00	0.00
3.(40 - 50)	0.46	0.12	0.45	0.11
4.(50 - 60)	1.03	0.33	1.68	0.50
5.(60 - 70)	3.23	1.25	3.70	1.32
6.(70 - 85)	5.99	2.74	9.51	4.07
7.(85 -100)	9.66	5.25	7.83	3.92
8.(100-125)	16.75	11.14	13.65	8.35
9.(125-150)	16.74	13.44	14.28	10.56
10.(150-200)	20.18	20.10	19.22	17.83
11.(200-250)	12.10	15.79	10.59	12.84
12.(250-300)	5.63	8.92	5.91	8.72
13.300&above	8.14	20.88	13.18	31.77
ALL CLASSES TOTAL	100.00	100.00	100.00	100.00
CONCENTRATION RATIO:	0.2793		0.3184	

TABLE -68

PERCENTAGE OF POPULATION AND TOTAL EXPENDITURE IN DIFFERENT EXPENDITURE CLASSES & CONCENTRATION RATIOS

RAJSTHAN	RURAL		URBAN	
Monthly per capita expenditure class	% of population	% of expenditure	% of population	% of expenditure
1.(0 - 30)	0.94	0.20	0.27	0.04
2.(30 - 40)	3.17	0.88	0.13	0.03
3.(40 - 50)	4.84	1.70	1.22	0.35
4.(50 - 60)	7.58	3.28	2.78	0.98
5.(60 - 70)	8.35	4.26	4.86	1.99
6.(70 - 85)	12.62	7.66	9.27	4.51
7.(85 -100)	11.91	8.61	10.26	5.90
8.(100-125)	15.58	13.66	16.79	11.81
9.(125-150)	9.87	10.57	14.65	12.58
10.(150-200)	12.96	17.47	17.51	18.85
11.(200-250)	5.25	9.15	9.67	13.36
12.(250-300)	2.47	5.25	5.10	8.70
13.300&above	4.46	17.30	7.49	20.90
ALL CLASSES TOTAL	100.00	100.00	100.00	100.00
CONCENTRATION RATIO:	0.3425		0.3044	

TABLE - 69

PERCENTAGE OF POPULATION AND TOTAL EXPENDITURE IN DIFFERENT EXPENDITURE CLASSES & CONCENTRATION RATIOS

TAMIL NADU Monthly per capita expenditure class	RURAL % of population	 % of expenditure	URBAN % of population	 % of expenditure
1.(0 - 30)	1.58	0.33	0.59	0.08
2.(30 - 40)	3.62	1.16	0.86	0.19
3.(40 - 50)	6.38	2.59	1.74	0.48
4.(50 - 60)	8.37	4.12	3.36	1.94
5.(60 - 70)	9.70	5.61	4.50	1.77
6.(70 - 85)	15.50	10.70	7.09	3.29
7.(85 -100)	11.89	9.78	14.40	7.96
8.(100-125)	16.88	16.77	16.88	11.37
9.(125-150)	7.65	9.33	11.74	9.69
10.(150-200)	9.44	14.44	16.65	17.07
11.(200-250)	4.21	8.29	10.68	
12.(250-300)	1.74	4.23	5.51	8.99
13.300&above	3.04	12.66	8.69	26.49
ALL CLASSES TOTAL	100.00	100.00	100.00	100.00
CONCENTRATION RATIO:	0.3248		0.3336	

TABLE - 70

PERCENTAGE OF POPULATION AND TOTAL EXPENDITURE IN DIFFERENT EXPENDITURE CLASSES & CONCENTRATION RATIOS

UTTAR PRADESH Monthly per capita expenditure class	RURAL % of population	 % of expenditure	URBAN % of population	 % of expenditure
1.(0 - 30)	0.86	0.22	0.22	0.03
2.(30 - 40)	2.43	0.85	0.59	0.16
3.(40 - 50)	6.12	2.71	2.38	0.79
4.(50 - 60)	9.89	5.32	5.60	2.26
5.(60 - 70)	14.57	9.23	7.88	3.73
6.(70 - 85)	16.09	12.13	13.29	7.43
7.(85 -100)	14.29	12.83	12.17	8.21
8.(100-125)	13.26	14.42	18.64	15.07
9.(125-150)	8.77	11.66	10.76	10.72
10.(150-200)	7.56	12.59	13.29	16.54
11.(200-250)	2.78	5.97	6.40	10.39
12.(250-300)	1.52	4.03	3.37	6.71
13.300&above	1.85	8.02	5.41	17.96
ALL CLASSES TOTAL	100.00	100.00	100.00	100.00
CONCENTRATION RATIO:	0.2899		0.3189	

TABLE - 71

PERCENTAGE OF POPULATION AND TOTAL EXPENDITURE IN DIFFERENT EXPENDITURE CLASSES & CONCENTRATION RATIOS

WEST BENGAL	RURAL		URBAN	
Monthly per capita expenditure class	% of population	% of expenditure	% of population	% of expenditure
1.(0 - 30)	2.96	0.68	0.15	0.02
2.(30 - 40)	3.00	1.04	0.60	0.12
3.(40 - 50)	4.87	2.13	1.78	0.49
4.(50 - 60)	7.33	3.87	2.00	0.66
5.(60 - 70)	10.90	6.82	4.18	1.60
6.(70 - 85)	15.92	11.75	8.31	3.81
7.(85 -100)	14.47	12.80	11.47	6.24
8.(100-125)	16.10	17.16	15.97	10.53
9.(125-150)	8.43	11.00	13.60	10.98
10.(150-200)	9.30	15.14	16.82	16.97
11.(200-250)	3.60	7.64	9.29	12.20
12.(250-300)	1.54	3.99	6.02	9.64
13.300&above	1.57	5.99	9.81	26.74
ALL CLASSES TOTAL	100.00	100.00	100.00	100.00
CONCENTRATION RATIO:	0.2864		0.3266	

rural areas. In urban areas Maharashtra (0.3369), Tamilnadu (0.3336) have higher concentration ratios than that of All India (0.3305). This is because Bombay and Madras which are two main business and trading centre in these two states where disparity in total expenditure are very high. To conclude, Urban sector has got more disparity in income (Expenditure) and in standard of living than rural areas.

V.2 DISPARITY IN EXPENDITURE INCURED BY TWO EXTREME DECILE POPULATION GROUPS

The percentages of expenditure incured by two extreme decile population groups have been calculated from the concentration curves given at the end of this chapter.These concentration curves were drawn taking percentages of population and total expenditure in 13 expenditure classes in X-axis and Y-axis simultaneously.

The percentages of expenditure incured by lower and upper decile population groups at All India level are 3.80 & 23.37 in rural areas and 3.91 & 26.30 in urban areas. States where lower decile population group has lower share of total expendiure than that of All India in rural areas are Karnataka (3.26), Kerela (3.37),Maharashtra (3.80), Orissa

(3.48), Rajasthan (3.15) and West Bengal (3.26). In rural areas states having higher percentage of expenditure than that of All India in upper decile population group are Karnataka (25.00), Kerala (28.04), Orissa (26.96), Rajsthan (27.17) and Tamil Nadu (25.30). Similarly in urban areas percentage of expenditure lower than that of All India in lower decile population group are in Andhra Pradesh (3.90), Kerala (3.80), Madhya Pradesh (3.21) and Rajsthan (3.48). Andhra Pradesh (29.35), Madhya Pradesh (32.63), Tamilnadu (30.43) and Uttar Pradesh (27.17) have higher percentages of expenditure in urban areas than that of All India in upper decile group.

The percentages of expenditure incurred by two extreme decile population groups presented in tables have lot of implications for inequality and poverty in India. The expenditure incurred by the upper 10 percent of total population is on an average five times more than that of lower 10 percent of the population. Percentages of expenditure by upper decile group has been divided by that of lower decile group and this figure is 8.62 in Rajasthan and 8.32 in Kerala in rural areas compared to All India figure of 6.15. In urban areas this figure is 10.17 in Madhya Pradesh, 7.5 in Tamilnadu and 7.53 in Andhra Pradesh

TABLE -72

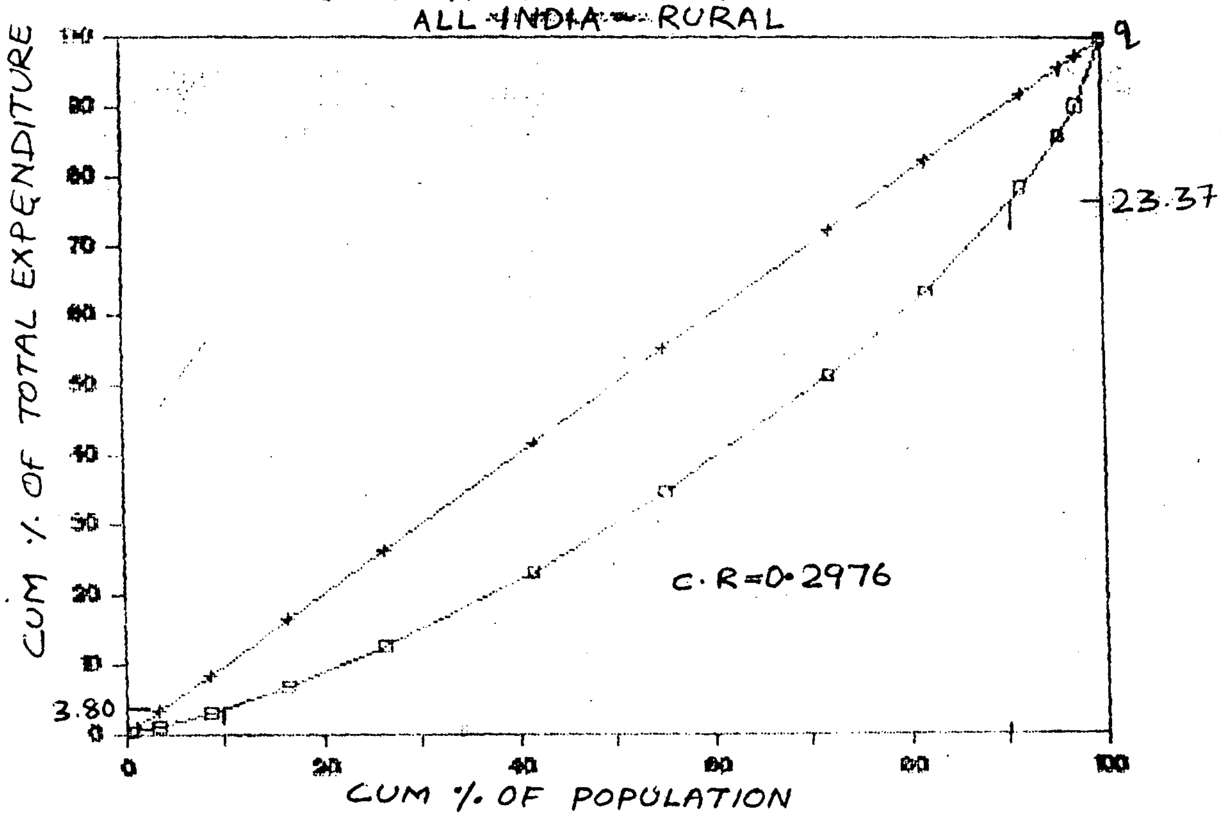
PERCENTAGE OF EXPENDITURE INCURED BY TWO EXTERME DECILE POPULATION GROUPS

STATES	RURAL % OF EXPENDITURE INCURED BY LOWER 10%	RURAL % OF EXPENDITURE INCURED BY UPPER 10%	R1	URBAN % OF EXPENDITURE INCURED BY LOWER 10%	URBAN % OF EXPENDITURE INCURED BY UPPER 10%	R2
1. ANDHRA PRADESH	4.24	22.83	5.38	3.90	29.36	7.53
2. ASSAM	5.54	17.61	3.18	4.24	23.26	5.49
3. BIHAR	4.89	21.52	4.40	4.89	24.35	4.98
4. GUJRAT	4.56	20.98	4.60	4.78	23.92	5.00
5. HARYANA	4.34	21.96	5.06	4.13	21.96	5.32
6. JAMMU & KASHMIR	5.65	20.11	3.56	4.89	21.20	4.34
7. KARNATAKA	3.26	25.00	7.66	4.35	22.83	5.25
8. KERALA	3.37	28.04	8.32	3.80	25.08	6.60
9. MADHYA PRADESH	4.13	22.83	5.53	3.21	32.63	10.17
10. MAHARASHTRA	3.80	22.83	6.01	4.24	26.09	6.15
11. ORISSA	3.48	26.96	7.75	3.91	25.00	6.39
12. PUNJAB	3.83	23.59	6.16	4.02	24.89	6.19
13. RAJASTHAN	3.15	27.17	3.48	3.48	25.12	7.22
14. TAMIL NADU	3.81	25.30	6.64	4.02	30.43	7.57
15. UTTAR PRADESH	4.40	22.82	5.19	4.35	27.17	6.25
16. WEST BENGAL	3.26	22.83	7.00	4.35	26.09	5.99
ALL INDIA	3.80	23.37	6.15	3.91	26.30	6.73

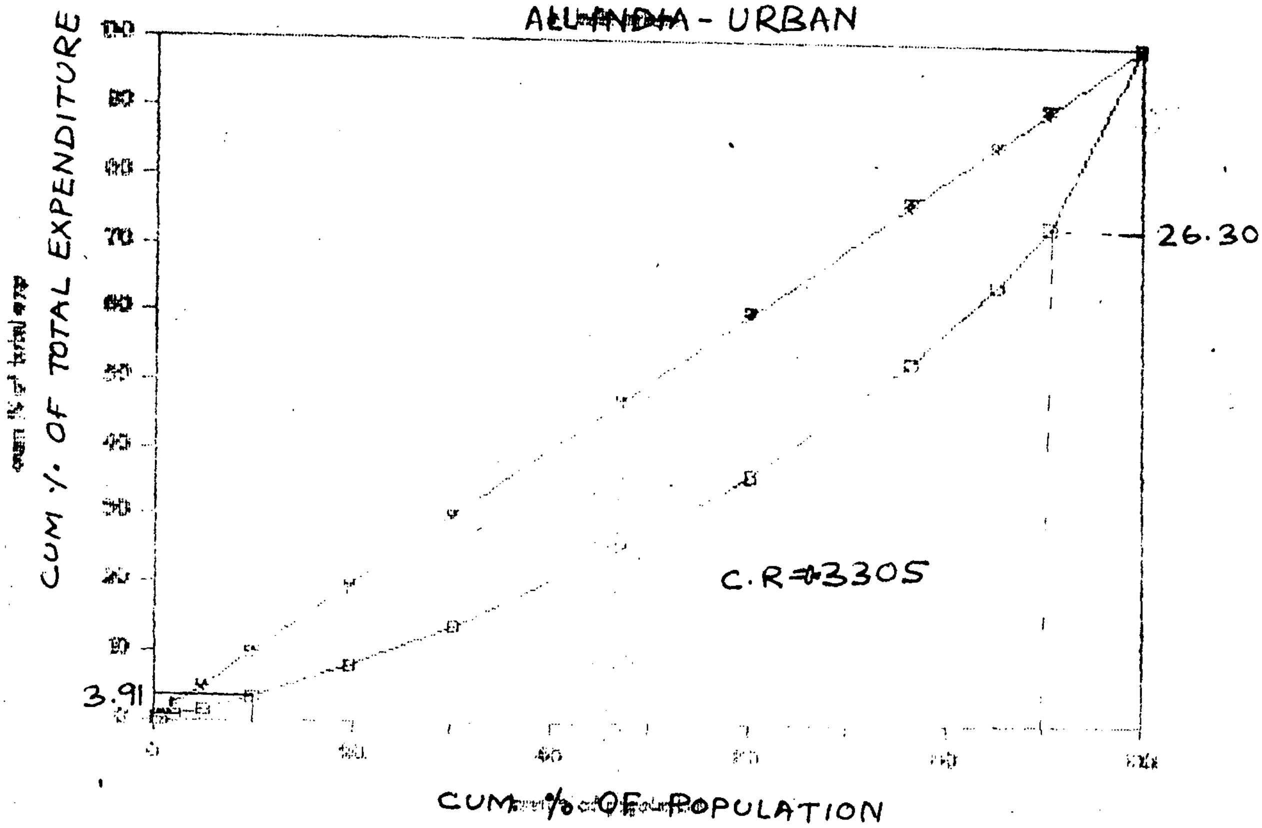
* R1 or R2 = $\frac{\text{Percentage of expenditure by upper 10\% populati}}{\text{percentage of expenditure by lower 10\% population}}$

compared to 6.73 at All India level. This difference is very low in Assam (3.18 times) followed by Jammu & Kashmir (3.56) in rural areas.In urban areas this figure is as low as 4.34 in Jammu & Kashmir and 4.98 in Bihar. This analysis shows extreme inequality in India and specially it is more in urban India.

CONCENTRATION CURVE
ALL INDIA – RURAL



concentration curve
ALL INDIA - URBAN



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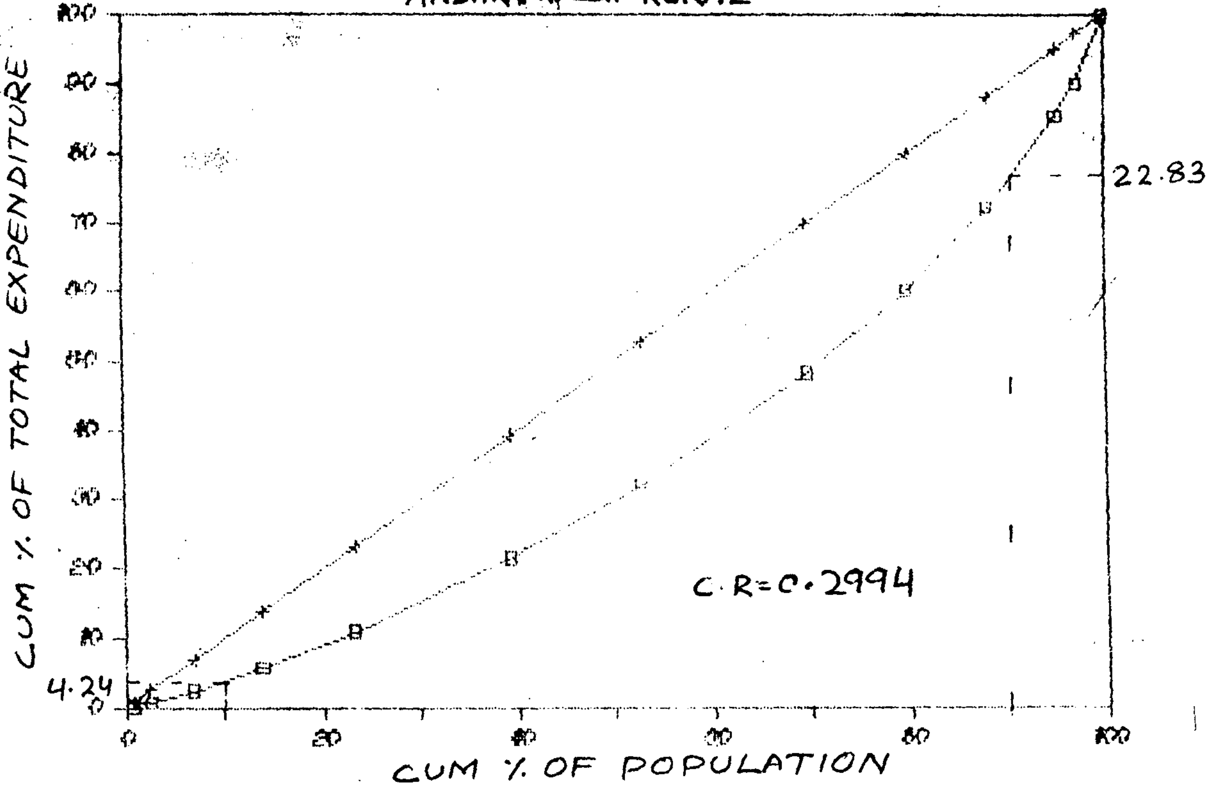
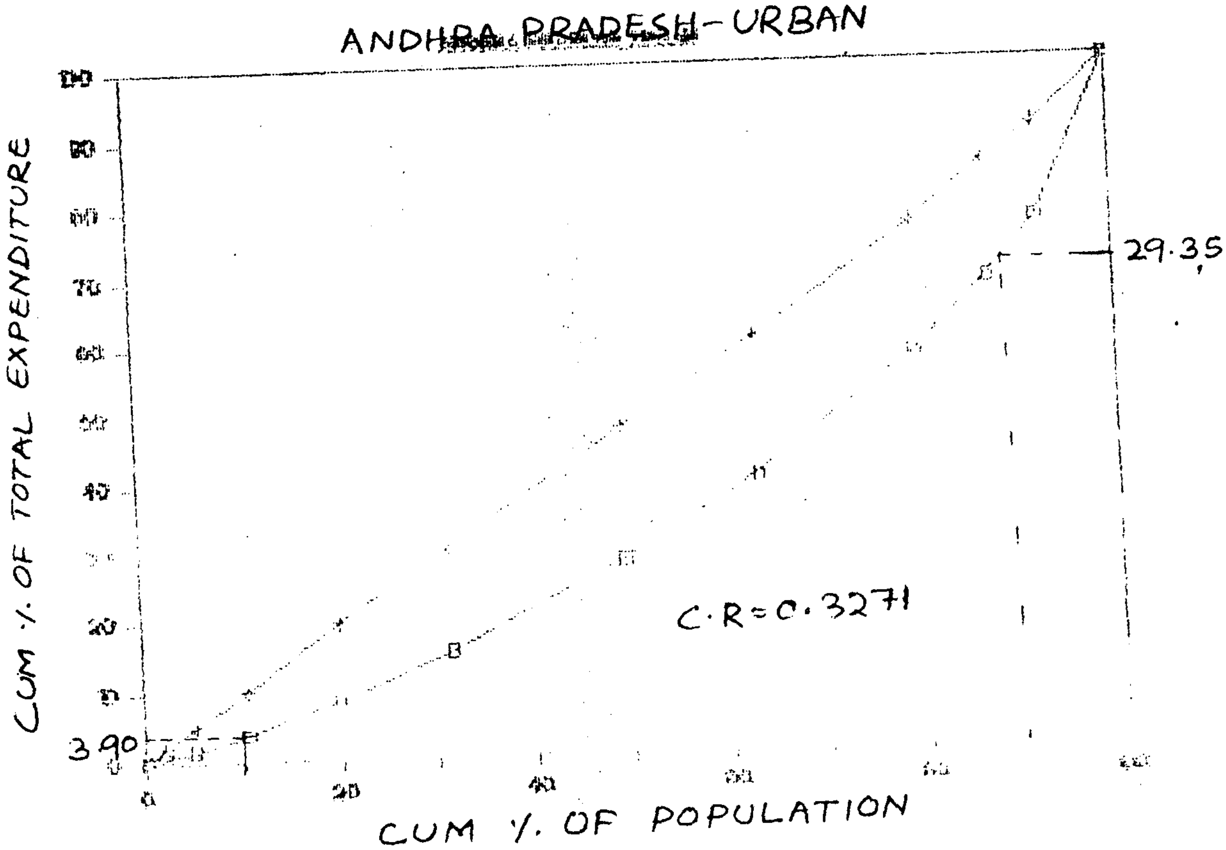
CONCENTRATION CURVE

ANDHRA PRADESH RURAL



ANDHRA PRADESH-URBAN



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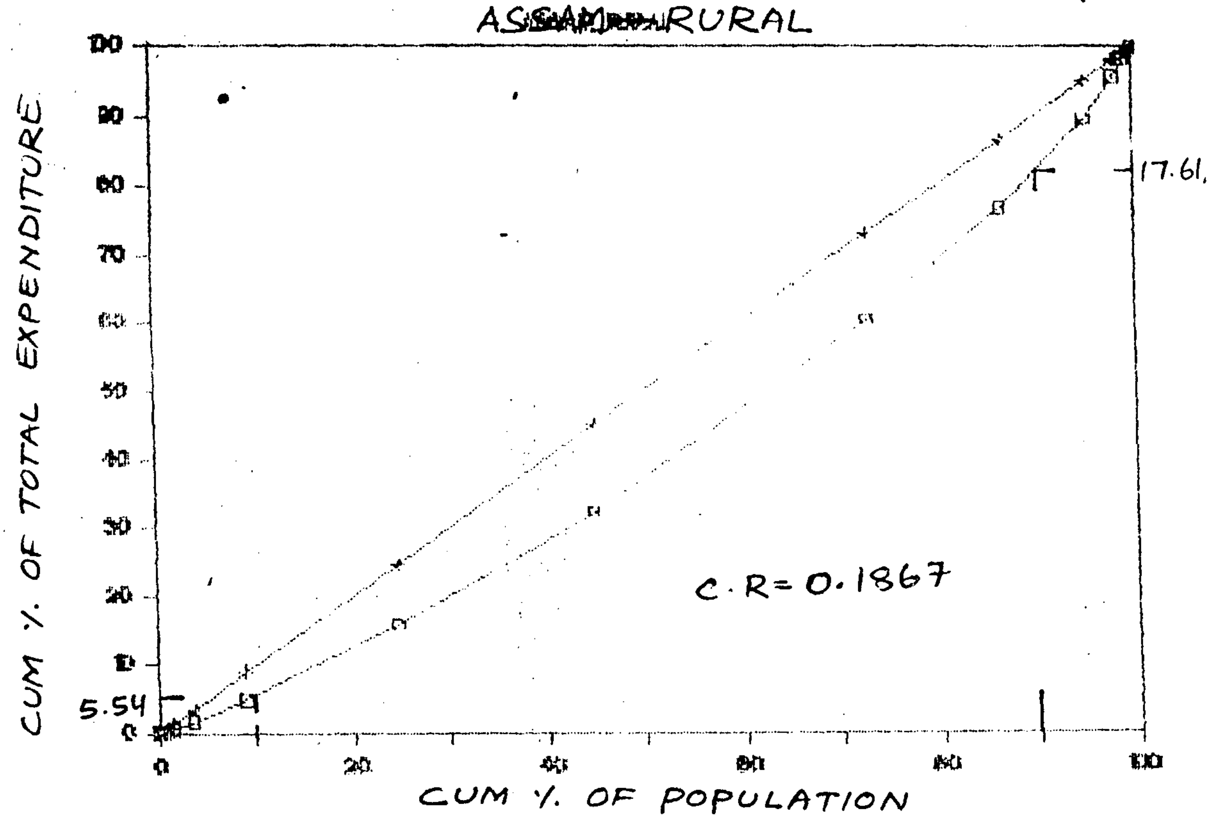

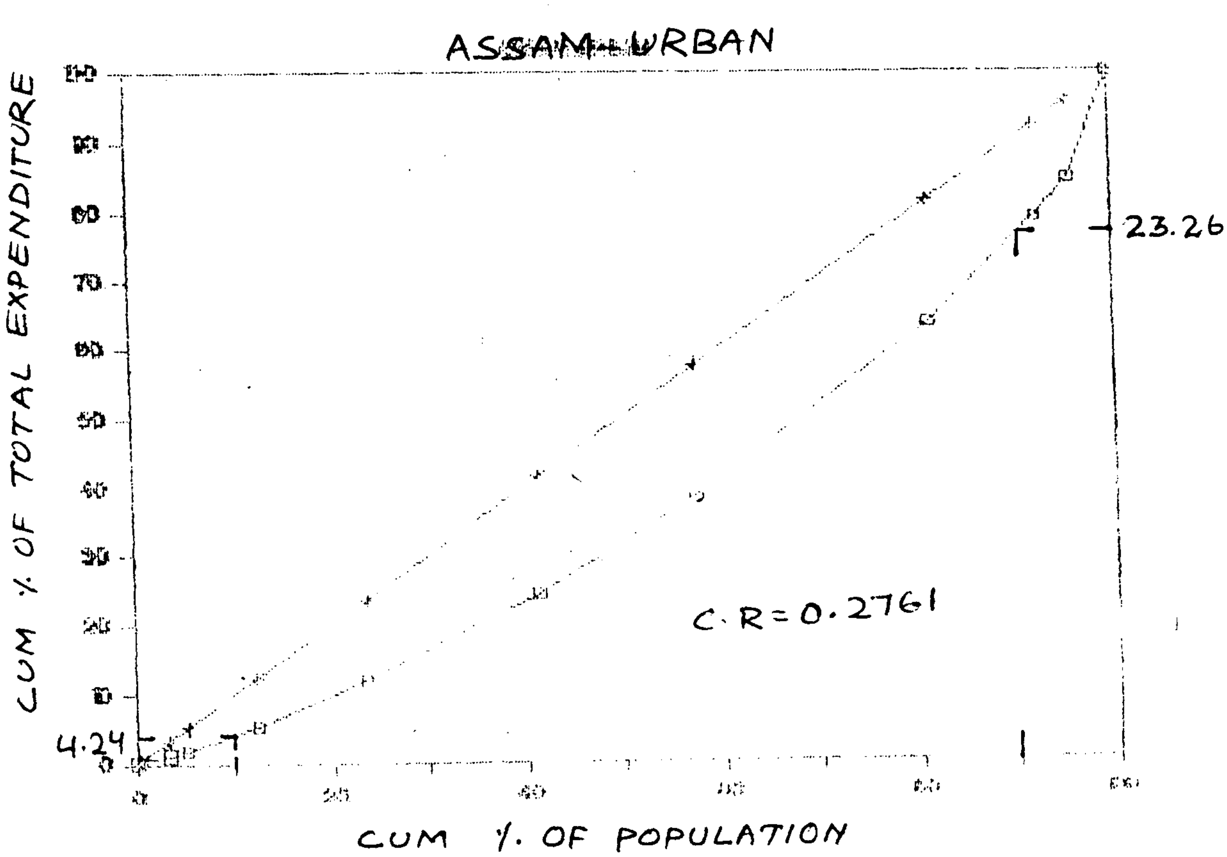

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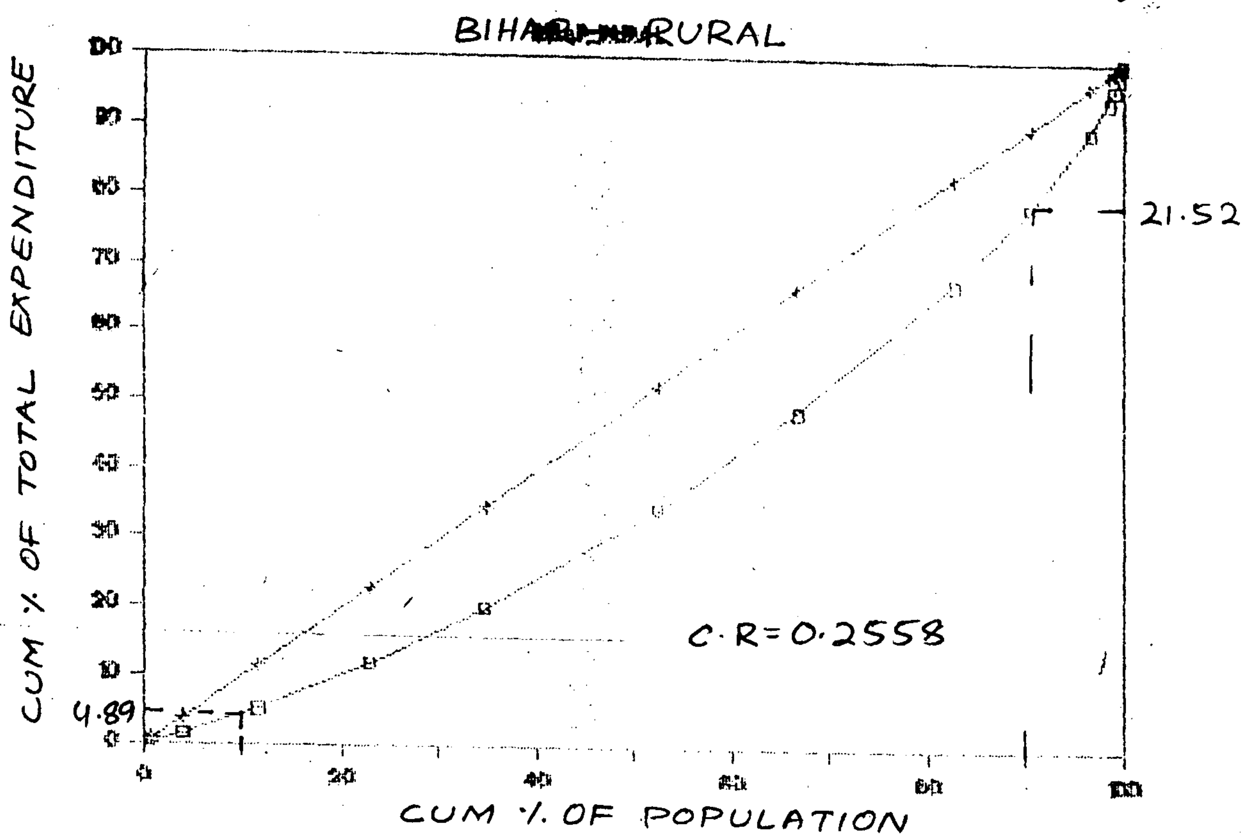
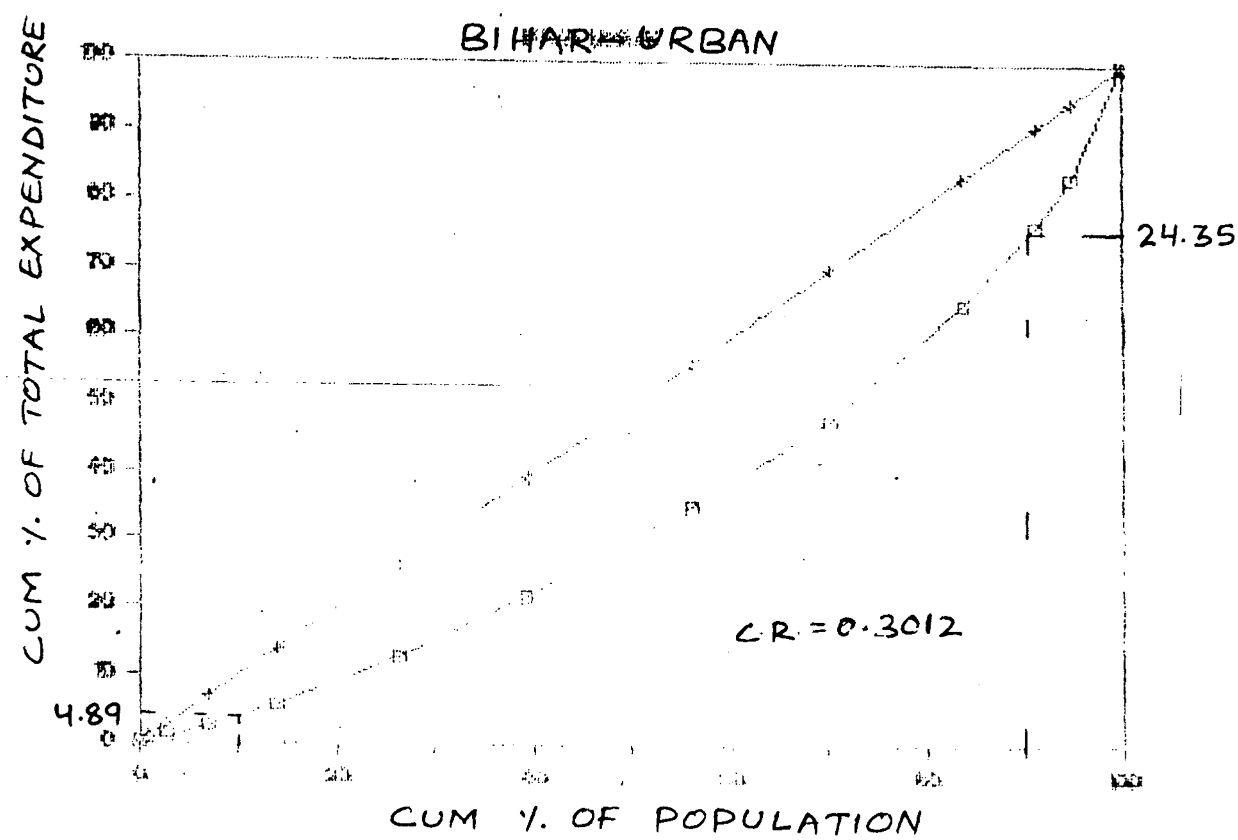
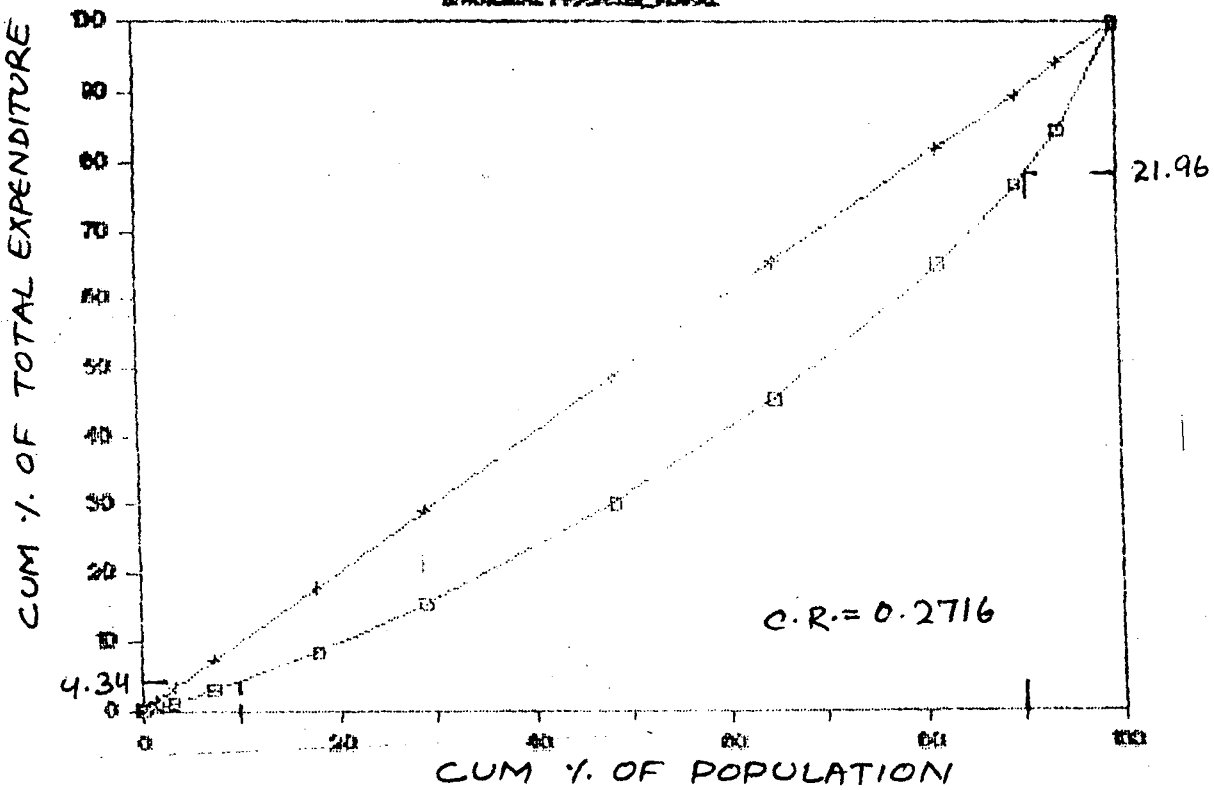


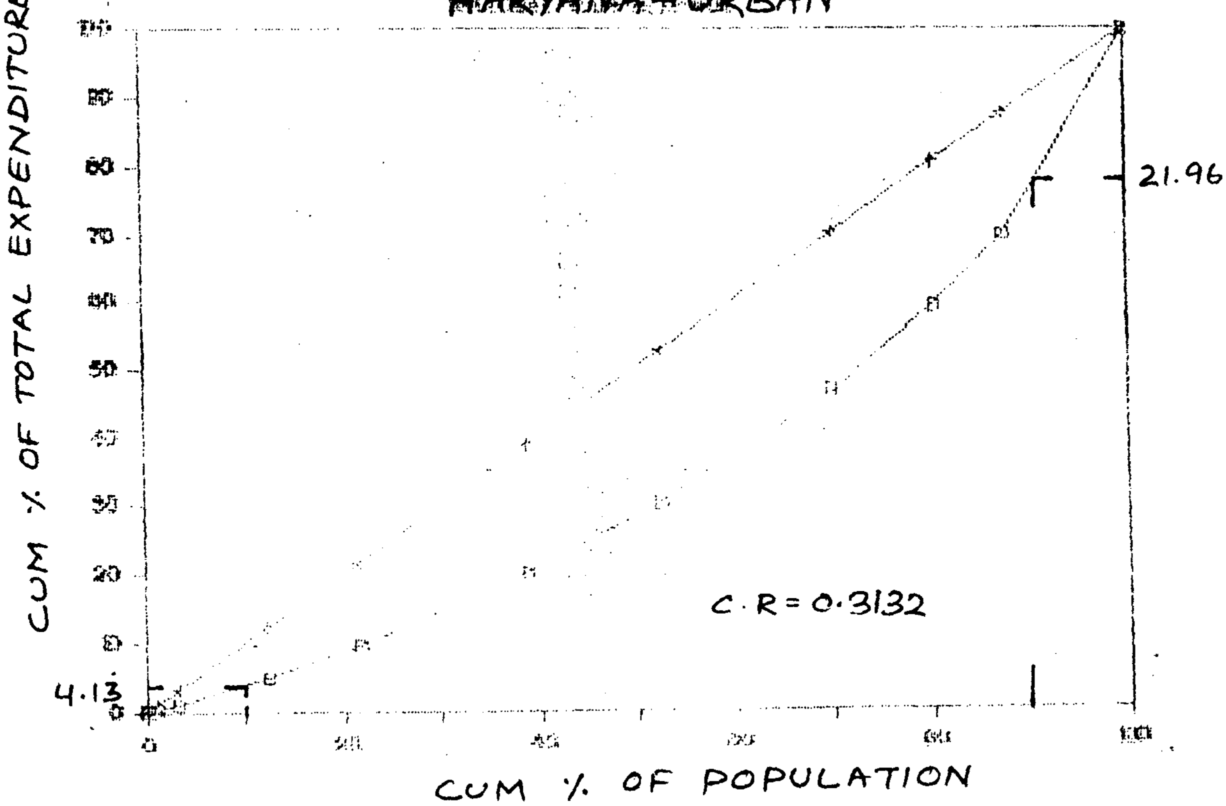


CONCENTRATION CURUE

HARYANA-RURAL



HARYANA-URBAN



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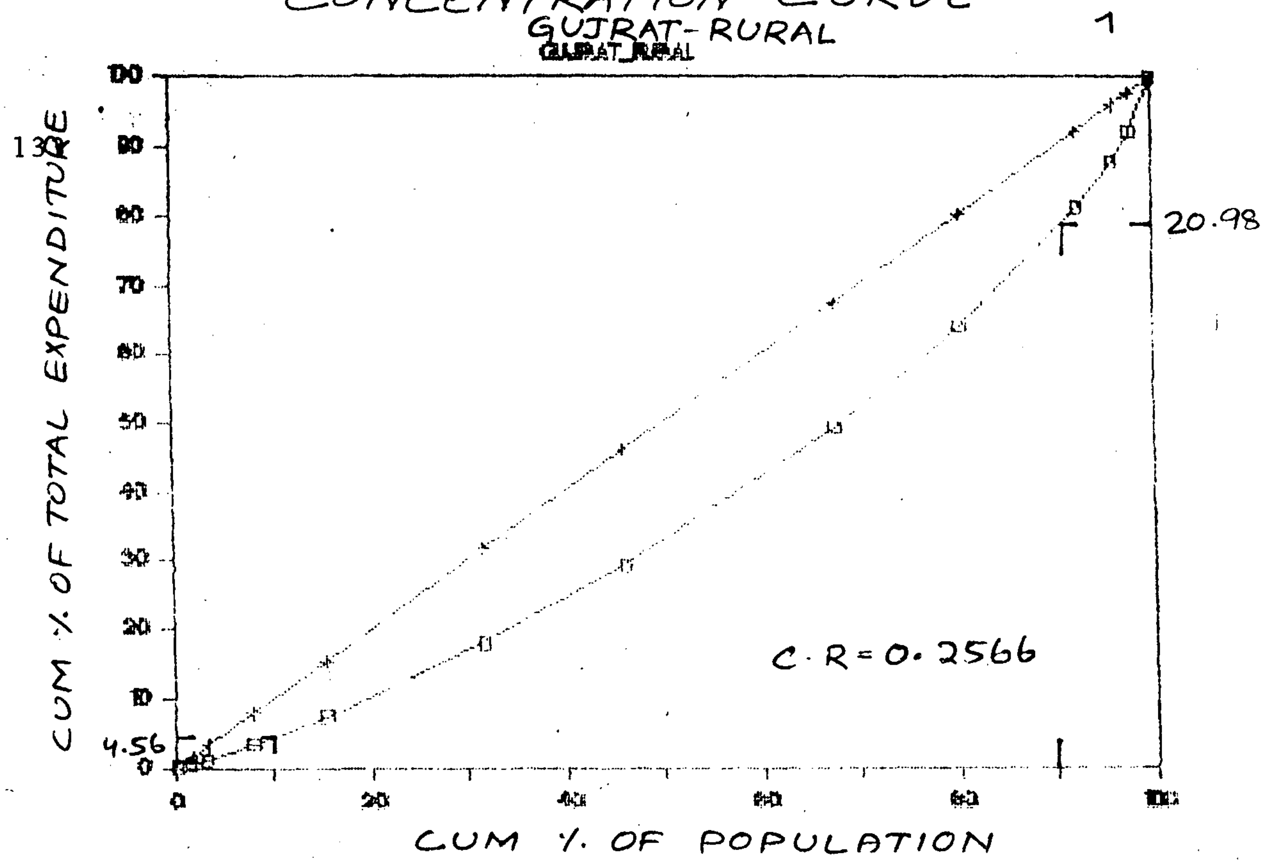

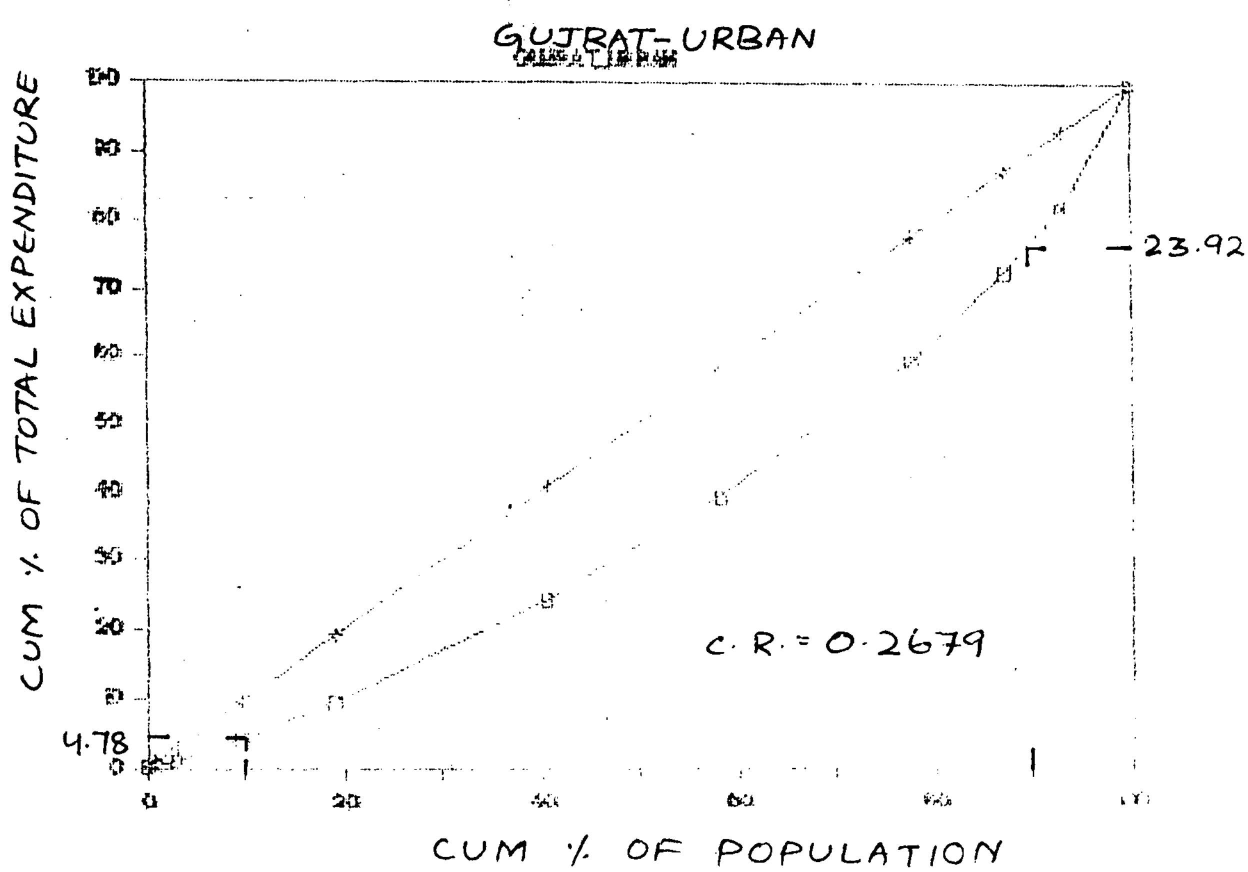

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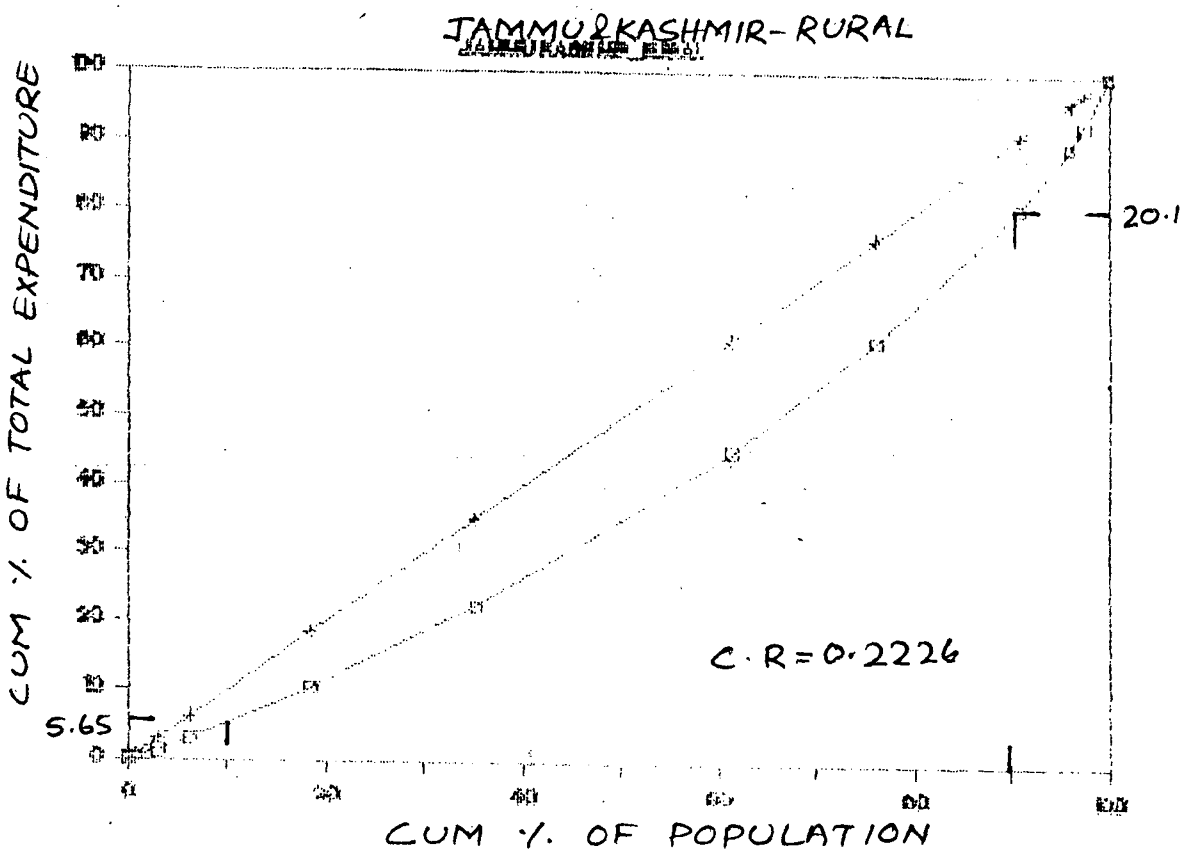
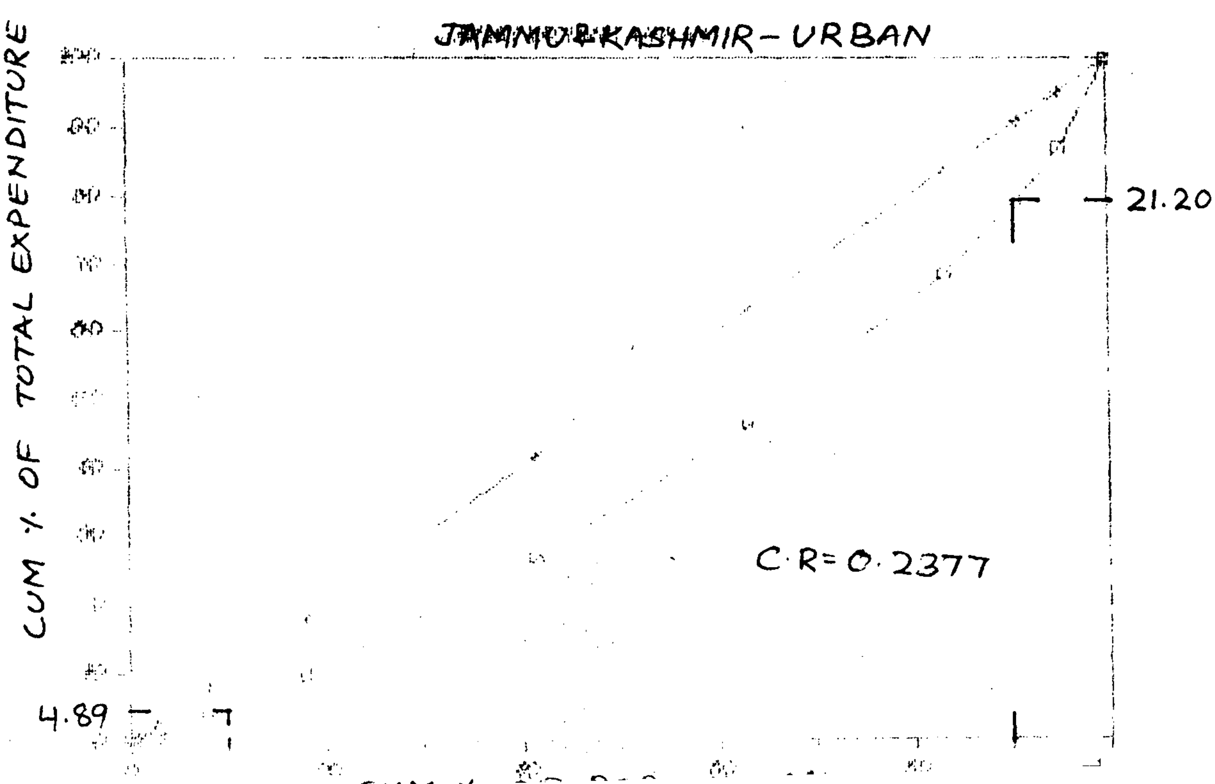
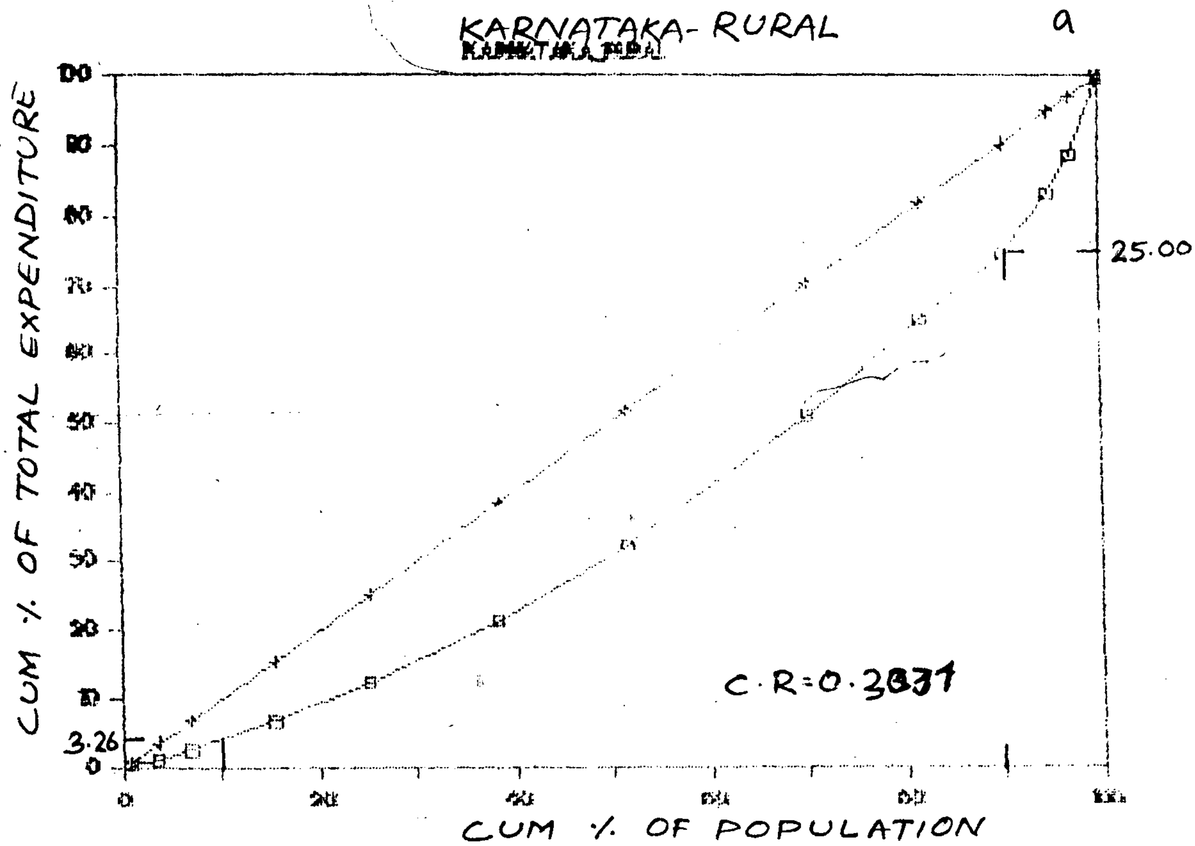
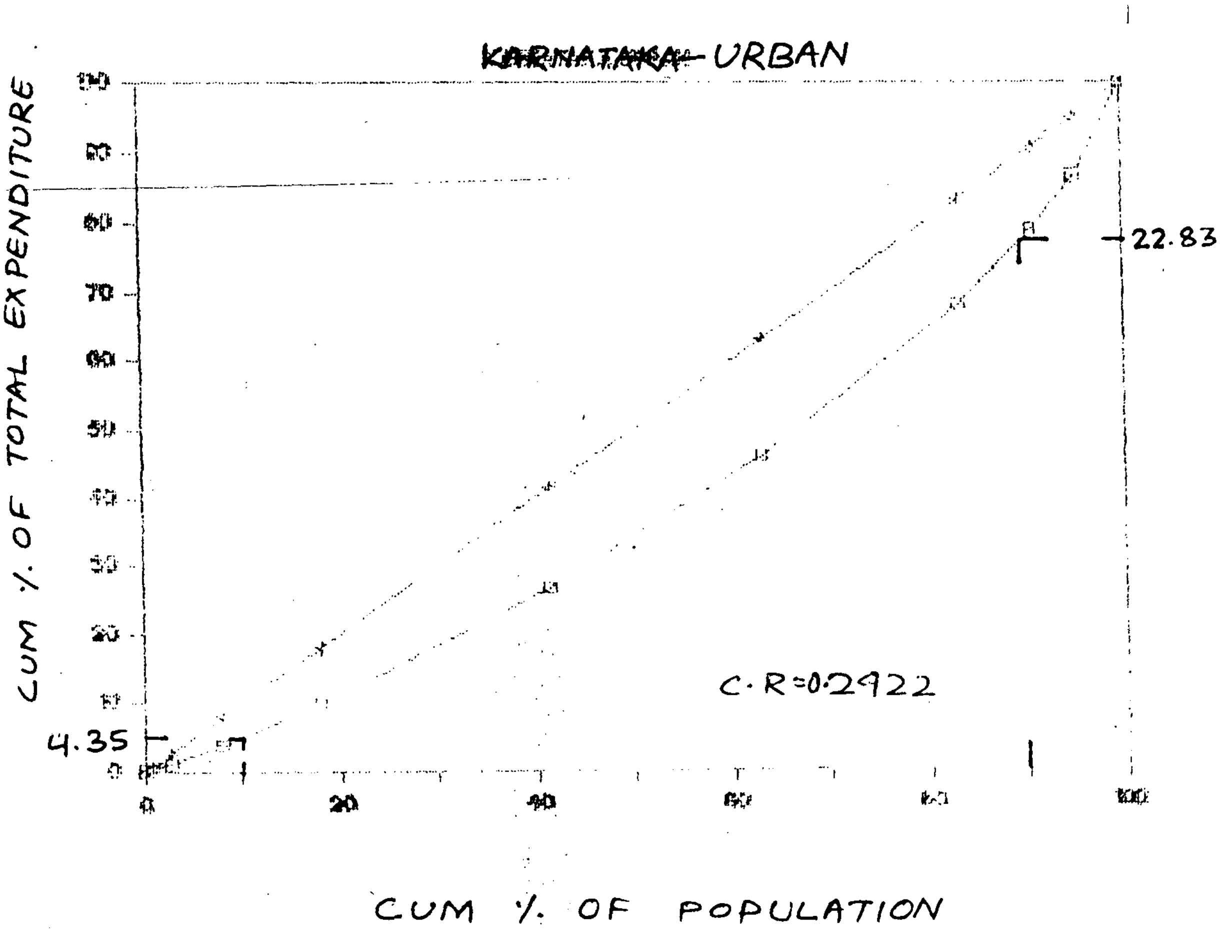




CONCENTRATION CURVE

a





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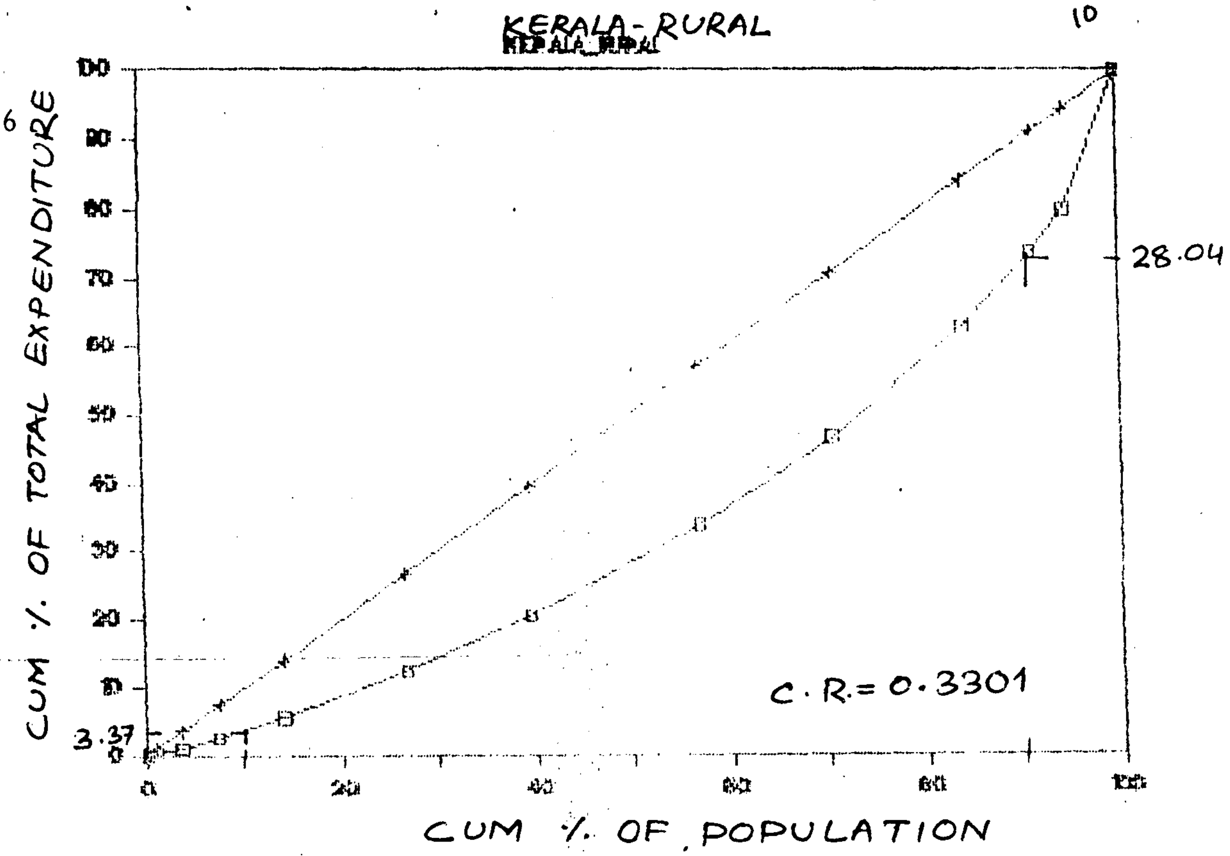
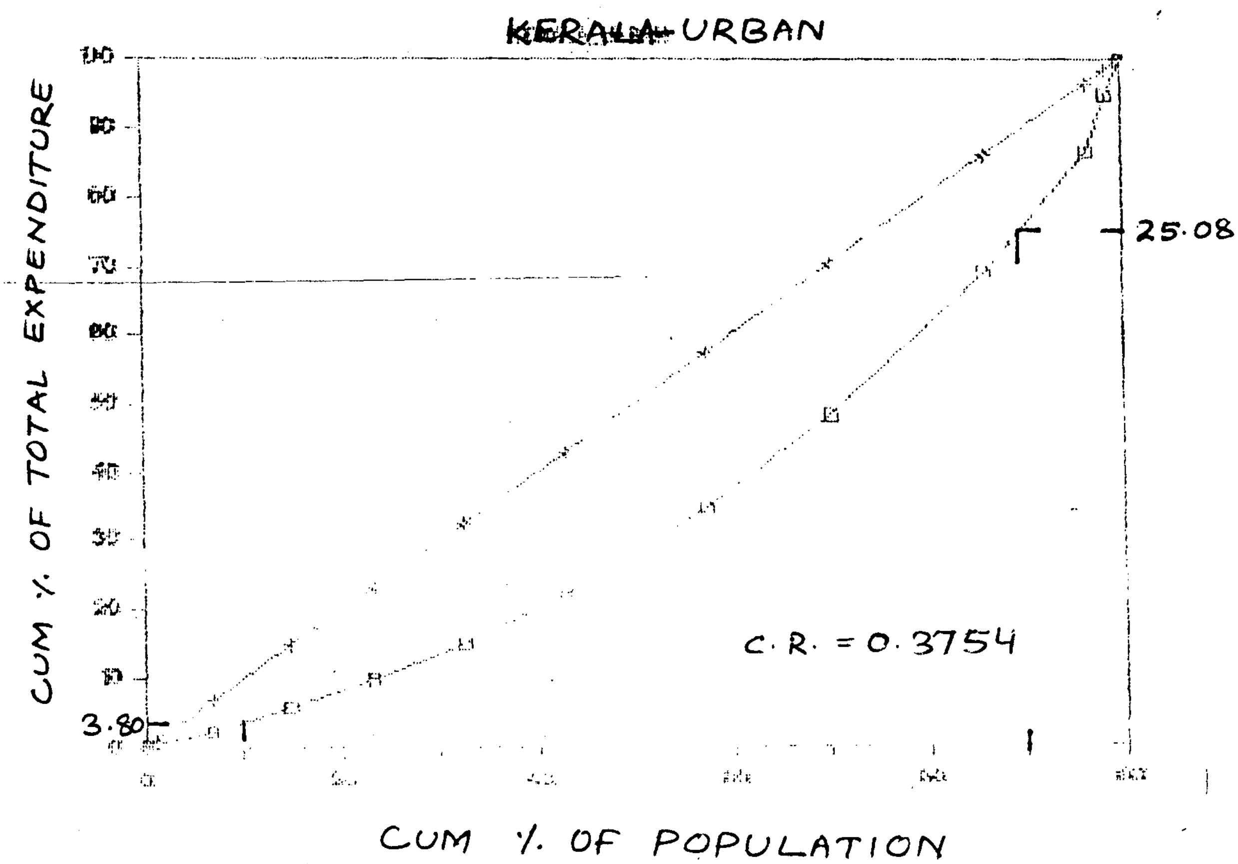
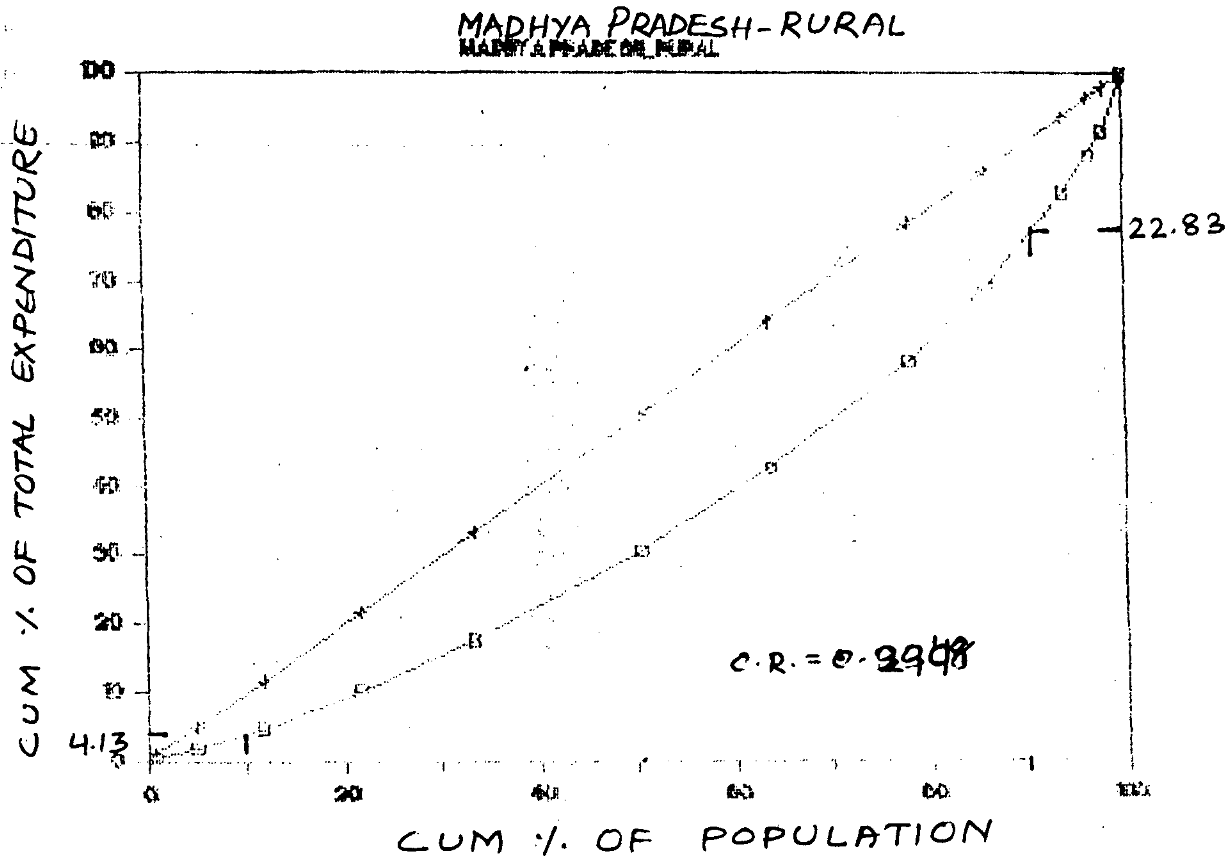
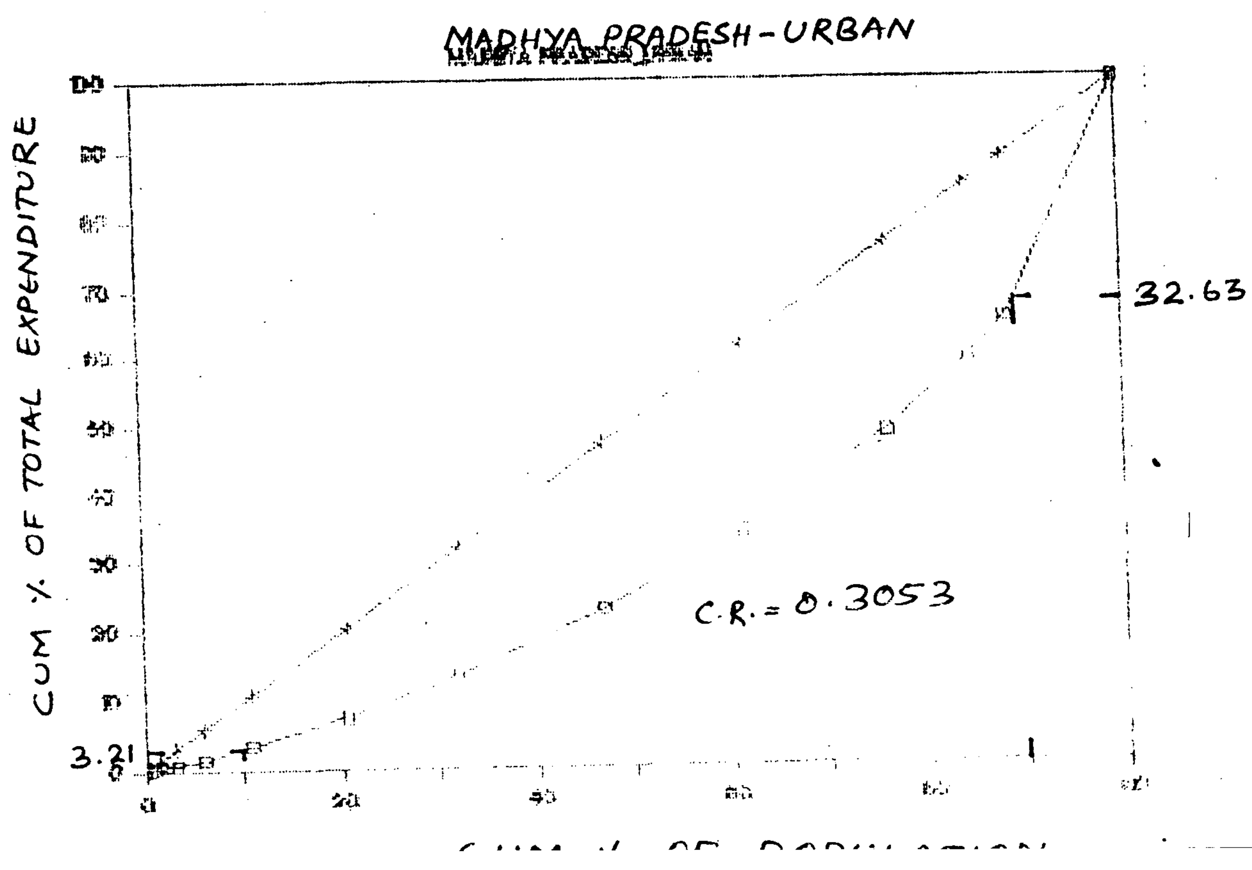




CONCENTRATION CURVE

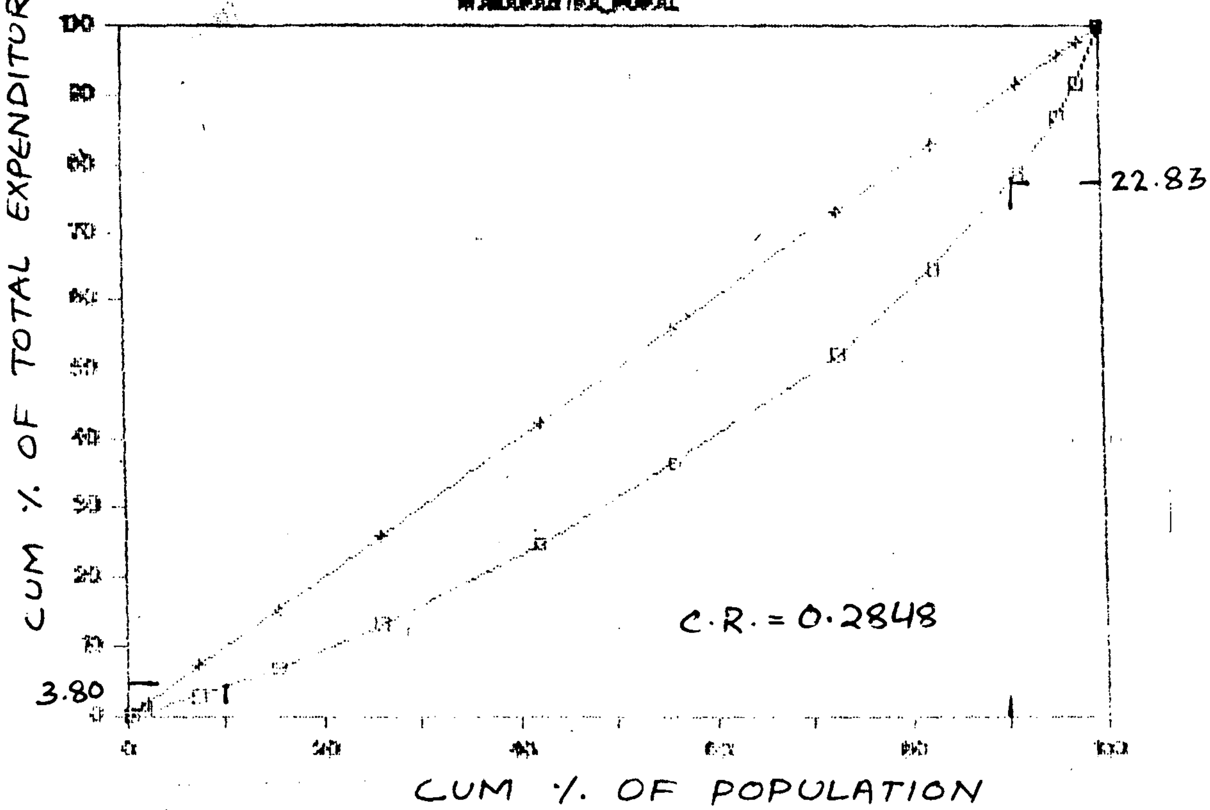
12



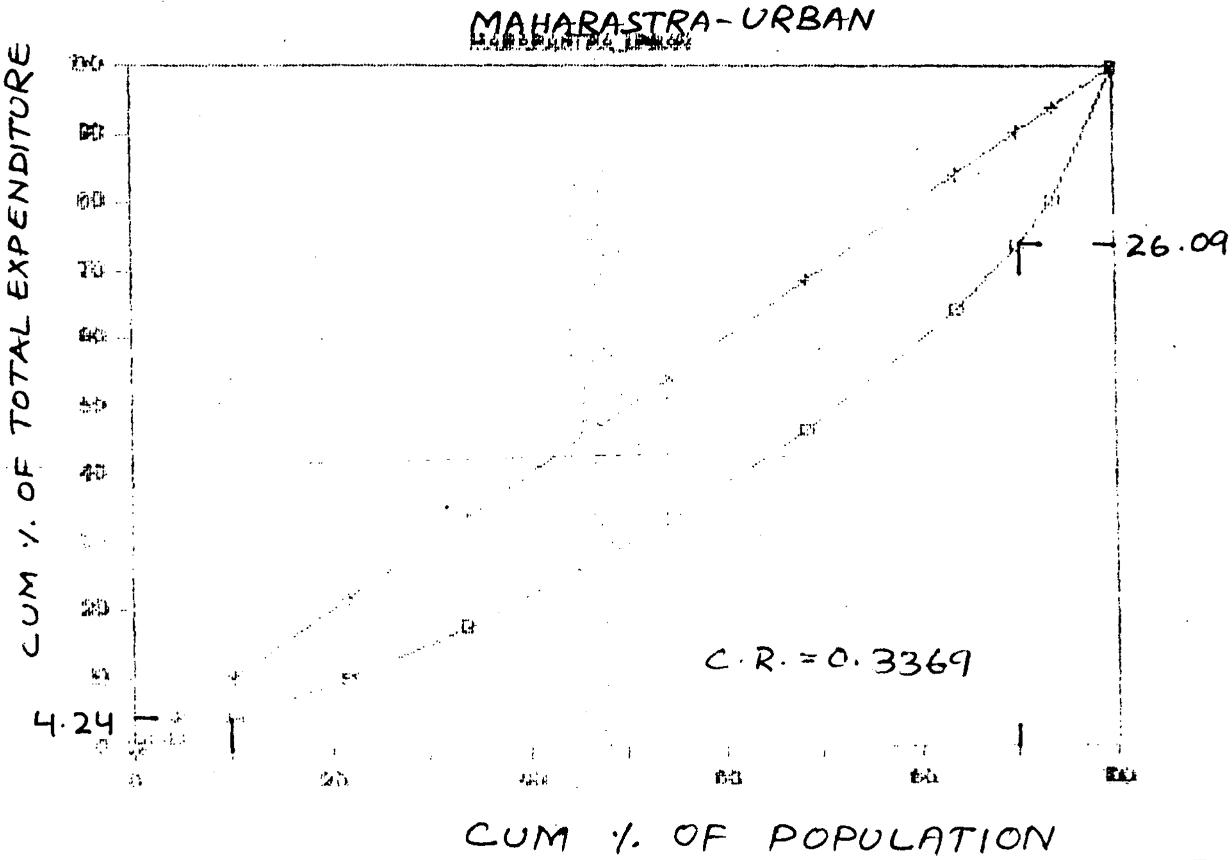


CONCENTRATION CURVE 12

MAHARASTRA-RURAL



MAHARASTRA-URBAN



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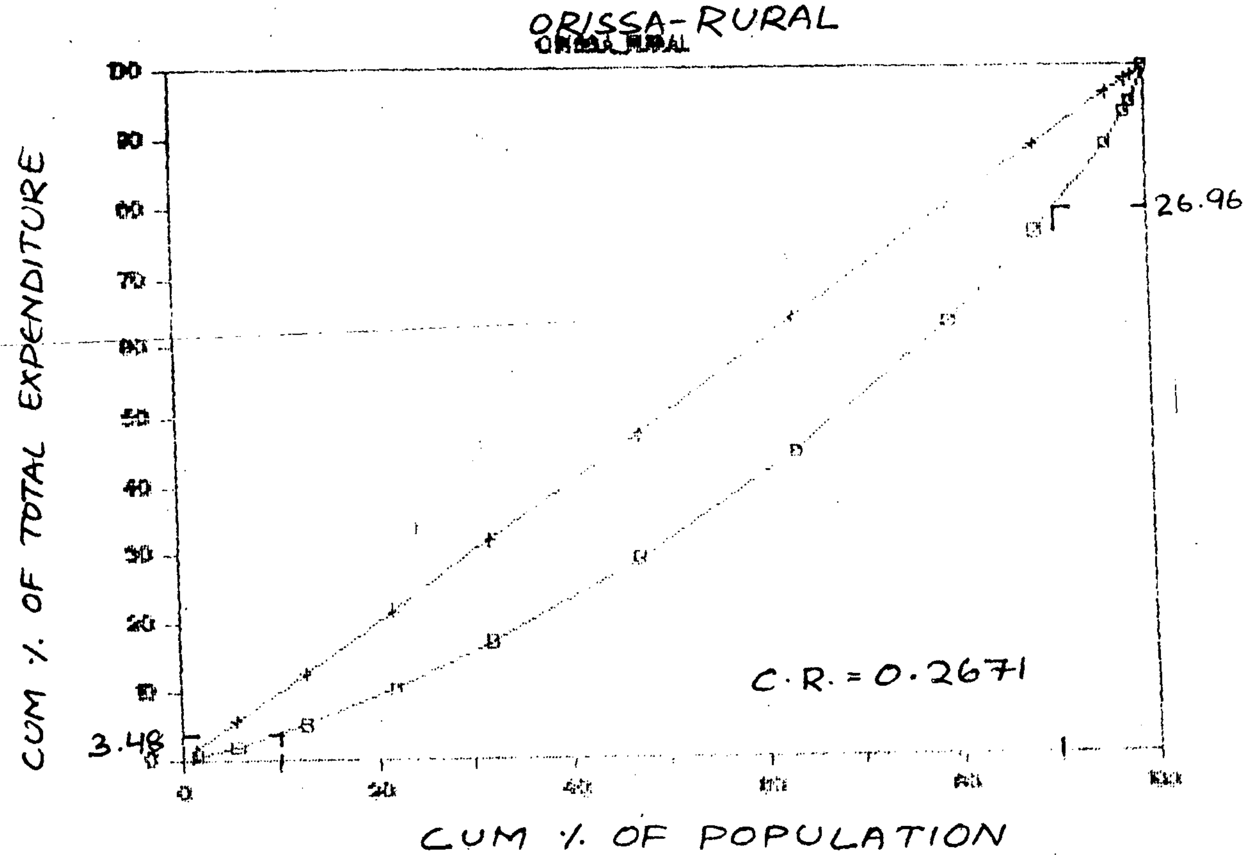
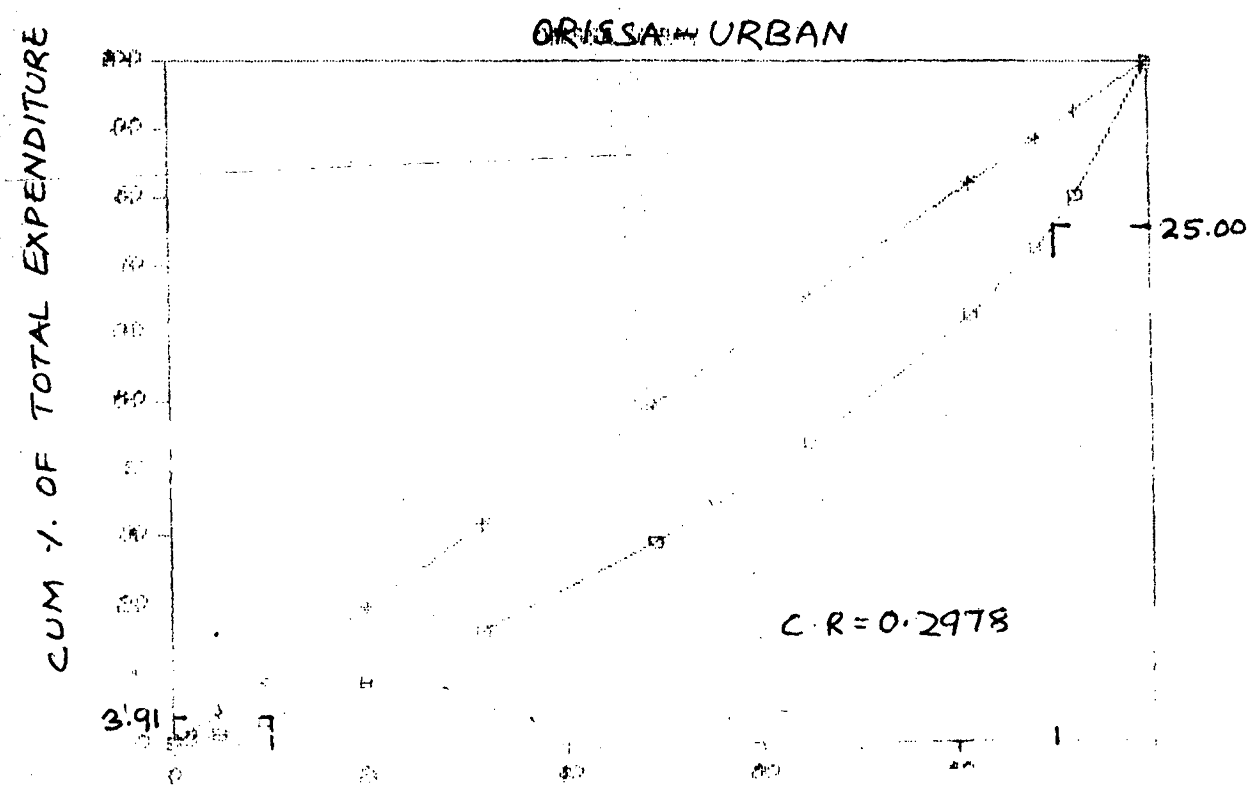
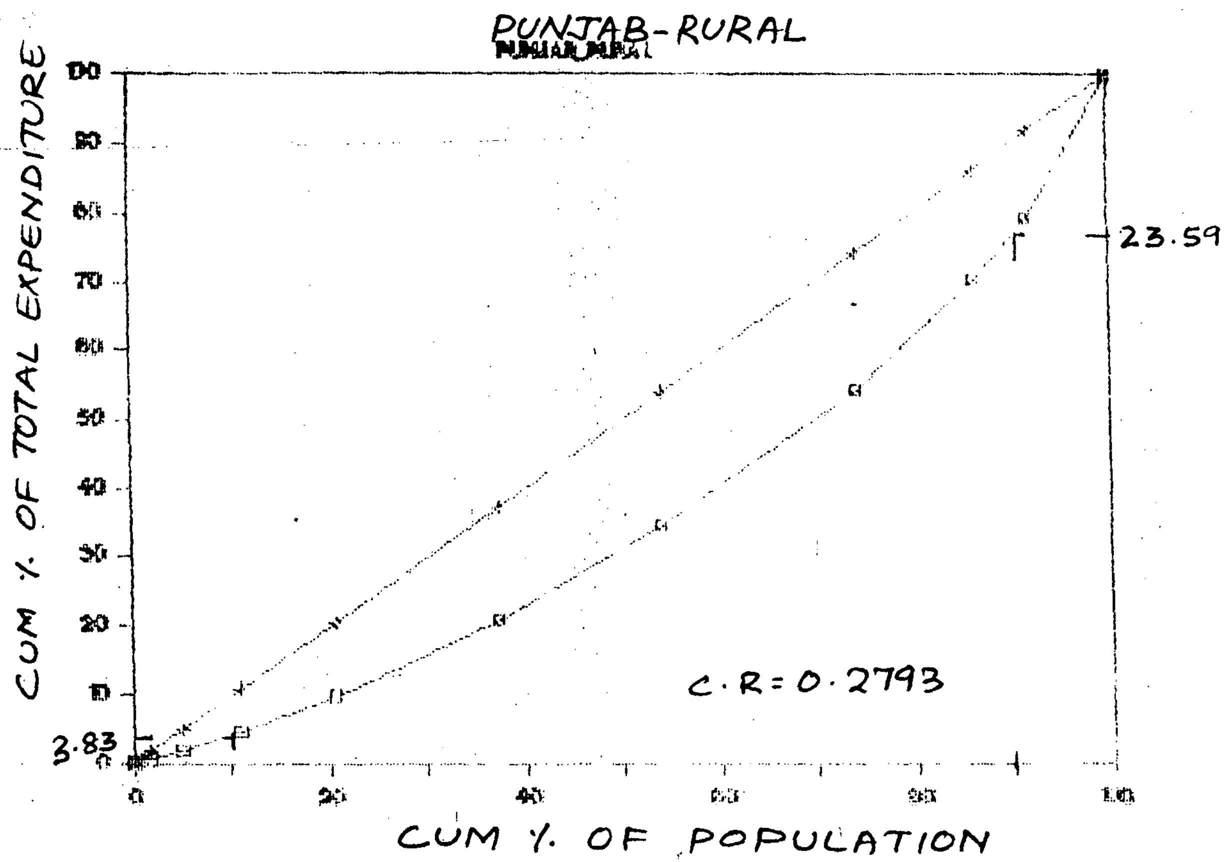
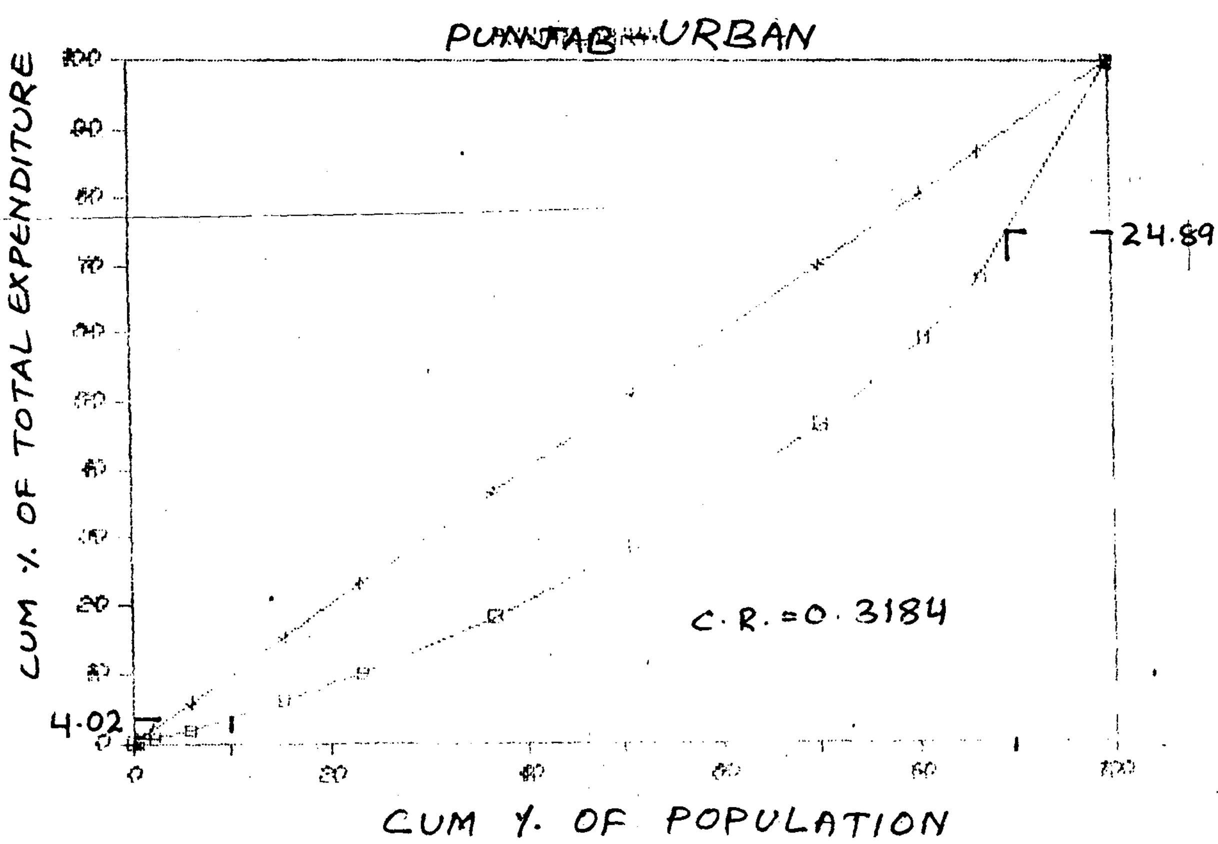




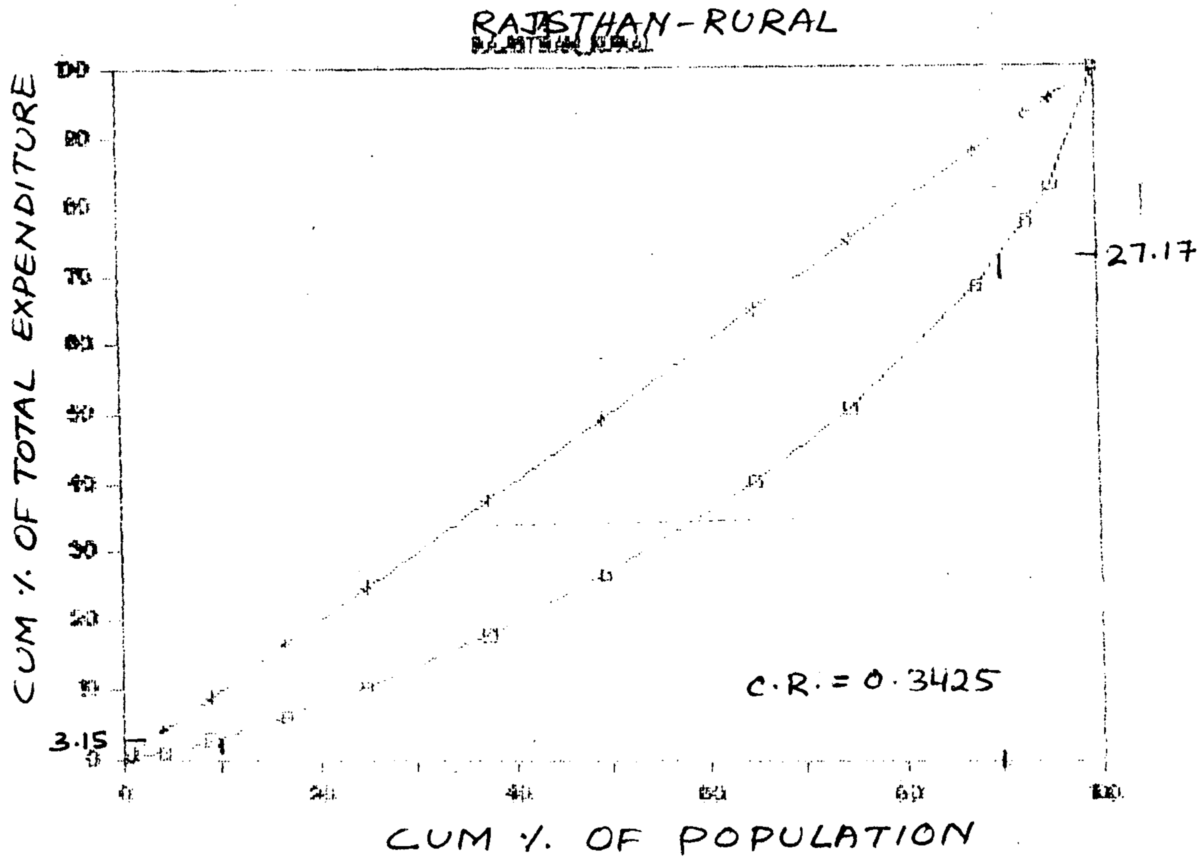
CONCENTRATION CURVE

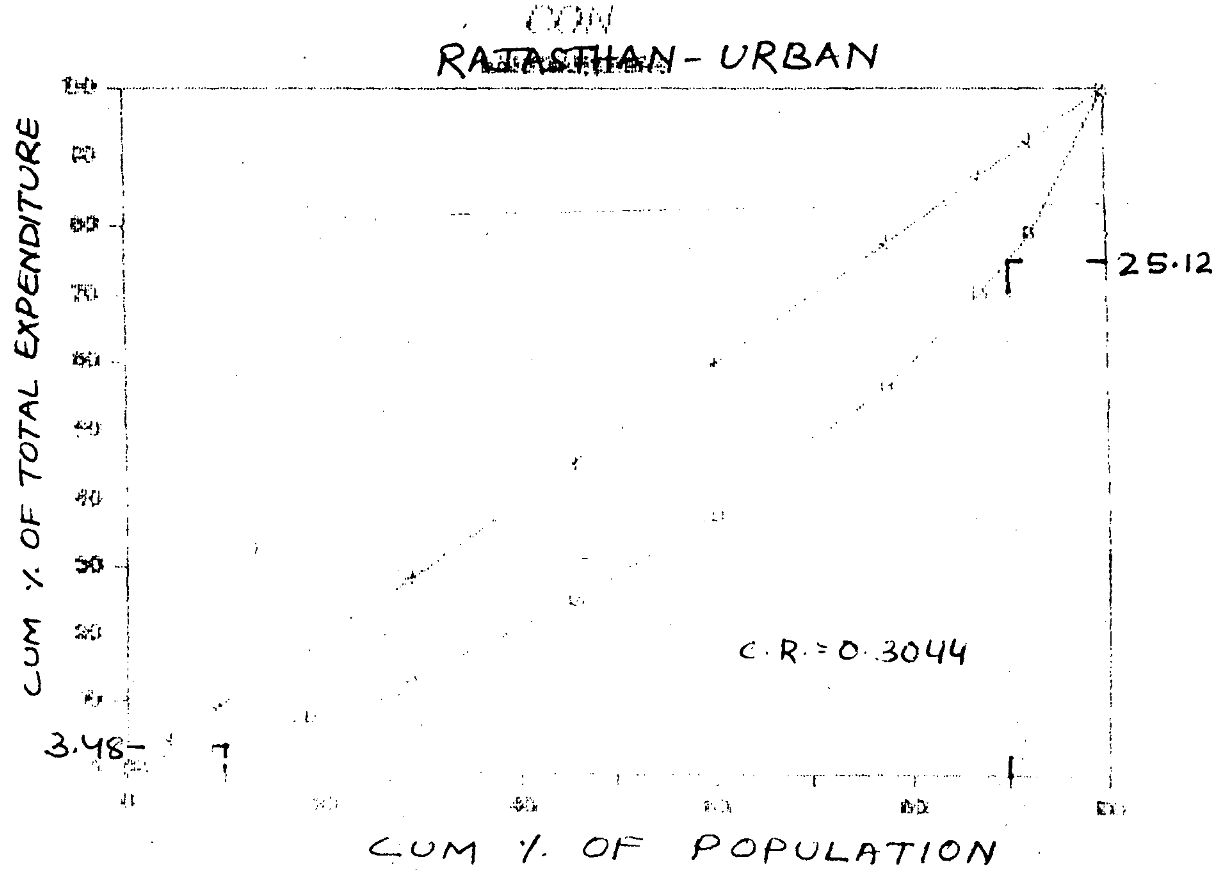
15





CONCENTRATION CURVE 15





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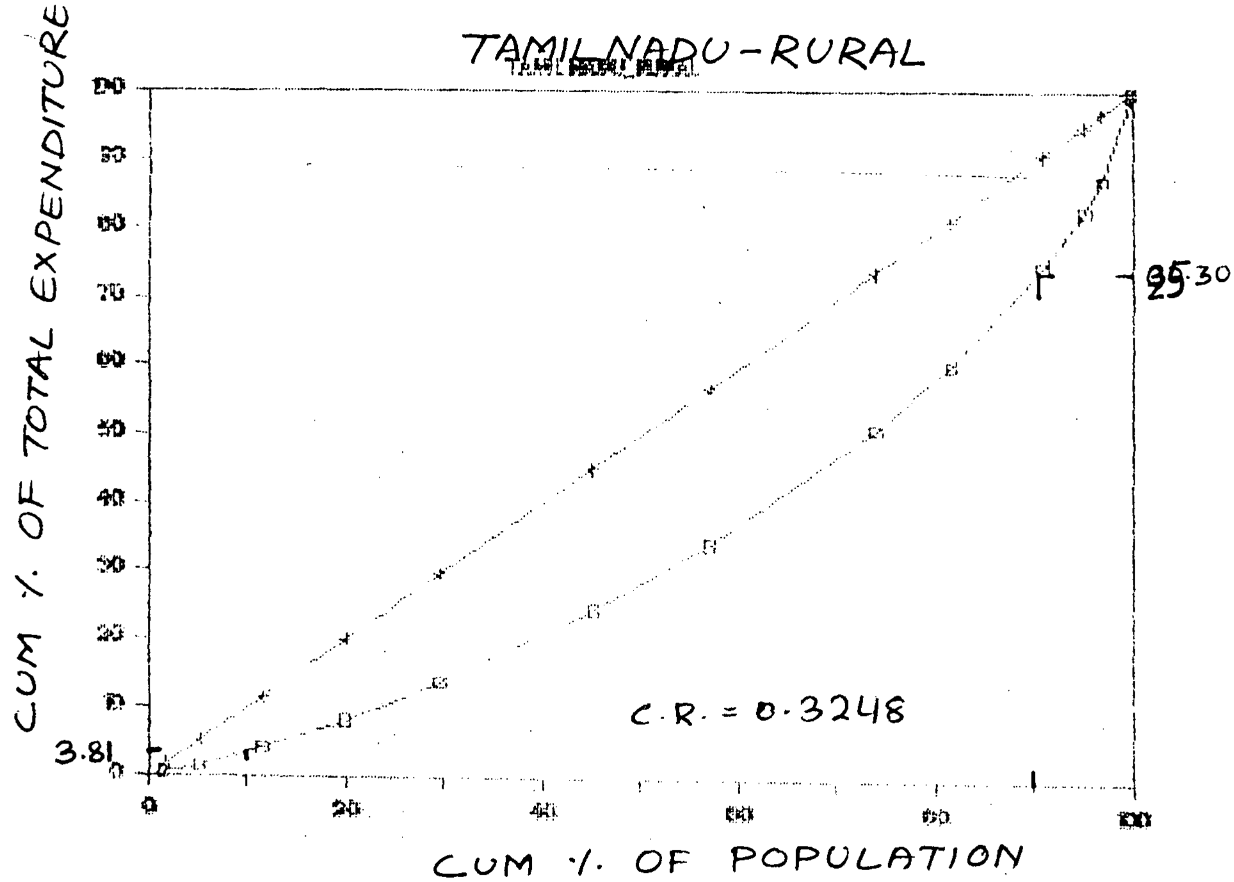
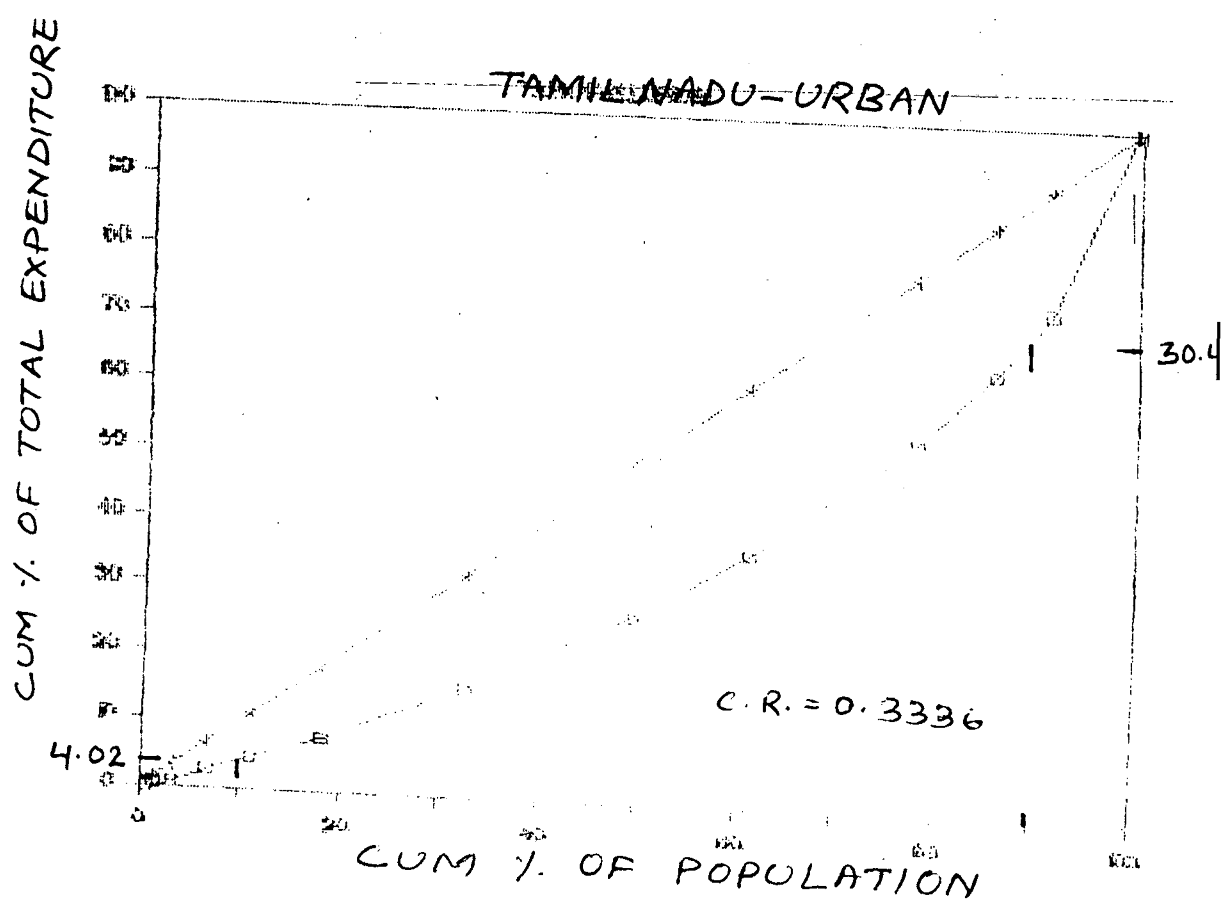
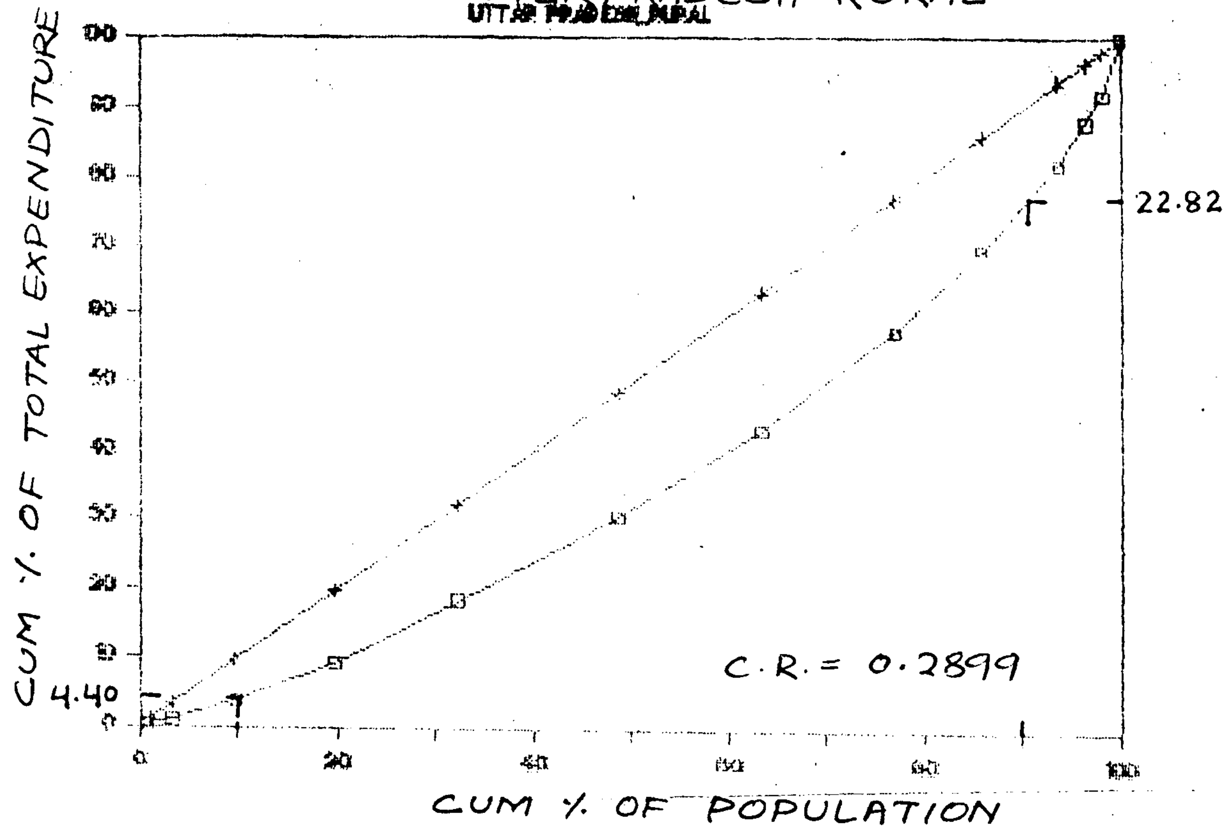


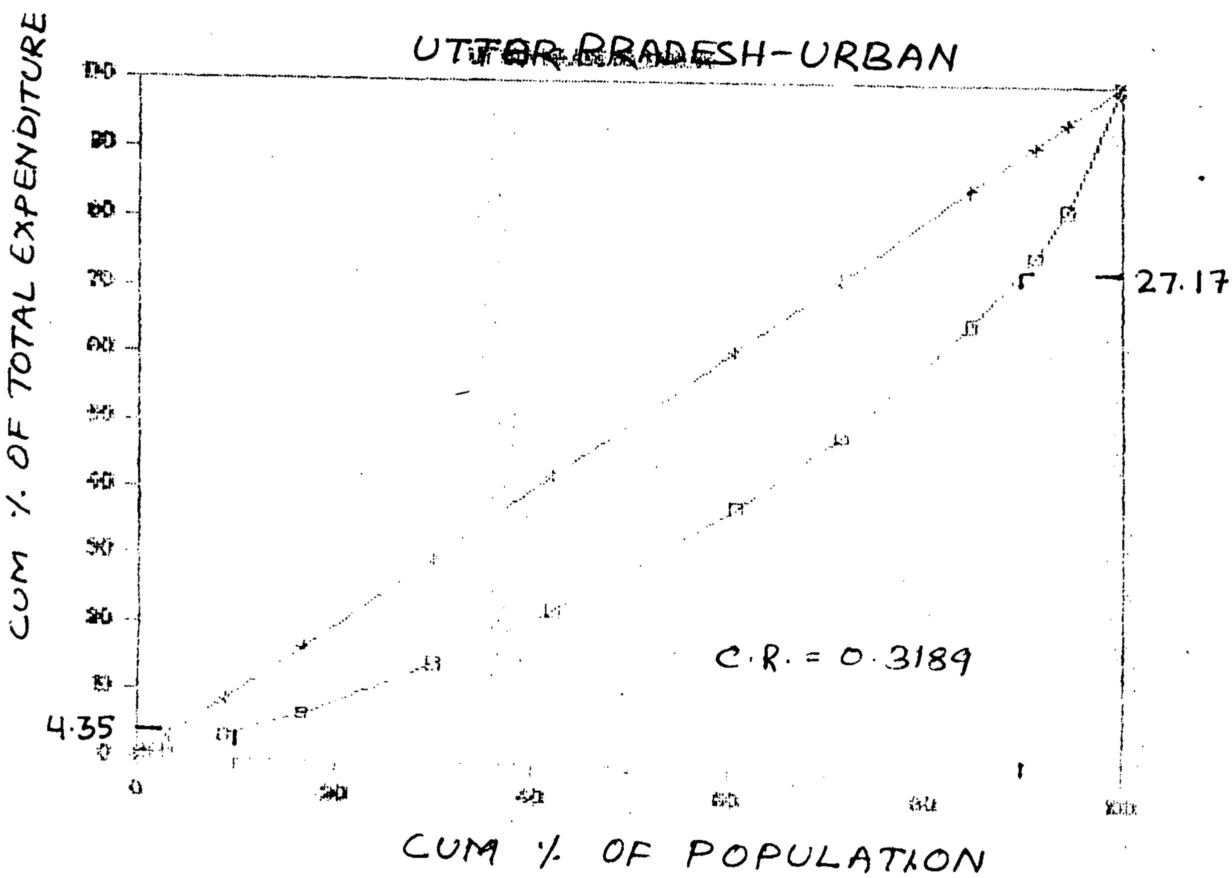


CONCENTRATION CURVE

UTTAR PRADESH-RURAL



UTTAR PRADESH-URBAN



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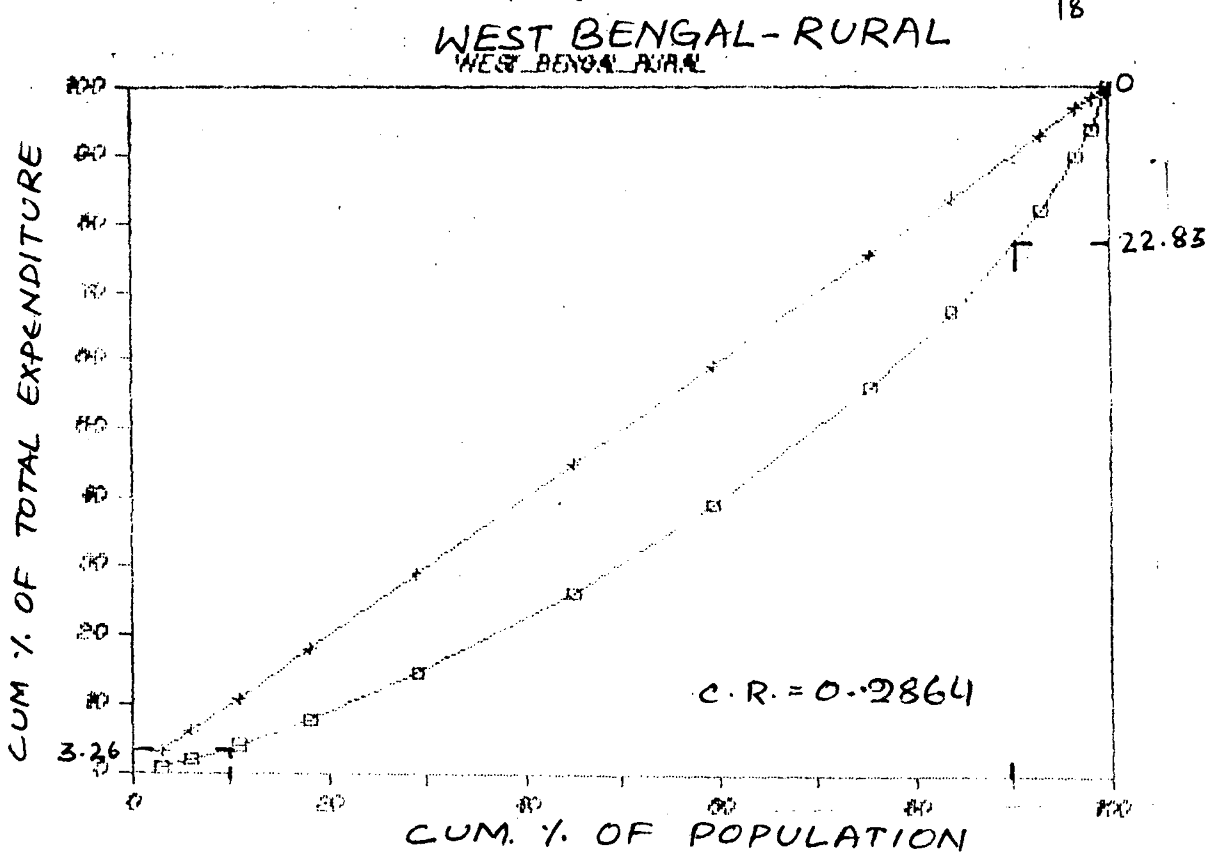

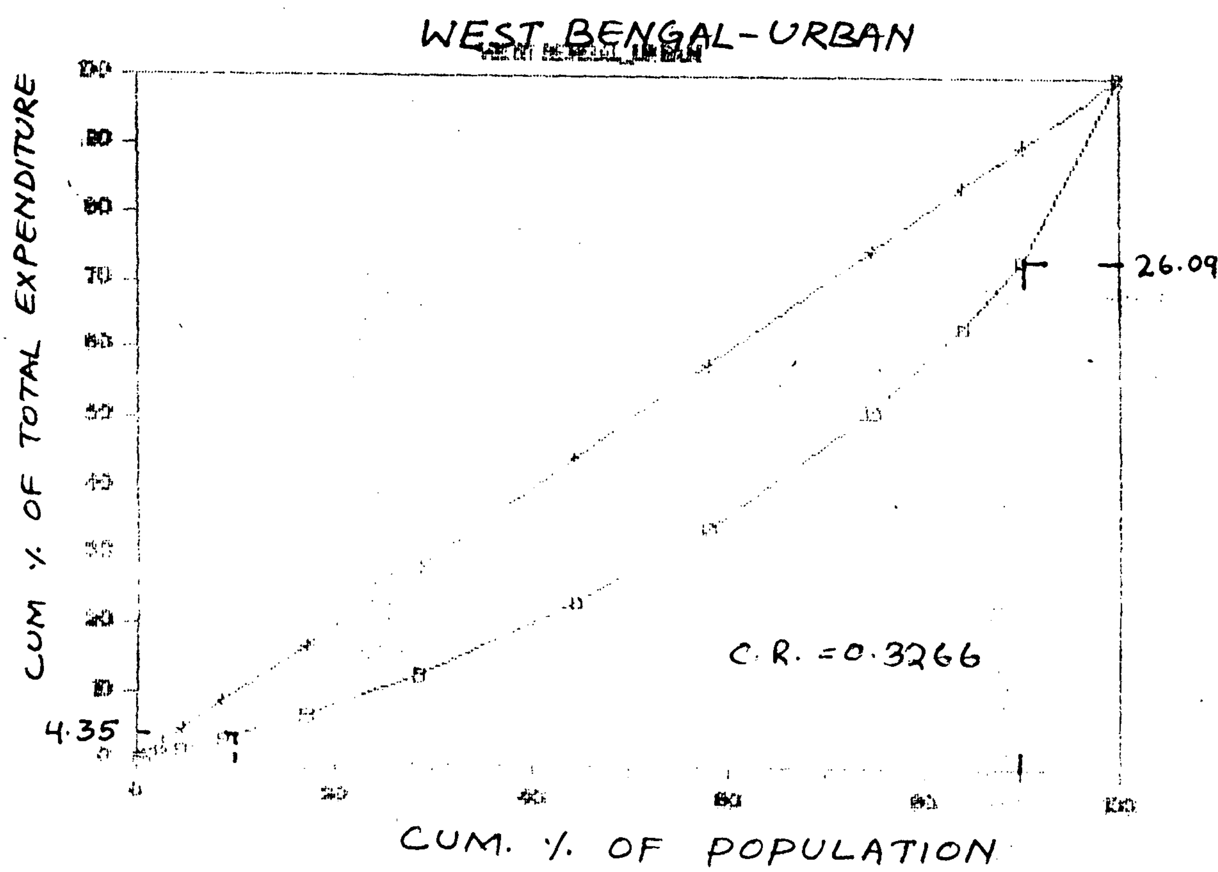

CHAPTER - VI

EFFECT OF HOUSE HOLD SIZE ON CONSUMPTION

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CHAPTER - VI

EFFECT OF HOUSEHOLD SIZE ON CONSUMPTION

The purpose of this chapter is to investigate the effects of household size on household consumption and to ascertain whether this influence is same in all states.In analysing the forms of Engel curves and inter-state variations in consumption patterns, both the dependent and independent variables were expressed in per capita terms, thus ignoring the possibility of economies (or diseconomies) of scale in household consumption due to the variations in the household size.It may be thought that since household size is a non economic factor, it could be possible to proceed by treating it as a random variable whose effects are superimposed on those of income(total expenditure) and that it's effects could be ignored by examining only the averages of a number of households of different sizes.This simple treatment is not justified for two reasons.Firstly,in most samples of household expenditure,there is a positive correlation between household income and household size,so that the biased estimates will result if household size is not explicitely treated.Secondly, variations in household size have comparatively large effects on consumption,so that in most samples of household expenditure the magnitude of the variations in consumption due to household size is for some commodities greater than that due to income variations.Thus household size must be considered explicitely in the formulation of Engel curve.

The relationship between household size and consumption is investigated for both cereals and clothing. Log-linear(double log) function have been used for this analysis. In view of the relatively greater importance of home produced goods in the rural sector, urban and rural households are studied separately.

The regression model used to study the effect of household size on consumption is as follows :-

$$\text{Log } Y = a + b \log X + c\log N + E$$

Where Y is the monthly per capita household expenditure on the item, X is the monthly total expenditure of the household and N is the corresponding household size and E is the error term and a,b,c, are regression parameters. Least square estimates b and c give directly the partial elasticities with respect to household expenditure and

TABLE -73

EXPENDITURE AND HOUSEHOLD SIZE ELASTICITIES FOR CEREALS FOR RURAL HOUSEHOLDS

STATES	b	t(b)	S.E.(b)	c	t(c)	S.E.(C)	R2
1.ANDHRA PRADESH	0.6100*	15.886	0.0384	0.9211*	4.998	0.1843	0.964
2.ASSAM	1.2136*	9.350	0.1297	1.4192*	4.835	0.2936	0.963
3.BIHAR	0.9716*	10.899	0.0899	1.8642	4.331	0.4304	0.981
4.GUJRAT	0.5213*	3.567	0.1461	0.4930*	0.861	0.5723	0.906
5.HARYANA	0.7399*	26.855	0.0276	1.6935	10.454	0.1620	0.991
6.JAMMU&KASHMIR	0.7053*	8.785	0.0802	0.0350	0.156	0.2251	0.960
7.KARNATAKA	0.6842*	20.340	0.0336	0.6000	2.442	0.2456	0.981
8.KERALA	0.6788*	6.740	0.1407	0.4457	0.992	0.4493	0.956
9.MADHYA PRADESH	0.6244*	7.328	0.7316	1.6766*	2.292	0.1085	0.847
10.MAHARASTRA	0.6159*	21.341	0.0288	0.7080*	5.086	0.1392	0.980
11.ORISSA	0.8367*	22.760	0.0367	1.5741	9.062	0.1737	0.986
12.PUNJAB	0.7297*	4.706	0.1550	0.4606	0.491	0.9380	0.769
13.RAJSTHAN	0.3836*	9.303	0.0412	0.4469*	1.968	0.2271	0.960
14.TAMIL NADU	0.8117*	11.676	0.0700	1.0763	3.150	0.3416	0.977
15.UTTER PRADESH	0.3772*	4.064	0.0928	-0.4056*	-1.029	0.3944	0.839
16.WEST BENGAL	0.7862	14.789	0.0531	1.2906	2.854	0.4522	0.974
ALL INDIA	0.7336*	30.723	0.0238	1.7316*	12.297	0.1408	0.995

* Significant at 5 per cent level of significance.

TABLE -74

EXPENDITURE AND HOUSEHOLD SIZE ELASTICITIES FOR CEREALS FOR URBAN HOUSEHOLDS

STATES	b	t(b)	S.E.(b)	c	t(c)	S.E.(C)	R2
1.ANDHRA PRADESH	0.4482*	13.895	0.0322	0.3879*	5.177	0.0749	0.967
2.ASSAM	0.4996*	2.588	0.1930	0.3659*	1.145	0.3196	0.747
3.BIHAR	0.7235*	10.737	0.0673	0.8608	5.744	0.1498	0.962
4.GUJRAT	0.5477*	5.197	0.1053	0.5693	1.961	0.2903	0.822
5.HARYANA	0.4096*	3.670	0.1116	0.4235	1.330	0.3184	0.670
6.JAMMU&KASHMIR	0.8663*	4.077	0.2125	0.7764*	1.991	0.3899	0.900
7.KARNATAKA	0.6274*	12.724	0.0493	0.4530	2.665	0.1699	0.950
8.KERALA	0.6466*	6.176	0.1046	0.4534	1.218	0.3722	0.937
9.MADHYA PRADESH	0.2593*	10.629	0.0244	-0.0337	-0.471	0.0717	0.937
10.MAHARASTRA	0.4747*	5.732	0.0828	0.0185*	0.079	0.2354	0.850
11.ORISSA	0.4353*	8.984	0.0484	0.3334	2.508	0.1329	0.896
12.PUNJAB	0.4586*	9.442	0.0486	0.1766*	1.652	0.1068	0.950
13.RAJSTHAN	0.5057*	11.151	0.0453	0.5484	3.547	0.1546	0.938
14.TAMIL NADU	0.6206*	6.031	0.1029	0.7858*	1.599	0.4913	0.817
15.UTTER PRADESH	0.6659*	18.614	0.0357	1.0152*	9.424	0.1077	0.981
16.WEST BENGAL	0.6818	13.778	0.0494	0.8472	6.319	0.1340	0.951
ALL INDIA	0.5984*	36.898	0.0162	0.9067*	15.958	0.0568	0.993

* Significant at 5 per cent level of significance.

TABLE - 75

EXPENDITURE AND HOUSEHOLD SIZE ELASTICITIES FOR CLOTHING FOR RURAL HOUSEHOLDS

STATES	b	t(b)	S.E.(b)	c	t(c)	S.E.(C)	R2
1.ANDHRA PRADESH	2.7039*	18.681	0.1447	0.6857*	0.989	0.6936	0.979
2.ASSAM	2.0353*	9.667	0.2105	-1.2276*	-2.578	0.4761	0.993
3.BIHAR	2.8998*	30.008	0.0966	2.8102	6.024	0.4665	0.998
4.GUJRAT	2.1398*	4.734	0.4519	-2.2412	-1.266	1.7698	0.978
5.HARYANA	2.7697*	9.294	0.2980	0.6889	0.393	1.7522	0.958
6.JAMMU&KASHMIR	2.1423*	6.403	0.3346	-1.9339*	-2.061	0.9384	0.995
7.KARNATAKA	2.8066*	20.719	0.1355	2.8693*	2.900	0.9894	0.982
8.KERALA	1.6467*	7.175	0.2295	-2.7810	-2.716	1.0239	0.984
9.MADHYA PRADESH	2.1623*	12.748	0.3532	-1.5647	-2.301	0.8534	0.898
10.MAHARASTRA	2.0138*	13.672	0.1473	-0.9154*	-1.289	0.7104	0.963
11.ORISSA	1.4427*	10.650	0.1355	-1.4391	-2.248	0.6401	0.974
12.PUNJAB	3.3952*	12.386	0.2741	0.9267	0.559	0.6581	0.961
13.RAJSTHAN	2.3998*	6.514	0.3684	1.8322	0.903	2.0294	0.932
14.TAMIL NADU	1.4889*	4.317	0.3448	-3.7125*	-2.206	1.6827	0.955
15.UTTER PRADESH	1.3137*	3.482	0.3773	-4.8894*	-3.049	1.6034	0.891
16.WEST BENGAL	2.3072	25.548	0.0903	2.1491	2.798	0.7682	0.992
ALL INDIA	2.0948*	12.824	0.1633	-0.4357	-0.452	0.9633	0.986

* Significant at 5 per cent level of significance.

TABLE -76

EXPENDITURE AND HOUSEHOLD SIZE ELASTICITIES FOR CLOTHING FOR RURAL HOUSEHOLDS

STATES	b	t(b)	S.E.(b)	c	t(c)	S.E.(C)	R2
1.ANDHRA PRADESH	2.5164*	8.362	0.3009	-2.9048*	-4.156	0.6990	0.879
2.ASSAM	1.4488*	3.070	0.4720	-0.6589*	-0.843	0.7813	0.948
3.BIHAR	4.7088*	7.817	0.6024	4.0683	3.036	1.3398	0.952
4.GUJRAT	1.9722*	6.195	-1.3115	0.3183	-1.496	0.8769	0.947
5.HARYANA	2.4621*	11.045	0.2229	-0.2358	-0.371	0.6359	0.968
6.JAMMU&KASHMIR	2.0074*	2.433	0.8251	-1.2125	-0.801	1.5142	0.950
7.KARNATAKA	2.3686*	20.201	0.1172	-0.7922	-1.960	0.4042	0.985
8.KERALA	1.9106*	4.443	0.4309	-0.3853	-0.251	1.5325	0.925
9.MADHYA PRADESH	2.2721*	12.475	0.1821	-0.1805	-0.337	0.5352	0.953
10.MAHARASTRA	1.9946*	17.020	0.1172	0.0928	-0.279	0.3332	0.981
11.ORISSA	1.9211*	12.485	0.1538	-0.3891	-0.922	0.4221	0.958
12.PUNJAB	2.8234*	5.619	0.5025	1.9354	1.750	1.1057	0.845
13.RAJSTHAN	1.7780*	10.361	0.1716	-0.9823	-1.679	0.5851	0.960
14.TAMIL NADU	2.3724*	9.042	0.2624	-1.9834	-1.584	1.2526	0.945
15.UTTER PRADESH	1.7924*	6.002	0.2986	-1.1621	-1.292	0.8993	0.954
16.WEST BENGAL	2.7188	25.444	0.1068	0.6162	2.131	0.2895	0.988
ALL INDIA	2.1752*	17.200	0.1265	-0.7009*	-1.582	0.4430	0.980

* Significant at 5 per cent level of significance.

household size. The choice of log linear form may be criticised on the ground that it is not always a best fitting function. But in the view of its extensive use in recent budget studies and its advantage of directly getting elasticities, it has been chosen in the study.

A look at the tables immediately indicates that household size elasticities are positive in both rural and urban areas for cereals and nagative for clothing in both rural and urban areas for most of the states. The occurance of significant negative elasticities for clothing implies that an increase in the household size, at any given level of total expenditure, results in an propertionate decrease in expenditure of clothing. Thus given the total outlay, increase in household size implies decrease in the expenditure on clothing. This result, that negative house hold size elasticities in the case of luxuries and positive and high elasticities in the case of necessities and inferier goods have been obtained by other researchers.

To give a detail picture, Assam (1.4192), Bihar (1.8642), Haryana (1.6935), Orissa (1.5741) and West Bengal (1.2906) have Household size elasticity more than unity for rural areas where as Jammu Kashmir(0.0350) has lowest household size elasticity for cereals.Uttar pradesh has negative household size elasticity i.e.-0.4056 in rural areas. In urban areas except Utter Pradesh(1.0152) Household size elasticities are less than unity in all states. Madhya pradesh has negative household size elasticity (-0.0337)in urban areas for cereals. This implies that in rural areas household size has got more effect on expenditure patterns than urban areas. In case of clothing Bihar(2.8102) has got a very high positive household size elasticity and mostly other states have negative elasticity . This household size elasticities vary significantly among states which clear from the tables.in urban areas household size elasticities are negative in most of the states expect Bihar (4.0683), Gujrat (0.3183), Punjab (1.9354),and West Bengal(0.6169). Andhra Pradesh has high negative value i.e. -2.9048. Following few important points can be infered from the above analysis.

i) The household size elsticities are generally higher for rural households as compared to urban ones.

ii) The size elasticities differ significantly from state to state.

iii) The household elasticities are positive for cereals and negative for clothing in most of the states.

All the above analysis is based on regression equation in which household size is taken as an additional explanatory variable.The major drawback in this type of analysis that it takes into account the impact of total expenditure as well as household size on consumption.This study has also tried to separate these effects and to consider household size as the only explanatory variable.The regression equation used is as fallows-

$$\text{LOG } Y = a + b \text{ LOG } N + E$$

Where Y is per capita consumer expenditure, N is household size.

The results of this equation where household size is the only explanatory variable are analysed below in three sections for cereals, clothing and total expenditure.

EFFECT OF HOUSEHOLD SIZE ON EXPENDITURE OF CEREALS

Household size elasticities for cereals ar naegative for all the states in both rural and urban areas. In rural areas the value of elasticity is more than unity in all the states except Andhra Pradesh and Maharashtra. It is highest in West Bengal (-3.746) which is followed by Tamilnadu (-2.513) and Kerala(-2.336). In urban areas the value of elasticities are negative except Andhra Pradesh (.716) but lower than those in rural areas. The elasticities are less than unity in all the states except Kerala (-1.634) and Tamilnadu (-1.087). Lowest value of elasticity was obtained in West Bengal (-0.276).

EFFECT OF HOUSEHOLD SIZE ON EXPENDITURE OF CLOTHING

Household size has strong negative effect on expenditure on clothing. The elasticity of household size for clothing in rural areas is greater than -5.0 in all the states. It is as higher as -12.631 in West Bengal followed by Jammu & Kashmir (-12.435) Punjab (-12.320). It is lowest in Maharashtra (-5.300). But in urban areas the Household size elasticities are lower than those of rural areas. It

TABLE - 77

REGRESSION COEFFICIENTS,T VALUES,STANDARD ERRORS,F VALUES AND COEFFICIENTS OF DETERMINATION FOR CEREAL IN RURAL AREAS

	a	b**	t(b)	S.E(b)	F	R^2
ALL INDIA	2.952	-2.042*	-3.182	0.642	10.125	0.479
ANDHRA PRADESH	1.905	-0.646	-0.850	0.760	0.722	0.062
ASSAM	2.418	-1.173*	-3.914	0.299	15.317	0.605
BIHAR	3.464	-2.607*	-5.866	0.445	34.406	0.748
GUJRAT	2.467	-1.466*	-6.357	0.231	40.414	0.786
HARYANA	2.799	-1.812*	-2.318	0.782	5.372	0.328
JAMMU & KASHMIR	2.776	-1.601*	-4.497	0.356	20.277	0.468
KARNATAKA	3.049	-2.139	-1.677	1.275	2.814	0.204
KERALA	3.193	-2.336*	-5.861	0.398	34.251	0.757
MADHYA PRADESH	2.951	-1.974*	-4.397	0.449	19.331	0.637
MAHARASHTRA	1.836	-0.633	-0.784	0.807	0.614	0.053
ORISSA	2.634	-1.461	-1.815	0.771	3.591	0.246
PUNJAB	3.078	-2.386	-1.948	1.225	3.793	0.256
RAJASTHAN	2.484	-1.393*	-4.216	0.330	17.710	0.618
TAMIL NADU	3.134	-2.513*	-4.621	0.543	21.357	0.660
UTTAR PRADESH	2.583	-1.588*	-3.845	0.413	14.781	0.573
WEST BENGAL	4.320	-3.746*	-2.762	1.356	7.628	0.409

*significant at 5 percent level of significance.

TABLE - 78

REGRESSION COEFFICIENTS,T VALUES,STANDARD ERRORS,F VALUES AND COEFFICIENTS OF DETERMINATION FOR CEREALS IN URBAN AREAS

	a	b**	t(b)	S.E(b)	F	R^2
ALL INDIA	1.601	-0.280	-0.536	0.523	0.228	0.025
ANDHRA PRADESH	0.959	0.716	2.344	0.305	5.495	0.333
ASSAM	1.899	-0.411*	-2.859	0.144	8.172	0.505
BIHAR	2.037	-0.623*	-3.046	0.205	9.275	0.481
GUJRAT	1.789	-0.651	-2.008	0.324	4.032	0.287
HARYANA	1.627	-0.382	-1.071	0.356	1.147	0.113
JAMMU & KASHMIR	2.061	-0.758*	-4.491	0.169	20.170	0.691
KARNATAKA	1.952	-0.756	-1.356	0.557	1.838	0.143
KERALA	2.629	-1.634*	-5.005	0.326	25.049	0.695
MADHYA PRADESH	1.713	-0.378	-1.770	0.214	3.132	0.222
MAHARASHTRA	1.946	-0.865	-2.464	0.351	6.073	0.356
ORISSA	1.771	-0.276	0.843	0.328	0.710	0.061
PUNJAB	1.698	-0.608*	-2.892	0.210	8.364	0.455
RAJASTHAN	1.794	-0.602	-1.497	0.402	2.241	0.169
TAMIL NADU	2.185	-1.087	-1.391	0.782	1.934	0.150
UTTAR PRADESH	1.886	-0.723	-2.365	0.306	5.591	0.337
WEST BENGAL	1.570	-0.175	-0.368	0.476	0.135	0.012

*significant at 5 percent level of significance.

** Household size elasticities

TABLE - 79

REGRESSION COEFFICIENTS,T VALUES,STANDARD ERRORS,F VALUES AND COEFFICIENTS OF DETERMINATION FOR CLOTHING IN RURAL AREAS

	a	b**	t(b)	S.E(b)	F	R^2
ALL INDIA	3.866	-5.015*	-2.605	1.925	0.618	0.318
ANDHRA PRADESH	1.065	-1.062	-0.594	1.788	0.353	0.031
ASSAM	2.555	-2.911*	-7.568	0.385	57.280	0.877
BIHAR	4.374	-5.588*	-4.070	1.373	16.563	0.624
GUJRAT	4.576	-5.704*	-5.080	1.123	25.810	0.721
HARYANA	4.101	-5.076*	-2.898	1.752	8.397	0.483
JAMMU & KASHMIR	4.123	-4.768*	-9.677	0.493	93.640	0.912
KARNATAKA	4.165	-5.355*	-2.591	2.067	6.714	0.397
KERALA	5.267	-6.533	-6.213	1.055	38.604	0.778
MADHYA PRADESH	2.699	-3.199	-1.727	1.852	2.984	0.213
MAHARASHTRA	3.163	-3.807*	-2.897	1.314	8.393	0.433
ORISSA	2.535	-3.081	-2.186	1.409	4.780	0.030
PUNJAB	2.434	-2.898*	-2.071	1.399	4.288	0.300
RAJASTHAN	4.282	-5.028	-3.534	1.423	12.486	0.532
TAMIL NADU	6.364	-9.143*	-3.262	2.803	10.638	0.492
UTTAR PRADESH	4.646	-5.841*	-6.369	0.917	40.560	0.787
WEST BENGAL	2.587	-3.459	-1.856	1.864	3.444	0.238

*significant at 5 percent level of significance.

TABLE - 80

REGRESSION COEFFICIENTS,T VALUES,STANDARD ERRORS,F VALUES AND COEFFICIENT OF DETERMINATIONS FOR CLOTHING IN URBAN AREAS

	a	b**	t(b)	S.E(B)	F	R^2
ALL INDIA	8.542	-11.210*	-5.972	1.877	35.668	0.764
ANDHRA PRADESH	4.625	-6.249	-1.867	3.346	3.486	0.241
ASSAM	4.510	-5.574*	-11.127	0.501	123.799	0.925
BIHAR	8.019	-10.534*	-8.223	1.281	67.623	0.860
GUJRAT	8.086	-10.284*	-12.071	0.851	145.707	0.930
HARYANA	10.289	-12.435*	-4.050	3.070	16.399	0.599
JAMMU & KASHMIR	5.883	-6.904*	-6.083	1.135	37.008	0.771
KARNATAKA	6.624	-8.367	-1.600	5.229	2.561	0.189
KERALA	7.488	-9.529*	-9.962	0.956	99.232	0.900
MADHYA PRADESH	8.744	-11.042*	-9.836	1.122	96.749	0.898
MAHARASHTRA	4.384	-5.300	-1.976	2.681	3.906	0.262
ORISSA	5.176	-6.672*	-4.857	1.373	23.593	0.682
PUNJAB	9.749	-12.320	-2.523	4.883	6.363	0.366
RAJASTHAN	7.834	-9.681*	-4.448	2.176	19.787	0.643
TAMIL NADU	6.995	-10.248*	-8.650	1.184	74.822	0.872
UTTAR PRADESH	7.080	-9.009*	-5.872	1.534	34.478	0.758
WEST BENGAL	9.560	-12.631*	-3.221	3.922	10.372	0.485

*significant at 5 percent level of significance.

** Household size elasticities

TABLE - 81

REGRESSION COEFFICIENTS,T VALUES,STANDARD ERRORS,F VALUES AND COEFFICIENT OF DETERMINATIONS FOR TOTAL EXPENDITURE IN RURAL AREAS

	a	b**	t(b)	S.E(b)	F	R^2
ALL INDIA	5.602	-5.143*	-5.912	0.869	34.953	0.761
ANDHRA PRADESH	3.632	-2.564*	-2.102	1.220	4.416	0.286
ASSAM	3.520	-2.135*	-9.085	0.235	82.530	0.892
BIHAR	5.214	-4.601*	-10.475	0.439	109.718	0.909
GUJRAT	4.793	-3.758*	-11.353	-0.331	128.881	0.921
HARYANA	5.750	-4.738*	-4.515	1.049	20.381	0.649
JAMMU & KASHMIR	3.819	-2.320*	-4.885	0.475	23.859	0.864
KARNATAKA	4.905	-4.003*	-2.174	4.725	0.300	9.000
KERALA	5.050	-4.098	-7.709	0.831	59.433	0.844
MADHYA PRADESH	5.666	-5.207*	-4.036	1.290	16.287	0.593
MAHARASHTRA	3.472	-2.177	-1.678	1.297	2.817	0.204
ORISSA	4.411	-3.627*	-3.974	0.912	15.794	0.589
PUNJAB	5.004	-3.901	-2.799	1.393	7.836	0.416
RAJASTHAN	5.514	-4.797*	-5.881	0.815	34.581	0.759
TAMIL NADU	4.748	-4.390*	-6.838	0.641	46.761	0.810
UTTAR PRADESH	4.157	-3.136*	-3.627	0.864	13.158	0.545
WEST BENGAL	6.567	-6.407*	-3.797	1.687	14.419	0.567

*significant at 5 percent level of significance.

TABLE - 82

REGRESSION COEFFICIENTS,T VALUES,STANDARD ERRORS,F VALUES AND COEFFICIENT OF DETERMINATIONS FOR TOTAL EXPENDITURE IN URBAN AREAS

	a	b**	t(b)	S.E(b)	F	R^2
ALL INDIA	3.372	-1.983	-2.078	0.871	5.191	0.321
ANDHRA PRADESH	1.065	-1.062	-0.594	1.788	0.353	0.031
ASSAM	3.171	-1.554*	-7.730	0.201	59.755	0.882
BIHAR	3.486	-2.051*	-7.533	0.272	59.740	0.850
GUJRAT	3.649	-2.227*	-4.347	0.512	18.896	0.654
HARYANA	3.483	-1.967	-2.852	0.689	8.136	0.475
JAMMU & KASHMIR	3.456	-1.771*	-11.065	0.160	122.440	0.932
KARNATAKA	3.369	-1.926	-2.235	0.862	4.994	0.312
KERALA	4.396	-3.228*	-7.183	0.449	51.600	0.824
MADHYA PRADESH	2.934	-1.329	-1.682	0.790	2.828	0.204
MAHARASHTRA	3.323	-1.862*	-2.875	0.647	8.265	0.429
ORISSA	2.898	-1.401	-1.970	0.711	3.883	0.261
PUNJAB	3.239	-1.712*	-3.915	0.439	15.329	0.605
RAJASTHAN	3.657	-2.276*	-2.973	0.765	8.837	0.445
TAMIL NADU	4.053	-3.018*	-2.706	1.115	7.321	0.400
UTTAR PRADESH	3.863	-2.610*	-5.766	0.453	33.250	0.751
WEST BENGAL	3.011	-1.499	-2.204	0.680	4.855	0.306

*significant at 5 percent level of significance.

** Household size elasticities

is highest in Tamilnadu (-9.143) and lowest in Andhra Pradesh (-1.062). This elasticity for all India is -5.015.

EFFECT OF HOUSEHOLD SIZE ON TOTAL CONSUMER EXPENDITURE

Household size elasticities for total consumer expenditure are negative in all states and lower in urban areas than rural areas. West Bengal has this elasticity as high as -6.407 followed by Madhya Pradesh (-5.207) in rural areas. Lowest elasticity was obtained in Assam (-2.135) followed by Maharashtra (-2.177). In urban areas household size elasticity in Madhya Pradesh is -3.228 and in Tamilnadu (-3.018). Lowest elasticity is obtained in Andhra Pradesh (-1.062)

Other details of the regression analysis are given in the tables. To sum up, household size elasticities for expenditure on cereals clothing and total expenditur are higher in rural areas than urban areas. This impies that the household size affects expenditure in rural areas where the level of icome and standard of living of the people is low. It may be concluded that household size affect more at low level of income and as development takes place, with rise in income this effect become weak over time.

To conclude, the question examined in this chapter was whether household consumption is affected significantly by household size. The results of our investigation are not obsolutely clear cut but it is difficult to escape the conclusion that household size affects household consumption and the extent of this affect varies bewtwen commodities and between states. Two considerations emerge from this. First, the effect of the household size on consumption must be assessed before using per capita formulations. Secondly, household size is an important regional factor in India and it is desirable to consider its influence in analysing consumer behaviour. However the validity of this conclusion is dependent on a number of factors such as inadequacies in the statistical data, the use of full logarithmic equation and the statistical procedure followed.

CHAPTER - VII

SUMMARY AND CONCLUSIONS

CHAPTER - VII

SUMMARY AND CONCLUSIONS

This study has presented some important results on inter-state and rural-urban variations in consumption patterns and its implication for regional inequality in India. The study is based on Secondary data on consumer expenditure for 1983 published by NSSO in it's thirty eight round.Consumption patterns were studied with the help of Engel functions fitted to consumer expenditure on cereals and clothing in different states. It also analyses rural-urban variations on consumption patterns using dummy variables, disparity in total expenditure using concentration ratios and curves and effect of household size on consumption.

Distribution of total expenditure in various commodity groups indicates that cereals is the dominant commodity group in food items. The percentage expenditure on cereals is higher in rural areas than urban areas in all the states except Haryana. The percentage expenditure on cereals is higher in less developed states compared to developed states. Cereals accounts for 14.40 and 11.97 per cent in Punjab compared to 50.74 and 30.48 percent in

Orissa. Milk and Milk products is another important commodity group among food items whose shares in the total consumer expenditure shows wide variations among different states. Milk and milk products group accounts for 24.07 and 17.14 percent in Haryana as compared to 1.51 and 3.98 percent in Orissa in rural and urban areas respectively. Among non food items clothing is the important commodity group which accounts for 5 to 10 percent of total expenditure in different states. Percentage of expenditure on clothing is higher in urban areas than rural areas.Miscelleaneous commodity group which contains medical, education and other services shows wide rural urban variations in terms of it's share of total expenditure. At All India level 20.42 percent goes to miscellaneous groups in urban areas where as it is only 3.61 percent in rural areas.

The analysis of excess of urban expenditure over rural expenditure shows that the magnitude of this excess varies a lot from state to state but the direction is almost same. Per capita total consumer expenditure in rural areas is more than that of urban areas in case of cereals in almost all the states. Per capita expenditure on food items in rural areas is more than that of urban areas in Gujarat and

Haryana. Per capita expenditure on non-food items is sufficiently higher in urban areas compared to that of rural areas. In Punjab and Haryana expenditure on Milk and Milk products in rural areas is more than the expenditure in urban areas.

Rural - urban differentials in autonomous and induced parts of consumption have been analysed using dummy variables. Dummy variable which has been used in the regression take zero value for rural areas and unit value for urban areas. Autonomous consumption is higher in rural areas than urban areas and the rural-urban differentials are significant at 5 percent level of significance. Induced consumption is the most important part of total consumption and rural-urban differentials in induced consumption are significant at 5 percent level of significance for clothing(except Haryana, kerala and West Bengal) and cereals (except kerala) in all the states. Rural-urban differentials are higher for autonomous consumption compared to that on induced consumption. In rural areas autonomous consumption is higher than urban areas and changes in induced consumption due to changes in total expenditure is higher in rural areas than that of urban areas for both cereals and clothing.

The study has used eight different kinds of algebric formulations of Engel functions for regression analysis between commodity expenditure and total expenditure (proxy for income). None of these functions is suitable for all states and for all the commodities. However, for cereals in rural and urban areas log quadiatic function is most suitable . For clothing in both rural and urban areas quadratic, log-log inverse and log quadratic are suitable functions.Expenditure elasticities for cereals are positive and less than unity and it varies in the range 0.15 to 0.60. These elasticities are positive , more than unity and falls within the range of 1.0 to 3.5 for clothing. These elasticities are generally higher for states with low levels of mean expenditure and vice versa. On the other hand for clothing in the middle ranges in income, it is observed that elasticities are more or less constant indicating the appropriateness of using contant elasticity functions which imply that the expenditure on clothing changes with the same magnitude as the changes in total expenditure. The hypotheses on the elasticities are accepted and valid because the elasticity for cereals is less than unity and that of clothing is more than unity in all the states. Since the elasticities were calculated from eight types of functions and none of the functions is suitable for all the commodities and for all the states, it is concluded that magnitude of expenditure elasticities depend on the type of function estimated. Elasticities in urban areas are smaller than those in rural areas, specially for cereals. Elasticities are higher for cereals in less developed states compared to these in developed states as indicated by total expenditure.

Expenditure class-wise distribution of population and total shows that classes like 70-80, 85-100, 100-125 and 125-150 account for about 50 percent of total population in rural as well as urban areas. In developed states population is more concentrated in upper expenditure classes. Lower expenditure classes account for higher percenage of population in less developed states. In most of the states the expenditure class (100-125) has got highest share in total expenditure in rural areas where as in urban areas expenditure class (Rs.300 and above) has highest share in almost all the states. The percentages of population and total expenditure were used to find out concentration ratios in all the states. Kerala has highest concentration ratios 0.3301 and 0.3754 in rural and urban areas which implies high disparity in distribution of total expenditure and population in various expenditure classes.

Assam has the lowest concentration ratio 0.1867 in rural areas, which means there exist very little difference in distribution of expenditure and population.

The most important aspect of this study is the analysis of percentage of total expenditure incurred by two extreme decile population groups.The expenditure incurred by the upper 10 percent of population is on an average five times more than that of lower 10 percent of population. In rural areas the expenditure incurred by lower decile population group is 3.15 percent compared to that of 27.17 percent by upper decile group in Rajsthan and the gap is the highest among all the states.In urban areas this difference is the highest in Madhya Pradesh and the percentage of expenditure in upper decile population group is 10.17 times more than that of lower decile group. The difference in expenditure incurred by two extreme population groups is lowest in Assam in rural areas and in Bihar in urban areas. Hence there is high relative inequality in total consumer expenditure and in turn, in standard of living between rural and urban areas.

Household size is one of the most important non-economic factor which affects consumer expenditure on different commodities. This study has tried to investigate effects of household size on expenditure of cereals and clothing using double log function.Two types of regression have been used. In the first case,household size has been used as an additional explanatory variable along with total expenditure in the Engel function. In this type of regression effects of household size as well as total expenditure are considered. In disaggregated data it is not possible to separate this effects.But in the second case, household size has been used as the only explanatory variable in the regression.

In the first type of regression it was found that household size elasticities are positive for cereals and negative for clothing in both rural and urban areas in most of the states. These elasticities are generally higher in rural areas than those of urban areas and differ significantly from state to state.In the second type of regression where household size is used as the only explanatory variable ,these elasticities are negative for both cereals and clothing in rural and urban areas.The magnitudes of these elasticities are higher for clothing than cereals in all the states. Household size has negative effect on total monthly per capita expenditure too. The first hypothesis on the household size elasticities of clothing is not valid but the second hypothesis is accepted because the household size elasticities for clothing are negative.

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