A QUANTITATIVE ANALYSIS OF POVERTY, INEQUALITY AND CONSUMER BEHAVIOR

The Case of the Scheduled Castes and Tribes of Karnataka

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DECLARATION

THE RESEARCH WORK embodied in my present doctoral thesis entitled, "A Quantitative Analysis of Poverty, Inequality and Consumer Behavior : The Case of the Scheduled Castes and Tribes of Karnataka", has not been submitted elsewhere for a degree or for any other academic award.

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C E R T I F I C A T E

THIS DOCTORAL THESIS by Shailaja Raghuprasad, entitled "A Quantitative Analysis of Poverty, Inequality and Consumer Behavior : The Case of the Scheduled Castes and Tribes of Karnataka" is her own research work carried out in the Economic Analysis Unit, Indian Statistical Institute, Bangalore Centre, under my guidance. She satisfies all necessary eligibility requirements for submitting her work for the Ph. D. of the Indian Statistical Institute.

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(N. S. IYENGAR)

PREFACE AND ACKNOWLEDGEMENTS

This work is an outcome of a series of studies conducted at the Economic Analysis Unit, Indian Statistical Institute, Bangalore Centre, during the last four years or so. It incorporates some of the studies on regional demand patterns undertaken as part of the Unit's research programme based mainly on the National Sample Survey (NSS) data.

The thesis is about the Scheduled Castes and Tribes of Karnataka. These backward groups consisting of about 15 % of the population have been the victims of social ostracism and economic stagnation for several hundred years. The Indian Government, in an effort to remove these social and economic inequalities, has formulated and implemented several preferential policies. However, the recent unrest in Gujarat and the escalation of violence against Harijans and Girijans (Scheduled Castes and Scheduled Tribes) in Rural India has questioned these very policies.

It is in this context that a study of the levels of living of this section of people assumes importance. Since consumer behavior reflects the level of living and brings out the disparities more vividly it is very relevant to look closely at the consumption patterns of the Scheduled Castes and Tribes in comparison with the rest of the population.

The analysis is made within a dualistic framework with due consideration given to temporal and spatial dimensions, using the standard techniques of inequality decomposition and covariance analysis of the engel curves.

The empirical analysis shows that the Scheduled Castes and Tribes are still amongst the poorest. Also striking disparities between this group and others in general are observed both in their levels of living and pattern of expenditure.

The author has drawn upon the works of several researchers and scholars on the subject of engel curve estimation and decomposition analysis and owes an intellectual debt to all of them. She

owes a special debt of gratitude to the authorities of the NSSO for permiting the use of their disaggregated data.

She is particularly grateful to her thesis adviser Professor NS Iyengar for his inspiring guidance and encouragement throughout. The author also owes thanks to Professor Nikbilesh Bhattacharya, Dr Narayana and Mr MH Suryanarayana for their helpful suggestions which substantially improved the content and presentation of the thesis.

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CHAPTER 1

BACKGROUND AND OBJECT OF THE STUDY

> 'State will promote with special care the educational and economic interests of the weaker sections and in particular of the Scheduled Castes and Scheduled Tribes and shall protect them from social injustice and all forms of exploitation' - a 'Directive Principle of the State Policy' in the Constitution of India.

1.1 Introduction:

The concept of growth with social justice is basic to the philosophy of development underlying Indian Economic Planning. This philosophy is reflected in our former Prime Minister Mrs Indira Gandhi's foreword to the Sixth Plan (1980-85) document[1] where she wrote, 'Economic Growth must be balanced, it must ensure self - reliance, stability and social justice. All sections should be assured that there will be no discrimination'.

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1 See, Planning Commission (1981). This Philosophy is echoed in our Seventh Plan and the 1986 budget also.

It is with these weaker sections - rather a segment of them - that this study is concerned. Our study is an attempt to look closely at the levels of living and the consumer behaviour of the Scheduled castes and Tribes[2] (SC and ST) in Karnataka at the household level and try to gain insights into these aspects of the life of this particular section of people.

Section 1.2 describes the historical background of this section of people. Section 1.3 concerns itself with the social reform movements and briefly documents how the efforts of Mahatma Gandhi and Dr Ambedkar culminated in the commitment of the Government of India to formulate preferential (or protective) policies in favour of the SC/ST. Section 1.4 describes briefly the government's policies to alleviate the sufferings of the SC/ST. The welfare schemes that form a part of the Government's policies of preference are evaluated by official agencies from time to time. The results of such evaluation are released in the form of official reports year after year from the office of the commissioner of Scheduled Castes and Tribes. Other sources of official information are the census documents of 1971 and 1981. Section 1.5

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[2] For a description of how this word evolved and other details of the caste system see the next section.

builds up their present status by describing the official reports and their conclusions for two periods of time viz. 1973-74 and 1977-78. These years were chosen for the study mainly because disaggregated household data of the type required were readily available with the National Sample Survey Organisation (NSSO) for these two periods of time and for the latter period only for the State of Karnataka. This study is confined to Karnataka[3] and Karnataka is divided into 4 regions based on geographical contiguity and there are clear inter-regional variations in economic and social development. This is brought out in Section 1.6 . Section 1.7 gives an outline of the thesis and concludes the present chapter.

1.2 Historical Profile of the SC/ST.

Before beginning to look into the problems of the Scheduled Castes and Tribes, one must know their origin and development and how the expression 'Scheduled' came to be attached to them.

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3 Karnataka witnessed reform movements aimed at the upliftment of the untouchables as early as the 11th century through the religious leader Ramanujacharya. In the same direction the movement led by Basaveshwara in the 12th Century is also significant.

Anyone who is Indian or has experienced the manners and customs of Indian (specially Hindu) society will know what 'Caste' means-at least in practice. Hindu society is compartmentalised into caste groups called 'Varnas'. The 'Varna' system was initially a sort of occupation grouping. The highly respected Brahmins were those who knew Sanskrit and performed religious rites and were teachers of Society. The Kshatriyas were the martial group whose duty was to guard the people against enemies and the King, who ruled, was a Kshatriya. The Vaishyas looked after cultivation, trade and Commerce. Another group engaged in inferior service were called Shudras. The lower types of functions like sweeping streets, scavenging, cleaning gutters and dry latrines, skinning carcasses and tanning were performed by the fifth order of the four-fold Hindu Society. This group of people were the untouchables and were outside the pale of the Caste system. (Ghurye 1979)

Slowly after the passage of centuries 'Varna' (or Caste) began to be decided by 'birth' so that opportunities for group mobility within the caste system were more or less closed to the 'untouchables'. So, over time the untouchables got concentrated in low paying occupations, thus perpetrating their low economic position. The 'Jati' System which delineates subcastes in each 'Varna' developed later and, according to Gupta (1978) was characterised by localised exploitation in a closed village economy, where the ruling class lived off the land. The 'Varna' system he writes, which preceded the 'Jati' system is characterised by general exploitation.

The term Scheduled Caste (SC) came into existence in 1935 when, on the eve of a new constitutional reform, the British Viceroy issued an Order-in-Council and attached to it a Schedule which listed the communities considered untouchable. This Schedule then contained 429 'Outcaste' communities or subcastes, with such names as Mahar, Bhangi, Chamar, etc. After independence, a Scheduled Castes order was promulgated by the President in 1950, which basically re-enacted the 1935 Schedule. The basis of selection of the Scheduled Castes was primarily 'untouchability' measured by the incidence of social disabilities - but this criterion has been combined 'in varying degrees with economic, occupational, educational, residential and religious tests. (Galanter 1984).

The Scheduled Tribes (ST) are selected groups of the Indian population which are distinguished by 'tribal characteristics' and by their spatial and cultural isolation from the bulk of the population. They tend to inhabit hilly and jungle areas and live by hunting and gathering and by shifting cultivation. In 1950, the President promulgated the list of Scheduled Tribes.[4] Appendix D gives a list of the Scheduled Castes and Tribes in Karnataka.

Approximately 15 per cent of the Indian population belongs to the SC and about 7 per cent to the ST, according to the 1971 census. The ST population is heavily concentrated in Central, Eastern and North-Eastern India whereas SC population is more evenly spread. Scheduled Tribes and Castes follow very different life-styles though we have grouped them into one and called them SC/ST for purposes of the present study. In Karnataka, the ST are only .8 per cent of the population (1971 census) and hence in Karnataka pooled SC/ST are virtually SC so that pooling creates no serious problems. Tables 1.1 gives the percentage of SC and ST in the two years 1971 and 1981. Table 1.2 gives the rural/urban breakup.

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[4] There is a third group other Backward Classes (OBC). Which is also allotted preferential treatment by the government. The issue of who belongs to OBC is full of controversy and for a detailed discussion of this issue see Galanter (1984) Chapters 6 and 7. Suffice it to say that what emerges is that the OBC are the second and third lowest quintiles of the population - in terms of 'traditional status' - assuming that the SC/ST make up roughly the lowest quintile.

TABLE 1.1 : Percentage of SC and ST to total population according to 1971 and 1981 census.

Years / Region	1971		1981	
	SC	ST	SC	ST
India	14.82	6.82	15.75	7.76
Karnataka	13.14	0.79	15.07	4.91

Source: Census of India 1981 series - 1, India, Part II B(ii) and II B(iii)

TABLE 1.2 : Percentage of SC in Rural and Urban Sectors in 1971 and 1981 census.

Year	1971		1981	
Region	Rural	Urban	Rural	Urban
India	88.06	11.94	84.00	16.00
Karnataka	73.19	16.08	78.08	21.92

Sources: Census of India 1981 Series - 1, India, Part II B(ii)
Census of India 1971 Series - 1, India, Part V - A(I)

1.3 The Untouchables and Social Reform:

Jyotirao Phule, the Poona reformer, first attempted to assist low castes way back in 1850.[5] Hindu religious reformers like Dayanand Saraswati, founder of the Aryasamaj also attacked caste exclusiveness. Christian missionaries proferred conversion as a solution to age old problems. However, it was not till the end of the 19th century that caste heirarchy and inequality were widely perceived as problems in their own right. It was in 1909 that the condition of the untouchables - which had become a major item of reform interest, began to gain political significance because they constituted one fifth of the population and thus accounted for a sizable chunk of the votes. By the close of the 1920's the untouchables were being given special attention in terms of fee concessions, scholarships, housing, etc.,

At this point of time, two men of immense stature, took up the case of the untouchables. One was Mohandas Karamchand Gandhi and the other, Dr Bhimrao Ramji Ambedkar. Each of them

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[5] However, history tells us of Basaveshwara (12th century) and Ramanujacharya (11th century) who tried in their own way to break the stranglehold of Casteism.

approached the problem differently[6] but what emerged from their wrestling was, as Galanter observes, "a national commitment to reduce numerous distinctions among groups, coupled with a conviction that it was permissible, and perhaps, necessary to employ these discredited caste notions to effectuate equalising policies".

1.4 The Government and the SC/ST:

The national commitment to this section of the population was crystallized when the Indian Constitution was written. Article 46 (quoted in the beginning of this Chapter) is a Directive Principle of State Policy which promises upliftment of the SC/ST and protection from social injustice. The Constitution also recognises that to promote the betterment of the 'untouchables' and 'tribals' it is necessary to provide for protective discrimination on their behalf - strictly equal treatment will not be enough. It must be noted, however, that only for the SC/ST (and OBC) are these devices of protective discrimination countenanced by the Constitution. Thus, there is a

[6] See Galanter (1984) for details about their viewpoints.

deliberate departure from formal norms of equality in order to offset historic inequalities adversely affecting these groups. It may be noted in passing that the Indian government is not the only one which countenances preferential policies. Policies of Affirmative Action (as they are sometimes called) are also followed by other countries notably, the Government in the USA.[7]

1.4.2 Welfare Programmes:

Preferential schemes organised by the Government are of three basic types: First, there is reservation - in legislatures, of posts in government service, and of places in coveted higher technical and professional colleges. Reservation is also there in land allotments, housing, and allocation of other scarce resources, but to a smaller extent.

Second, there are welfare programmes for education and economic uplift. Scholarships, grants, loans, land allotments, health care, legal aid, etc. - all come under this heading.

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[7] See Schiller (1980) for a discussion of what Affirmative action policies are and what is their impact.

Third, there are special protections which attempt to remedy the disadvantaged position of the untouchables by regulation rather than redistribution. An example of such a scheme is the Protection of Civil Rights Act [8] which is an effort to relieve untouchables from the social disabilities which they have suffered.

Table 1.3 gives the annual per capita expenditure on Scheduled Castes and Tribes for the successive Five Year Plans of India and Table 1.4 gives the allocation for Scheduled Castes in the various plans as percentage of total plan allocation at the national level and its breakup into education, economic development, health, housing etc.

Schemes for education and economic uplift are more far-reaching in their effects than the reservation schemes. Among educational schemes are the scholarship programmes, provision of meals, and hostels for SC/ST students; and the construction and maintenance of schools intended mainly for these groups. For economic upliftment

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[8] The Protection of Civil Rights Act is the new name given to the Untouchability Offences Act of 1955 upon its amendment in 1976.

TABLE 1.3 : Annual Per Capita expenditure on Scheduled Castes and Scheduled Tribes for five five-year Plans.

(in current rupees)
All India

	SCHEDULED CASTES				
Year Plan	1951-56 1st	1956-61 2nd	1961-66 3rd	1968-74 4th	1974-79 5th
Education	.20	.66	.98	.85	1.44
Economic Uplift	.01	.15	.17	.20	.57
Health, Housing etc.,	.10	.39	.25	.33	.52
Totals	0.31	1.20	1.40	1.38	2,53
	SCHEDULED TRIBES				
Education	0.48	0.78	0.98	1.21	1.83
Economic Uplift	0.41	1.78	1.82	2.20	1.45
Health, Housing etc.,	0.90	1.34	0.78	0.29	0.75
Totals	1.79	3.90	3.58	3.70	4.03

Source : Galanter (1984), pg 57.

TABLE 1.4 : Allocation for Scheduled Castes (in crores), All India

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Plan period	Total plan allocation	Allocation on: Education	Econ Dev	Health Housing and others	Total	% of col. 4 to 2
		Figures in brackets represent percentage of amounts in col. 4.				
(1)	(2)	(a) (3)	(b)	(c)	(4)	(5)
First Plan	2012.00	Break-up not available			7.00	0.35
Second Plan	4673.00	12.21 (42.75)	6.06 (17.72)	11.09 (39.53)	28.56a	0.61
Third Plan	8616.00	21.38 (57.38)	6.15 (16.51)	9.73 (26.11)	37.27	0.43
Year 66-67 to 68-69.	6684.00	17.49 (72.97)	2.62 (10.93)	3.86 (16.10)	23.97	0.36
Fourth Plan	16584.00	36.97 (60.90)	4.48 (12.32)	16.26 (26.78)	60.71	0.37
Fifth Plan	28614.00	103.46 (69.75)	..	3.48 (3.25)	106.94c +121.10d	0.80
1978-79	11649.00	21.52 (92.28)	0.50 (2.14)	1.30 (15.57)	23.32c +74.42e	0.84
1979.80	N.A	16.71 (56.24)	10.00 (33.66)	3.00 (10.10)	29.71c +59.06e	

NOTE: Figures in col. 4 excludes outlays for aid to voluntary Agencies from 1st Plan to the 1year 1968-69 as these are not available. (Only amounts released are available). Amounts of outlays from the Fourth Plan onwards are included in the figures in col. 3-4.

NOTE: a) includes Rs. 15 laksh for O.B.Cs on Punjab under State Sector.
b) for four years 1974-75 to 1977-78 only c) Central Sector only. d) State Sector of which group-wise break-up is not available. e) for all categories of Backward Classes (break-up is not available).

Source: Report of the working group on the development of SC 1980-85, (office of the Director for Scheduled Castes and Tribes, Bangalore).

there is a plethora of schemes. Allotments of agricultural land, encouragement of cottage industries, provision of tools, seeds and other subsidies are some of them.

The largest single item which affects the largest number of individuals and entails the highest expenditure is education, because education is regarded as the prime instrument of social change to improve the condition of the backward. However, as seen from Table 1.3 this special treatment is very thinly spread in the sense that the per capita allocations are very low. The Rural Works Programmes aim at income generation by the target group itself to meet their needs and attempts to strik at the very root of the problem.

1.5 Official Reports:

The Commissioner of Scheduled Castes and Tribes writes an annual report on the general impact of these welfare schemes.

Education being the single most important item on which money is spent one may first look at the percentage of children from the SC/ST group and the non SC/ST group enrolled in various age groups for the years 1968-69, 1973-74 and 1977-78. Table 1.5 shows the relevant percentages.

Lowered barriers, a changing atmosphere, availability of schools, and government aid have contributed to a great increase in participation of SC and ST students. However, in the lower grades the percentage of children from these groups trailed behind the rest of the population, and in the higher grades there were even greater disparities.

Table 1.5 shows an increase in percentage enrolment from 1968-69 to 1973-74 for all age groups and Social groups but a drastic drop from 1973-74 to 1977-78. Dropping out and to a lesser extent, repeating a class are the major problems, which cause this.

The Report of the Commissioner of the SC/ST comments that the SC suffer at the hands of vested interests on "account of social inhibitions and inadequate work done to bring about the required social change".

TABLE 1.5 : School Enrolment as a Percentage of Corresponding age group, by Social Groups

Classes		I-V	VI-VIII	IX +
	1968-69	82.8	37.7	21.2
Non SC/ST	1973-74	90.7	48.4	23.4
	1977-78	57.3	27.2	14.9
	1968-69	64.1	20.5	9.3
SC	1973-74	68.9	22.1	11.5
	1977-78	44.3	15.3	6.9
	1968-79	52.3	14.1	5.9
ST	1973-74	59.3	15.7	7.9
	1977-78	36.8	11.4	15.2

Source : Reports of the commissioner on SC/ST, 1977-78.

On reading the Commissioner's reports for the various years one finds the same story of inadequate facilities and lack of imagination in implementation of policies repeated over and over again. The reports also cover other aspects like "number of cases of atrocities and harassment", 'Indebtedness and bonded labour' etc., which have not been discussed here.

The census reports give mainly the demographic characteristics of the SC/ST. The census reports also occassionally publish bibliography of ethnic studies on the SC/ST.

The famous Mandal Commission appointed by the Janata Government submitted its report in 1980. This report has been criticised (Desai (1984)) on the grounds that the Commission in its report has confused classes and castes and that the other Backward castes have come up and are oppressing the Harijans[9] and that there are many Brahmins who are poor so that preferental treatment should be class based not caste based. These criticisms notwithstanding the Mandal Commission Report has also been lauded by Radhakrishnan (1982) who

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[9] Name given to the SC by Gandhiji. Ramanujacharya called them 'Srikulattar'. Scheduled Tribes are sometimes called Girijans, meaning the hill people.

points out that the village studies have brought out the close correlation between caste and class and though protective reservation has done little, without reservation nothing could be done.

The Backward Classes Commission for Karnataka headed by LG Havanur had, as its terms of reference the other backward classes and was appointed to draw up a list of Socially and educationally backward classes.

Other research studies regarding the Harijans are critically reviewed in the next chapter.

1.6 Regional Division of Karnataka:

Since our study is of the SC/ST population belonging to Karnataka it is very important to know the state of development and the regional disparities in the development of Karnataka.

Karnataka economy depends heavily on the primary sector which in turn, consists mainly of agriculture.[10] Success of agricul-

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[10] 47 per cent of the State domestic product in 1972-83 was accounted for by the primary sector (Iyengar and Suryanarayana, 1985).

ture depends largely on irrigation with regard to which Karnataka continues to lag behind the other Southern States[11] so that in Karnataka the monsoon is relied upon heavily by the farmer. It is therefore to be expected that the wet districts of Karnataka are richer andat a higher level of economic development than the dry areas. This is what Iyengar and Sudarshan (1983) find in their snap-shot study of Karnataka for 1980-81. Table 1.6 gives the classification of Districts in Karnataka in 1980-81 by level of economic development. This classification is based on a single development measure which combines several indicators of development, like literacy rate, hospital beds, irrigated area, factory employment, length of surfaced roads etc.

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11 Op. cit.

TABLE 1.6 : Classification of Karnataka Districts (Regions)* 1980-81

Stage of development	Districts (Region)
Highly developed	Bangalore (3) Dakshina Kannada (1)
Developed	Kodagu (2) Shimoga (2) Dharwad (4) Belguam (4)
Developing	Bellary (4) Mandya (3) Chickmagalur (2) Mysore (3) Chitradurga (4) Uttar Kannada (1) Kolar (3)
Backward	Hassan (2) Tumkur (3) Bijapur (4)
Very Backward	Raichur (4) Bidar (4) Gulbarga (4)

Source : Iyengar and Sudarshan (1983),

* 1) Coastal and Ghats, 2) Inland Eastern,
3) Inland Southern, 4) Inland Northern.

The four regions are not homogeneous. The NSS has divided the State into regions on the basis of geographical contiguity. We see that Region 1 is more developed than the rest of them and Region 4 is least developed. The percentage of SC/ST population in the four regions according to the 1971 census is mapped in Figure (1).

This shows that Region 1 (Coastal and Ghats) has the lowest concentration of SC but the highest of ST. With this background, we proceed to give a chapter by chapter outline of the present thesis in the next section.

1.7 Outline of the thesis:

This thesis is an attempt at gaining insights into the life of the Scheduled Castes and Tribes by making use of disaggregated household expenditure data collected by the National Sample Survey which remained largely unused. The thesis consists mainly of three parts. The first part (Chapter 5) is devoted to a general description of the levels of living of the SC/ST *vis-a-vis* the non SC/ST. The second part (also chapter 5) attempts a decomposition of inequality into between group (social/occupational) and within group -

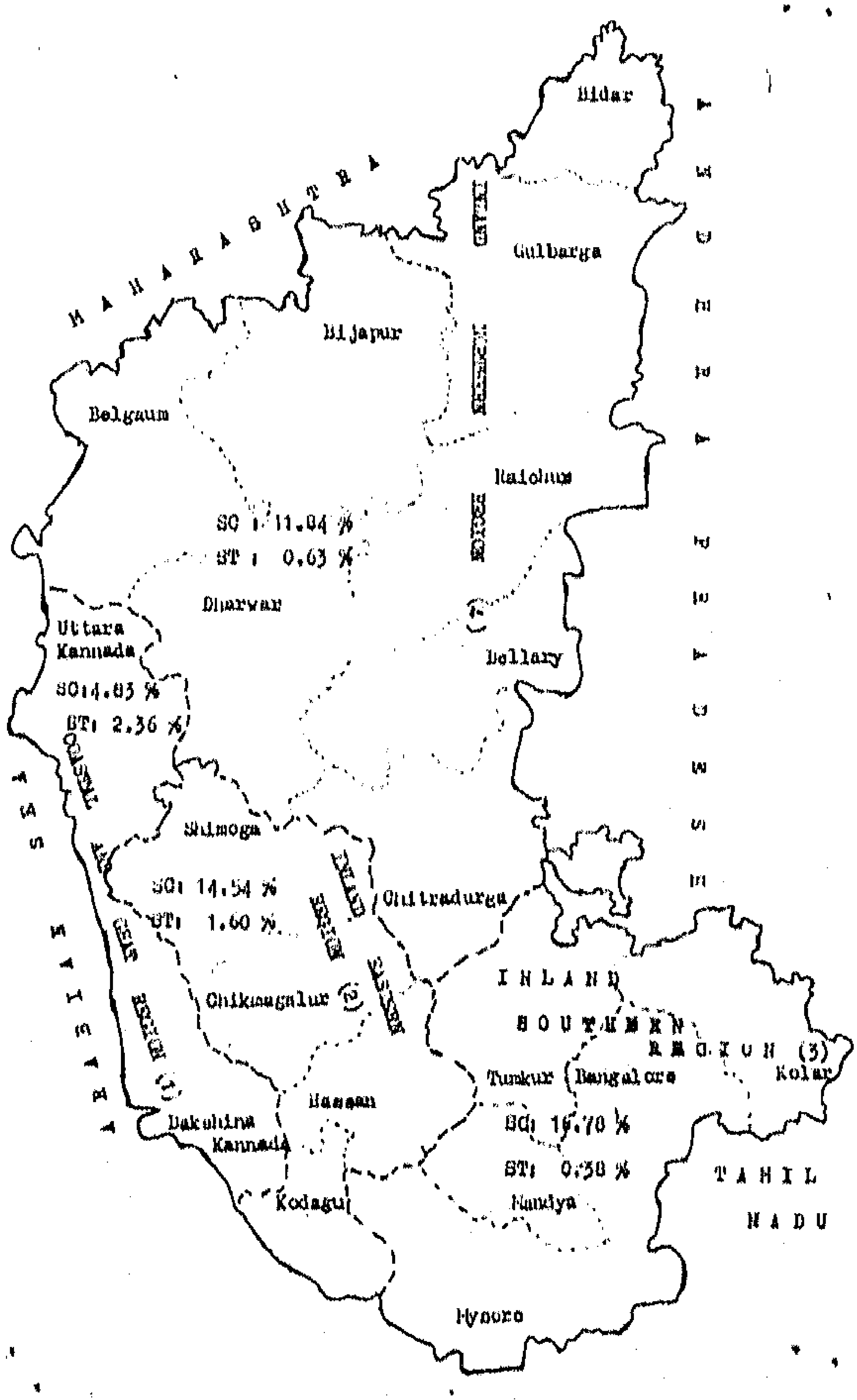

Fig 1 : Percentage of SC/ST in state's population
according to 1971 census.

components in an attempt to isolate the major contributors to inequality. The third part (Chapter 6 and Chapter 7) looks at the consumption patterns of the SC/ST and the non SC/ST for specific commodity groups in order to discern any differences in consumer behaviour across social groups.

All the analysis is done for two periods of time 1973-74 (28th Round of NSS) and 1977-78 (32nd Round) so that inter-temporal comparisons could be made.

Below is presented a Chapter wise summary of the present study.

Chapter 2 reviews the empirical work on the SC/ST done by sociologists, anthropologists, and economists. Various aspects of the life of the SC/ST have been studied in the literature. But as far as we are aware there has not been any major study of their levels of living and consumer behaviour so far, based on household disaggregated household data. This is important because, as we have seen in Table 1.4 'economic uplift' is given the most importance by the government in its policy of betterment of the SC/ST and economic upliftment has a direct impact on living levels and hence consumer behavior. It would, therefore, be pertinent in this context to look at living levels and consumer behavior. The survey of literature thus identifies a gap in existing research work done on the SC/ST and establishes the need for the present study to fill this gap.

Chapter 3 is a review of the methodology used in the context of this study. The study uses (i) the method of decomposition analysis to assess the relative contributions of different components of inequality and, ii) the method of engel curve estimation and the analysis of covariance to describe the consumption patterns of the SC/ST vis-a-vis the non SC/ST. In this chapter the theoretical development of decomposable inequality measures and their empirical application is briefly described. The models for estimation of engel curves are identified and their relative merits are weighed based on past empirical evidence. The Leser form of engel function is finally chosen for estimation.

Chapter 4 and Appendix B describe the data on which the study is based. The NSS household expenditure data of the 28th (Oct 1973-June 1974) and the 32nd (July 1977-Jüne 1978) Rounds for Karnataka have been used in the study. The sample design of the NSS sample, it size and scope and various other details are described in Appendix B. The reliability of the NSS data has been discussed in Chapter 4 keeping in view the results of research done by various scholars.

Chapter 5 analyses the data to carry out some inter-temporal comparisons of poverty, inequality and levels of living and goes on to present the results of decomposing inequality into between group and within group components where the groups are social groups (whether SC/ST or not) which are further broken down into occupation groups. Profiles of rural and urban poverty are also drawn in order to identify subgroups of the population which are most exposed to poverty. Comparisons of literacy level, occupational pattern and household characteristics across social groups are also presented based on NSS disaggregated data.

Chapter 6 presents the model used to describe the consumer behaviour of the SC/ST and the non SC/ST and discusses the estimation problems such as heteroscedasticity encountered in fitting the model and their solution. Some results on how the model fits on application to actual data are also presented.

Chapter 7 presents the results of the analysis of covariance conducted on the estimated engel functions to determine whether the consumer behaviour of the SC/ST is any different from that of the non SC/ST. The four regions of Karnataka described above give a regional dimension to the analysis. The 28th and 32nd Round results are then compared and conclusions drawn.

Chapter 8 concludes the thesis after suggesting certain policy implications of the study and pointing out certain areas in which forther research would be both interesting and fruitful.

CHAPTER 2

REVIEW OF LITERATURE

2.1 Introduction:

"The most important class conflict in the poor countries of the world today is between rural and urban classes" writes Lipton (1980); and, one can add, within these classes the conflict is between the less fortunate and the more fortunate. Lipton criticises the planning process as wrongly biased in favour of the urban classes and it is easy to see that this bias will affect the less fortunate more.

In India, the preferential policies[1] of the government which favour these disadvantaged less fortunate groups try to soften the effect of this bias. The Scheduled Castes and Tribes (SC/ST) form a large part of this group and several researchers have tried to evaluate these policies in order to determine their effect on these groups of

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[1] Also called Protective discrimination, reverse discrimination and compensatory discrimination by Galanter (1984).

people. Etienne (1986) detects some change for the better. He observes that in places where the rich are getting richer, the poor are also getting less poor, so that there appears to be some gains atleast. In the case of the SC/ST also the overall picture that emerges after reviewing the literature is, at first sight, dismal with the SC/ST concentrated in the lowermost rung of the social as well as economic ladder. But a closer look provides a ray of hope. Economic change is taking place among India's Harijans[2] as is evidenced by the formation of an elite among them and the resulting conflict of identity that is born within them. (Malik 1979, Singh 1985). Urbanisation has begun the process of social change as is seen in some castes of Gujarat and Maharashtra. The recent unrest in Gujarat is also an evidence of a new awakening. Thus, the various studies on these groups seem to indicate some change - albeit a very slow one.

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[2] Name given to the Scheduled Castes (SC) by Mahatma Gandhi literally meaning 'People of God'. The Scheduled Tribes are called 'Girijans'. This survey mainly deals with research pertaining to the SC. This is because the ST who are very very few in our Sample are not analysed separately but have been merged with the SC to form the SC/ST group which forms the target group of the Government's preferential policies.

This chapter reviews the research done on the various aspects of the Harijan's life. It must be mentioned at the outset that this review is not exhaustive and refers only to some of the more important contributions in this field of research.

The Scheduled Castes (also known as Harijans, Untouchables, Dalits, Depressed classes)[3] have received a lot of attention both by the Government departments and researchers in fields as varied as Law, Sociology, Social Anthropology, Anthropometry, History, Political Sociology, Social Geography and Economics.

Existing knowledge about the SC is either based on secondary data or on microlevel studies of which there are many. These studies throw light upon various aspects of the Harijan's life i.e. the occupational distribution, the opportunities for education, their living conditions, their dwelling, their religious beliefs and social customs, their politicization and the impact of change on the Harijan psyche. There are also several reports and studies looking at the problem of untouchability.

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3 Actually, the Scheduled Castes form part of the Dalits and Depressed classes.

The census documents also produce separate special reports for the SC/ST which gives their population and occupation structure. The Census of India also produces a bibliography of ethnic studies of the SC/ST occasionally. (See, for example, Census of India, Occasional paper - 1 of 1982).

Apart from these areas of research there are some attempts to evaluate the welfare measures and policies of protective discrimination intended to uplift these disadvantaged groups. These attempts have been made both by government departments and individual researchers. The microlevel studies mentioned above also attempt to draw conclusions about preferential policies.

In this survey the large body of li.erature on the SC is divided into several heads depending upon the area of research which the study (or group of studies) focusses upon. Sections 2.2, 2.3, 2.4, and 2.5 describe caste studies,/studies in the fields of Sociology and Social Anthropology, Political Sociology, and Economics respectively. It must be noted here that in some cases it is not possible to place the study in one or the other discipline of research because it crosses the boundaries of discipline and contains information encompassing two or more areas of research. Discretion has been used in such cases and the study has been placed in the background which it was thought to match best with.

Section 2.6 describes studies where an attempt is made to construct a coherent picture of these groups. Section 2.7 concludes the chapter with the identification of a gap in the existing information and analysis of data on these disadvantaged groups. This study finds a niche for itself in this gap.

2.2 Caste studies:

Caste studies have had an important place in sociological research from the beginning[4]. Different aspects of caste such as caste in rural and urban contexts, caste and land tenure, caste, class and social inequality, caste and social mobility, caste ranking, caste and kinship, caste and the legal system, caste among non-Hindus, tribe-caste continuum, caste and personality structure, and caste in other societies have been discussed.

This review does not attempt to include a description of these multitudinous studies of the caste system. Suffice it to

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4 For a review of the research in Sociology and Social anthropology See Rao (1974) and Singh (1985).

indicate (as done above) the general areas which these studies concentrate upon. One cannot, however, review caste studies without mention of Ghurye and his book 'Caste and Race in India' which has a separate chapter on the history and the present position of the SC. Ghurye (1961, 1979) is the single most prominent sociologist who has written about Caste, Class, Race and Occupation in India. He interprets the Government's policies of preference for the SC/ST as an endeavour to secure a casteless society but, after an incisive analysis of contemporary India, Ghurye apprehends that India would develop into a plural society and not, a casteless one, as was the dream of the architects of the Constitution of India.

2.3 Sociological studies:

Sociologists have been most actively researching the lot of the Harijans. Most studies have been at the micro-level based on samples from particular villages, regions or states of India. Uttar Pradesh, Kerala and Gujarat seem to have attracted the most attention but there have been isolated studies pertaining to specific sub-castes of the Scheduled Castes in Maharashtra, Rajasthan, Karnataka, Andhra Pradesh, Bihar and Punjab. Most studies have been interested in the educational aspect of the progress of the

Scheduled Castes rather than other aspects. This concentration on education may not be misplaced in view of the fact that education is the single most important harbinger of better times and also the preferential policies of the Government are largely concerned with better educational facilities in the shape of scholarships, hostels, free student ships and the like.

For sociologists the study of social stratification is an important area of research from the theoretical point of view. The study of caste as a form of social stratification and the attempt to resolve the caste-class dichotomy in the process of stratification has been the aim of several studies by sociologists on the Harijans.

Untouchability has been studied very often by sociologists. (e.g. Desai 1976, Bose 1981). Its origin and its transformation down the ages has been traced. The various forms in which untouchability is practised in different parts of India and the position of the untouchables in the caste heirarchy has been researched fairly extensively by sociologists. The effect of urbanization and of legal provisions (e.g. Protection of Civil Rights Act 1976) on the perception of untouchability as a social custom has also been studied.

The Harijan elite who have benefited from the compensatory discrimination policies of the Indian Government have also been studied by several researchers trying to find out the psychological, social, economic and cultural import of upward mobility on them. The position of the Harijan elite vis-a-vis their less fortunate fellow caste man has also been a subject of study.

The following subsections deal with the literature on each of these aspects one by one.

2.3.2 Educational aspects:

Studies of educational opportunities for the Scheduled Castes show that though there is marked progress where facilities have been institutionalized, (Premi, 1974) generally, the inequality in this regard continues to persist. New inequalities have, however, arisen as SC students get access only to poor schools and poor colleges because of the cumulative effect of their poor enrolment and retention in the school system (Chitnis, 1975). Chitnis's study is based on a survey of Scheduled Caste high school and college students in 15 states in India aimed at investigating the outcome of investment in providing educational facilities to the SC. The study finds that Scheduled Castes within themselves have differential utilization of educational facilities and that it is misleading to lump all Scheduled Castes in one group. Also there are striking inter-state disparities in representation of girls, demographic characteristics, aspiration levels, academic performance and social outlook and there is no consistent pattern in this variation.

Ramaswamy (1986) also, finds that the SC are internally differentiated in terms of occupation, numerical strength, geographical spread and ritual status in her study of the Mala and Madiga Scheduled Castes of Andhra Pradesh and concludes that it is not realistic to assume socio economic homogeneity of Scheduled Castes for the application of preferential policies by the government.

Mandal (1970) suggests that the Scheduled Castes and other disadvantaged groups be merged together at least for educational facilities because the data do not suggest serious caste discrimination. Protective discrimination may be continued only where caste per se is a problem.

These findings suggest that among themselves the Scheduled Castes are at different stages of development and thus any facility that is provided to them is utilised more by the advanced Scheduled Castes than others. But this is true of the non SC/ST also and is true, in fact, of any backward group; the better equipped among the poor take advantage of any external facilities. Ahmed (1978) reviews recent studies of the impact of protective discrimination and emphasises the need for removal of situational constraints highlighted by the various studies through an integrated programme for the disbursal of benefits. The relationship between inequalities and facilities should be inverted so as to affect the underlying system of inherited inequalities.

Shah and Patel (1977) however, conclude to the contrary. They find that there is differential utilization of government assistance for higher education by the SC/ST in Gujarat and this differential utilization is explained by the proportion of urban population among the different SC/ST. Hence the lumping together of SC and non-SC even for the purposes of education is not very straightforward. Another important finding of this study is that educational climate rather than occupational and/or income back-ground of families of the SC/ST is likely to be a direct determinant of actual or potential utilization of government assistance for higher education. This means that if there is a culture of education in a household, there is greater motivation to educate the children even though the income level of the household is not very high. Such households may even scrimp and save and send their children to school. Any educational facility would be at once welcomed and used by such households. In other words, there is not much support for the hypothesis that higher education acrue mostly to children of privileged families among the SC/ST, some of it also accrues to households that have a motivation to go in for it.

The performance of the SC who go in for higher technical education has been investigated by Kripal (1978) in his case study of IIT Bombay students. He finds that the dropout rate is high so that very few compete for higher education and hence the talented are left out, so that, inspite of facilities the SC community remains educationally backward. The reasons for dropout are outlined in the paper and not discussed here.

Karlekar (1975) finds that the SC students are unable to adjust to the values of higher education because of non-adademic familial reasons like bad financial conditions and low level of parental education rather than any basic lack of intelligence.

The data used by Chitnis have been studied in more detail for West Uttar Pradesh (Chauhan etal, 1975). It presents a slightly more encouraging picture in that the students are forward looking and aspire to become teachers and officials rather than continue with traditional occupations. On the one hand Harijan students plead strongly for the abolition of caste names (Rastogi, 1976) and on the other they rely heavily on reservation policies to overcome the problem of suppression.

This is an evidence of the fact that economic change does not lead to social recognition, atleast not at the same pace. Yet, there is evidence that economic improvement is definitely a predecessor of social acceptance. (Parmar 1978). Upward mobility in occupation is a sign of economic uplift and we now turn to review the research in this area.

2.3.3 Occupation, its structure and mobility therein:[5]

Occupational mobility is low among the Scheduled Castes (Ramaswamy, 1974) though there is some evidence of it (Shamkumar, 1985). It is minimum in rural areas because of the stronghold of caste. However mobility is not restricted in urban and industrial centres (Mandal, 1970).

In an interesting analysis of caste discrimination in the urban labour market of India, Banerjee and Knight (1985), using a survey of workers in Delhi decompose the gross wage difference between Scheduled and Non Scheduled Caste into explained and discrimination components and, from a model of occupational choice, into wage and job discrimination. Discrimination is found to exist and operate through the traditional mechanism of assignment to jobs, with the Scheduled Castes entering poorly paid 'dead-end' jobs. It is assisted by methods of recruitment

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5 Apart from the census and micro-studies described in this sub-section, NSS household survey collect data for Social group classification (into SC,ST etc.,). If tabulated they could be informative. The present thesis is an effort to gather this information.

based on contacts, prevalent in the manual occupations, which also causes past discrimination to carry over to the present. This practice of recruitment based on contacts makes prejudice more difficult to eradicate and serves the economic interests of those who are in favour of discrimination. The government reservation policy has more leverage in the non-manual labour market than in the manual one because manual jobs are filled through personal recommendations. It, therefore, seems clear that the caste discrimination is rooted not in unequal pay for equal jobs but, in, jobs of unequal status i.e. there are barriers to jobs of higher occupational groups. Yet, Scheduled Castes do not necessarily move to white-collared or even blue collared occupations on moving to urban centres. Castes whose traditional occupation (e.g. Dhobhi) yields good income, practice only these occupations even in towns but occupation pattern and change in it depends on caste and education (Singh 1980). Another reason for retaining themselves in traditional occupations even after moving to urban areas is that initial lower income endowment prevents them from incurring high expenditure on learning costs of a new trade or in building up human capital. Instead, they continue in their traditional occupations in the cities. The great demand for their traditional skills enables them to earn quite well so that they are able to send their children to school. This opens up opportunities for these children which takes them upwards. The next generation is thus benefited. The effect of urbanisation and literacy on the non agricultural occupation of the SC/ST has been studied by Ramana and Rao (1973).

Ansari (1975), Singh (1975), Toli (1975) and Ganguly (1973) posed the question whether social deprivation and economic deprivation were really coterminous in rural India-using the data from Bihar, Rajasthan and Uttar Pradesh[6]. They attempted to prove, with the help of correlation matrices, that, with an increase in proportion of SC population at the village level there was a phenomenal increase in the share of agricultural labourers in the work force.

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6 Material drawn mostly from the chapter on 'Social Geography' by Moonis Raza and Ajazuddin Ahmed in 'A survey of Research in Geography 1972-1975', 1983.

Studies on social geography have shown that redistribution of land in the wake of land reforms and agricultural development to disturb the habitual caste equilibrium. Singh and Mukherji (1972) in a first study of its kind seek to identify the characteristic attributes of the population geography of SC's of the country. A very high proportion of agricultural labour among the SC work-force engaged in agricultural has emerged as a theme of great social relevance.

Bharadwaj and Harvey (1975) applied multivariate analytical tools to compare the occupational structure of the SC in Punjab with that of the general population. Awasthi (1975) studies the occupational structure of the Chamars of Rajasthan.

Welfare measures taken up by the government for the uplift of the SC/ST hasn't had much impact. The land allotted to them under state welfare measures never gets to them (Khan, 1980, Murdia, 1975). The share of the Scheduled Castes in services in banks and other public institutions is much below the expected norm. Mankidy, (1976), Jain (1981), Rao, (1976), Rao (1981), Premi (1974), Rayappa and Grover (1979) used secondary data from the census, the reports of the Commissioner for SC/ST and the plan documents as the basis of their studies of various facets of the lives of the SC/ST. Though their data base is at a very aggregate level they find that the policy of preferential treatment has barely scratched the surface of the problem. In a fact finding survey of female labour participation rates among the SC s of Karnataka, Rao (1978) used secondary data from the census to examine the occupational distribution of SC and non-SC female workers. In rural areas agriculture is the main occupation and the majority of SC female workers are employed as landless labourers. The proportion of SC in female population is low but their share in female workforce is high. Among the SC's the literacy rate of female population is low and the female labour participation rate is high. The SC s continue overwhelmingly in traditional occupations in rural areas, and female participation rates are high, since per capita earnings are low. Yet we must remember that 'the magnitude and intractability of the problem is so great that we have still a very long way to go if the constitutional goals are to be realised[7]'.

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7 JP Naik, Member Secretary, ICSSR in Foreword to 'Scheduled Castes and education' by Brij Raj Chanhan, G Narayana, TR Singh, 1975, Anu Publications, Meerut.

But let us now see how far we have come away from the traditional custom of untouchability - a practice that has been going on for centuries.

2.3.4 Untouchability and related social aspects:

The issues relevant to social stratification in relation to the Scheduled Castes have been examined in the Seventies both in respect of ideological and structural changes[8].

Desai (1976) studied untouchability in Rural Gujarat and, on the basis of his study of 69 villages, finds that there is weakening of the ideology of 'untouchability' in the public sphere though the practice is still strong in the religious and domestic spheres. The obiliteration of untouchability in the public sphere as it now turns out (in the wake of caste riots in Gujarat) were primarily rooted in the structure of interests, and access to resources (Bose 1981). Bose finds that caste riots in

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8 Material in this subsection has been drawn mainly from Yogendra Singh's article on 'Sociology of Social Stratification' in Survey of Research in Sociology and Social Anthropology: ICSSR, 1985, Vol II.

Gujarat are most virulent in those areas where Scheduled Castes have advanced in economic and educational terms and where they are more concentrated. Thus the ideology of 'untoucha bility' seems to have had its roots in the class interests of dominant sections of society rather than in heirarchy. This aspect of the ideology of 'untouchability' has been further confirmed by several studies (Omvedt 1971, 1978,Patankar and Omvedt 1979, Tuinman 1984).

Social acceptance and economic improvement do not go together and this creates a crisis for the Harijan. He finds himself neither here nor there, so to speak.

The emergence of the 'Dalit' movement gives a sharper edge to the social contradiction of the place of the Scheduled Castes in Hindu social stratification.

Singh (1985) in his survey article writes:-

"The sharpness of the ideological schism increases as two-way contradictions are emerging in the SC social stratification. Firstly, the benefits earmarked for the SC's are not as yet reaching most of them or the most needy amongst them. Secondly, the demonstration effect of the status mobility by a few SC families and that too in limited sectors of opportunities is being exaggerated by non-SC caste creating larger than life size negative images, and a backlash which is rooted more in emotion than in reason".

Poverty keeps the Scheduled Castes at the periphery of the development process despite decades of planned efforts (Chandidas 1969, Maurya 1976, Aggarwal and Ashray 1977, Tuinman 1984, Shamkumar, 1985). This uneven change results in increased ideological and structural tensions between the SC and the caste-Hindu society.

To quote from Singh (1985), again: "Recent studies indicate that attitudinally SC youth reject the caste model of social stratification and the _Karma_ ideology of Hinduism[9] (Paranjpe, 1971). Only a few among them think that prestige

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[9] This ideology is embodied in the Bhagvadgita where Lord Krishna enjoins man to do action (_Karma_) without attachment to the outcome. Present status is attributed to actions in the past birth (_Janma_).

in society depends upon caste. This observation is also confirmed by other studies (Aggarwal 1971). Berreman (1967), Gongh (1973) Beteille (1972) Suggest that theory of Karma is in general less acceptable to Harijans than to upper castes. Jnergensmeyer (1980) also observes this. The ideological rejection of caste, however, does not harmonize with the empirical reality of the social stratification of the SC's which is still embedded in the caste system.

But the inter-caste heirarchal setup is not only the prerogative of upper caste Hindus. Singh writes; "Hierarchy is as much a value system of the Harijans, as of the caste Hindus (Mofatt, 1975; Fiske, 1977). One finds grades based on caste segregation among the SC based on the ideology of caste purity and pollution.

The ideological rejection of the caste model, therefore, although powerfully and widely articulated at one level involutes the emotional and psychological ambivalence towards caste at another level. Neo-Buddhism is one result of this process. However, the studies show that conversion to Buddhism contributes only to psychological succour and not to improvement of social status (Fiske, 1977). The roots of caste ideology, therefore, would seem to disguise the class contradictions of Indian society and the nature of economic exploitation which now increasingly gets exposed as the pressure of social stratification on the system increases."

The next question worth pondering about is whether or not untouchability takes a backseat in the face of upward movement in the class heirarchy. To this question we now turn.

2.3.5 The Harijan elite:

Some fortunate among the SC have succeeded in climbing the ladders of success and have reached the higher echelons of society. It is important to study these 'Harijan elite' as they are called to identify the factors contributing to their success and also to assess their position vis-a-vis the other non-SC elite.

The tragedy of the elite among the Scheduled Castes is that a family which goes up tends to look down upon its less fortunate members but at the same time it is not accepted by the higher castes. (Malik, 1979 Singh 1985).

There is an emerging new middle class consisting of the salaried persons of the SC (Nandu Ram 1976). Such a middle class which is the result of the preferential policies of the Government is distinct from the old middle class due to its historical background and origin. The members of the new middle class have not been accepted in the old middle class. Added to this they suffer from what Nandu Ram has called as 'Status anxiety' because of the contradictions between their status in the class and caste heirarchies.

It has been observed that the middle classes of the backward castes offer stiffer resistance to the rising status of the Harijan than the very highest castes (Sachchidananda 1972). However, Sachchidananda's view that the Harijan elite do not have concern for their fellow castemen and are concerned only with their own betterment has been criticised by Mendelsehn (1986) on the basis of his study of Scheduled Caste politicians and their background. Mendelsohn argues that Scheduled Caste politicians have been subject to more rigid standards than other politicians and that this is unfair. He averrs that it is extraordinarily difficult to be an untouchable politician in India because of the pressures of working in a political atmosphere which is not totally free from the patterns of economic and social dominance and subordination prevalent in the outside world. A study of Scheduled Caste elites in Andhra Pradesh (Abbasayulu 1977), like Mendelsohn, finds that education, awareness, constitutional provisions and family reputation were the main contributory factors in the rise of the SC and amongst these, education was the most important. The study also documents the opinions of the elite about various issues. The elite feel they are not able to help their own caste people because of caste Hindu decision makers, lack of interest among the non-SC politicians and lack of knowledge among the SC for development. A study of 400 educated (at three levels of education - middle school, university and technical) in Etah district of Uttar Pradesh discovers that education Sanskritrises[10] the Scheduled Castes (Singh 1980).

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[10] Term first used by M.N. Srinivas; meaning adoption of customs and behavior of higher caste people.

Social outlook shows evidence of broadening. Upwardly mobile Scheduled Castes are less opposed to inter-caste marriages, and, the decision of marriage is passed to the children (Malik 1979). These mobile SC also tend to shift to a nuclear family and their women drop out of the labour force and if still working take up jobs on par with the husband's prestige (Malik 1979).

The success story of the Mahyavanshi caste of Surat city (Parmar 1978) bears witness to the fact that awareness and self-help can help the SC to rise. This caste which was originally called 'Dhed' was helped by Europeans who employed them as domestic servants. This established their contacts and they determinedly climbed up in society with the help of voluntary Christian missionaries. They agitated for changing their caste name from Dhed to Mahyavanshi in 1900 and were registered as Mahyavanshi in 1939. Now, most people in Surat society do not even know that the Mahyavanshis were Scheduled Castes. Their residential areas are modern, they own houses and rent them out to Savarnas (Brahmins)!

But all Scheduled Castes may not be as motivated as the Mahyavanshis. Differential motivation because of differential value systems is a fact and this makes the impact of welfare measures different in different castes. (Santhakumari 1976). Hence researchers find different subcastes among the Scheduled Castes moving at different speeds (Abbasayulu 1977, Chitnis 1981, Singh 1980, Khan 1980).

Before concluding this section, mention must be made of a relatively older book of Isaacs (1965) in which the author has interviewed 50 ex-untouchables[11] standing at various points along the path of change. This book, though criticised as being based on an unreliable sample and slender evidence (Sachchidananda 1974) highlights the social and economic disabilities of the Scheduled Castes, even though untouchability has been abolished by law. To quote- "................... the small number of those (ex-untouchables) who have been able to move up and out of the mass and away from the worst of it move into that peculiar semi-limbo reserved for men in motion between two identities. They are forever picking their way among seen and unseen obstacles, many outside and many inside themselves, as they try to cut loose from the huge mass of attachments and rules of life which hold them strongly bound no matter what they do or where they get to,

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11 Word coined by Isaacs himself.

for Indian society is simply not changing fast enough to provide them with enough new and open ground onto which they can freely move".

Recent evidence described earlier seems to indicate that the situation has not changed very much since the time when this book was written though there has been some evidence of the weakening of the strangle-hold of caste (Patwardhan 1973 and Desai 1976). On the basis of her study of Mahars in Poona city Patwardhan says that the Indian society is relatively more open now and the Harijans will move up, albeit at a slow pace.

Saberwal (1973) envisages no Harijan problem in Punjab in the next two generations. The Harijan poor, though still existing, would merge into the poor of all castes.

The Harijans have, however, not accepted their lot and some have tried to move upwards through political means. The next section reviews the literature to see how far they have succeeded in doing so.

2.4 Politics and the SC/ST[12]:

The untouchables made some attempts in the late 19th century at improving their social status by adopting the norms and behaviour of the higher castes but these efforts were not very fruitful till the 20th century when they found a champion of their cause in B.R. Ambedkar who gave momentum to the process of their political mobilisation. There is very little to report on the 'politics' of the SC communities though there has been a lot of research on ST regarding tribal movements etc[13]. Shah (1981) reviews the comparative study of India's Harijans and of American Negroes by Verba, Ahmed, Bhatt and considers the study methodologically sound and substantively interesting. The study aims at examining ways in which deprived groups-particularly deprived groups

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12 Material has been drawn largely from Ghamshyam Shah's trend report on 'Politics of SC and ST' in the Survey of Research in Political Science ICSSR, Vol. III, 1981, 170 pgs.

13 As already mentioned this study (and hence this survey of literature) does not give much attention to the Scheduled Tribes as a separate entity mainly because our data contains very few ST.

for whom the basis of deprivation is some ascriptive characteristic (for Harijans it is caste, for Negroes it is skin colour), use political means to overcome their deprivation.

The study finds the Harijans are mobilized externally by other individuals either Harijan or non-Harijan i.e. their participation is not self-conscious and personally motivated. However, their participation in politics - as voter, campaigner, bargainer with administrators and elites for getting benefits etc. - has helped them in raising their social status and improving their economic condition. And, this is an important observation - to them the political system is more open and egalitarian than the socio-economic system.

Gangrade and Sanami (1969) find in their study that the SC united against the dominant higher castes in a Punjab village, and, could acquire political power in a traditional village setting. Chawla (1964) observes a similar phenomena in a Gujarat village. It must be noted, however, that the situation is different in other villages of the same area; but no attempt had been made to account for this different behaviour in the same variables till the end of the seventies. Some studies give a general account of SC/ST regarding their social conditions, provisions in the constitution and their problem (Dushkin 1979, Srinivas 1975, Beteille 1965, Chauhan 1969, Schermerhorn 1969, Bathwal 1969).

The Harijan as a voter has been described by Joshi (1981) who investigates into the contention of 'bloc voting'. She finds there is diversity within the SC because of regional and linguistic interests and that the SC community is sometimes coerced by dominant groups. She finds it difficult to judge how much attempted political independence lies behind either the violence or electoral results.

Dushkin (1972) finds evidence of the members of SC playing a more prominent role in public life-thanks to the policies of preferential treatment. On the other hand, she also finds evidence of the system being used to control a minority (the SC) which might otherwise have proved troublesome. She identifies two sets of problems related to the SC. One is the problem of untouchability and the other is the problem of poverty and lack of power and she concludes that the government's policies are more concerned with the latter than the former.

Nataraj and Nataraj (1982) describe the Devaraj Urs regime when he was Chief Minister of Karnataka from 1972 to 1980. They document the fact that it was during Urs regime that the Havanur committee on Karnataka Backward Classess was constituted and the populist policies of land reform, abolition of bonded labour and debt liquidation were started. The authors are of the opinion that these policies were nothing but a political game since alternative sources of credit were scarce once money lenders were got rid of. The authors conclude that Urs did little to change the basic equation in land relations. Nevertheless, they found that a climate had been created where the consciousness of rights had become a possibility. "It was during the Urs Government", they observe, "that the Dalit movement began in Karnataka".

The evidence then, suggests that united political endeavour by the SC has always resulted in tilting the balance in their favour but lack of resource that have to be allocated (i.e. Scholarships, seats in technical colleges etc.,) has resulted in tensions between the SC and others. This has further resulted in the formation of militant groups among the SC, all of which has contributed to an increase in social tension and escalating violence, most of which is directed against the Harijans - a familiar story of exploitation of weaker sections and the protection of class interests; and, since the SC/ST fall in the intersection of the lowest class and caste they are subject to oppression of the worst kind so that social deprivation and economic deprivation are coterminuous.

2.5 Levels of living and other economic aspects:

Most sociological studies mentioned in section 2.3 have something to say about the levels of living based on observation in rather general terms but data solely meant for such studies has been collected less often. Saradamoni (1981) studies two panchayats in Kerala and her study presents extensive data on assets, levels of living and occupations of the population stratified into caste-occupation categories. The study is the only micro-study of its kind which contains *inter alia* some tables on (i) per capita daily consumption of rice and rice purchased in the open market (ii) Average household expenditure on selected items for Onam[14] 1976.

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[14] An annual festival of Kerala

(iii) Average household expenditure on some non-food items. The study concludes that inspite of favourable political and social climate in the state, a large section of the SC as well as the poor of other communities are outside the pale of development and its benefits. In her study area, Harijan disabilities are basically economic and she asserts that growth, and, involvement of the Harijans themselves is the only answer.

NSS data has plentiful information on consumer expenditure on various items along with valuable information on housing, landholding, etc. This mine of information has hitherto remained largely unutilised. Pal et al (1985) have used it to show differentials in PCE across social group for whole of India.

Kuren (1982) investigates the economic factors leading to the conditions that are responsible for their plight. He concludes that because agricultural labourers form a major component of those in poverty, the economic situation of the SC in the country is intimately related to the problem of agricultural labourers, in general. In other words, underlying the particular problem of the SC is a more general class problem. An increase in production alone would not solve the problem. What is required is a socio-economic system that recognises that meeting the basic requirements of all citizens specially those who toil on land must be the major social goal.

Papola and Ashraf (1983) look at the socio-economic development of Scheduled Castes in Uttar Pradesh and conclude that benefits of development programmes have gone to those who already have some assets. A large proportion of the SC are agricultural labourers and their low wage rates contribute to their plight. Papola and Ashraf find that job opportunities in non traditional sectors has helped the SC more than engagement with some assistance in their traditional occupations.

A study of special privileges granted to the SC s in Haryana was done by Agarwal and Ashray (1977). A sample of 500 households spread over 36 villages and 6 towns in 9 districts of Haryana formed the basis of the analysis. In addition life histories of 20 successful SC persons were taken. The analysis suggests that lasting change can be brought about by making the Harijans economically and politically stronger, giving them education - which is considered as the single most important privilege.

The majority of the SC complained that they were excluded from the general aid programmes but high caste people thought that the SC should be satisfied with the special privileges provided to them. On balance, despite difficulties, special privileges have been beneficial to the SC's.

2.6 Other Studies:

The volume of literature surveyed above gives an idea of how researchers in varied fields of interest have been concerned with the Scheduled Castes.

Galanter (1984) studied the legal aspects of the policies of the Indian Government. He has analysed the preferential policy followed by the government to uplift the SC/ST and has observed that preferential policies can coexist with the commitments to merit or to even-handedness. But they do not automatically produce the much sought-after redistribution and they are not costless. Galanter's work reveals the choices and tensions resulting from the policies of compensatory preference in the Indian context. Galanter also presents some case studies of judgements regarding the SC's in various courts and bases his conclusions on these judgements. His study also contains reference to other legal material connected with the SC/ST.

J.Michael Mahar (1972) has tried to present a variety of approaches and points of view, each embodied in an essay concerning a different aspects of the Harijan experience in this book. This book has essays by eminent authors in the fields of Sociology, Law, Anthropology, Psychology, Economics, Politics, History and even Geography. They all present interesting explorations into the different facets of the lives of Harijans. The book also contains an excellent bibliography of literature on the SC/ST compiled by Eleanor Zelliot. Mahar has concluded that the two aspects of Harijan life, pollution (i.e. ritual status, untouchability) and poverty (economic status) have not yet been completely resolved. Economic upliftment does not necessarily lead to acceptance of the Harijan into the mainstream of Hindu society and worse, it leads to concealment of true identity and a feeling of inferiority in the Harijan. But the majority of Harijans have still no hope of economic betterment. He observes that "....... the untouchables .... are heavily concentrated as landless labourers

.... the landless agricultural labourer has been one of the first to suffer from the pressures of over-population, and will continue in a position of prime vulnerability".

This book also contains an essay on the psychology of Harijans as revealed in stories and poems written by some of them. Other attempts to analyse the relationship of social and cultural segregation of the Harijans and their self image have been made by Rath (1974) and Kumar (1983).

Ramaswamy (1974) finds on examination of the historical processes involved that there is an emergence of shared status and identity among the SC inspite of religious and heirarchal differences.

Rani (1980) tries to identify non-congnitive factors (i.e. self concept, achievement anxiety, purpose in life, perception of the institutional characteristics) affecting the academic achievement of the SC students in institutions of higher technical education. All available SC/ST students among the second and third year B.Tech students of IIT Delhi were interviewed and a random sample of non-SC/ST students in the same classes acted as the control group.

In an interesting study of the curriculum Kumar (1983) finds that its effect is to demean the SC more. Kumar has analysed stories and illustrates students-teacher interaction to show that the SC student is acquiring responses that match his description in society and the school helps in doing so.

Mencher (1980) writes that the Harijans do not perceive themselves low and suggests that "the untouchable today is caught in a circular situation: without radical reform that eliminates economic barriers, there can be no change in their position, yet without a change in the stigmatized aspect of their identity, it is exceedingly difficult for any radical economic change to take place".[15]

In direct contradiction to Mencher (1980), Mofatt (1975) writes "those persons who are, in egalitarian terms, among

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[15] Op cit, pg 262.

the most oppressed members of Indian society are also among the truest believers in the system that so oppresses them".[16] Freeman (1979) challenges this and attempts to lay to rest "the myth that untouchables are content with their place in society and with the treatment they receive from other castes". Jacobson (1980) says that, both the studies find evidence for these contradictory views because the Tamilnadu untouchables analysed by Mofatt accept their position possibly because of their better economic position than the truly impoverished Orissan Bauris of Freeman's study.

Berreman (1960) and Tuinman (1984) are of the opinion that the higher classes ensure their privileged position by espousing the doctrine of ritual purity and impurity as an explanation of caste precedence and enforce it by naked power, while the lower classes somehow deny inequality but are forced into it by power.

Kamat (1981) and Saradamoni (1981) view protective discrimination measures as a threat to lower sections of society,

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16 Op cit, pg 304.

creating a new elite amongst the SC/ST and preventing their unification to agitate for social change. Kamat argues for the solution of the basic social contradictions in the wider (non-SC/ST) society in order to solve the problems of the SC/ST.

The Office of the Commissioner for SC/ST publishes annual reports to be placed before the Parliament. The reports contain information on economic development, and development programmes associated with the SC/ST, educational development, number of cases of violation of the Untouchability Act[17], number of bounded labour freed, number of cases of atrocities and harrassment brought to the notice of the authorities etc[18].

Apart from these annual reports there are several reports on specific plans (viz, the special component plan, the tribal development plan etc.) These reports deal with the impact of specific development plans, based on the census and other secondary data sources.

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17 The original Untouchability (Offences) Act 1955 was given the new name of Protection of Civil Rights Act when it was amended in 1976.

18 The Commissioners' reports for 1973-74 and 1977-78 have already been described in Chapter 1.

Novelists like Mulk Raj Anand (1933) and Freeman (1979) have chronicled the life of one untouchable. Whereas Anand's is a fictional account of a day in the life of a Sweeper, Freeman gives a full length account of an undistinguished, unlettered, rural untouchable Muli based on Muli's first-person narrative.

Even human rights' organisations abroad have been interested in the problems of the Harijans. The report of the Minority Rights Group[19] (1982) has been written with force and feeling by Dilip Hiro and advocates a strengthening of government's policies and involvement of the general public in the organisation of help for the Harijans.

Barbara R Joshi, who has worked as the convener of the Working Group of Untouchables, a subgroup of the Minority Rights Group, writes that 'there has been change, but it has had a recurrent price, whether it be three months of riots against the education and job programs for untouchables in both urban and rural Gujarat in 1981, or a recent minor riot in Sholapur on the heels of an

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19 A human rights organisation based in London, England.

Untouchable literary conference" (Joshi, 1981).

She traces the history of the Untouchables and reviews some research on these groups and comes to the conclusion that untouchability is entrenched in the Indian psyche and the situation is grim for these people.

2.7 Conclusions:

On looking at the literature on the problems of the SC/ST one is impressed by the volume of research done and that too in fields that vary widely in methods and approach. Sections 2.2 through Section 2.6 describe research into the various aspects of a Harijan's life. Section 2.3 and 2.4 describe generally the sociologists' and social anthropologists' viewpoint which looks at the processes going on within a household i.e. the formation of human capital in the form of schooling, and, occupation which is of interest to the sociologist. Thus these studies that are by their very nature micro-level, look at educational and occupational aspects.

The economic studies described in Section 2.5 , on the other hand, are interested in household expenditure on various consumer items and inequality among households in respect of such expenditure, nutrition and related aspects like poverty and levels of living and inequality therein.

Socio-economic characteristics like education and occupation structure on the one hand, and the consumption expenditure and related aspects on the other are inter-related and thus it is important that consumer expenditure be studied and related to these socio-economic characteristics. After all, a household's expenditure pattern on various items of consumption is a reflection of not only its needs but also of its tastes and percapita income/expenditure which are determined by the level of education of its members and their occupation. We have seen in Section 2.5 that very few studies have attempted an analysis of this very important aspect of consumer behavior. This study makes this attempt. Also all studies have been based either on secondary aggregated data or on microlevel studies of particular areas or groups. Secondary aggregated data are very general and hence the interpretation of results is at a very broad, macro level. On the other hand, micro-studies have the advantage of focussing on a particular area or community, thus being able to look at the people closely, but such studies have very limited scope and the conclusions cannot be easily generalised. Moreover, economic studies based on survey data for the state of Karnataka are not very many.[20] Thus, there is a definite need for looking at the SC/ST more closely in Karnataka.

To this end we shall examine household level data collected by the NSS for a random sample of households representing Karnataka and we shall analyse the structure and pattern of consumer expenditure in the following chapters.

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20 But see Khan (1980) based on a sample of 500 hhs. in Bangalore District, Taylor (1972) for a study of SC/ST College students in Karnataka.

CHAPTER 3

SURVEY OF METHODOLOGY

3.1 Introduction:

Chapter 1 identified two major components of this study; one component consisting of determining the contributions to total inequality, of inequality within and between Social/Occupation groups and the other, the analysis of covariance applied to estimated engel functions in order to discern any significant differences in consumption patterns between the SC/ST and the non-SC/ST.

This chapter reviews the methodology of inequality decomposition and the methodology of engel curve analysis. Section 3.2 reviews the literature on the methodology of inequality decomposition and discusses the merits of various inequality measures when applied to decompose total inequality. The Gini coefficient emerges as a non-decomposable measure of inequality. The only two measures that do satisfy the criterion for decomposability are the ones proposed by Theil Section 3.3 describes some of the major contributions and studies on engel function estimation. The Leser form of engel function is identified as an appropriate choice for estimation purposes. The use of the traditional analysis of covariance technique in various studies is then briefly reviewed. Section 3.4 concludes the chapter.

3.2 Decomposition of inequality:

An effort to decompose overall or aggregate inequality into inequality levels corresponding to population subgroups has led researchers to develop various measures of inequality. These measures are decomposable in the sense that, if the population of income earners[1] is broken down into a certain number of subgroups, the overall inequality for the total population can be expressed as a weighted sum of the inequality measures 'within' its subgroups and of the inequality existing between these subgroups. Each subgroup inequality is weighted by a coefficient that depends on the aggregate characteristics of that subgroup. Different

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1 'Income' has been used interchangeably with expenditure. In our entire study we have used only expenditure distributions and this has been taken as a proxy for income distributions.

inequality measures have different weighting coefficients corresponding to them.

The central issue is the identification of the conditions under which aggregate inequality can be expressed as a function of the subgroup inequality levels. The theoretical development of decomposable inequality measures begins with the identification of basic requirements desirable for inequality measures. These requirements are:

1) The inequality measure should be continuous and differentiable in all individual incomes, i.e., an infinitesimal change in the value of an individual income may be expected to produce only an infinitesimal change in the inequality measure. The differentiability condition eliminates measures based on rank in the whole distribution[2].

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2 This is not a serious problem because in general, measures based on rank are not decomposable.

2) The inequality measures should be symmetric i.e., The personality of the income earners is irrelevant in the measurement of inequality (anonimity rule).

3) The measure should be income - homogeneous of degree zero i.e., the measure is invariant when all incomes are multiplied by the same scalar[3].

4) The measure should satisfy the symmetry condition for population which means that the inequality of a given distribution be the same as that of the distribution obtained by replicating any number of times each individual income in the initial distribution[4].

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3 This condition appears to be justified for an 'objective' inequality measure but may be debatable from a normative point of view (Sen 1973).

4 Axioms 3 and 4 imply a kind of 'Population zero homogeneity' for the inequality measures.

5) The measure should satisfy the Pigou-Dalton principle of transfers i.e., the measure decreases with any income transfer from a rich person to a less-rich person.

6) The measure should be decomposable.

It is proved (Bourguignon 1979 and Shorrocks 1980) that the only two measures which satisfy the above requirements are the Theil measure T and L defined below.

Let $y = (y_1, \ldots, y_n)$ be the income distribution vector for a population of n households Theil measure T can be written as

$$T\ (y,\ j,\ n) = \frac{1}{n}\ \Sigma\ \frac{y_i}{\mu}\ \ln\ \frac{y_i}{\mu} \qquad \ldots\ (3.1)$$

Where μ is the mean income $\sum_i y_i/n$

The Theil L measure is

$$L(y\ ;\ n) = \frac{1}{n}\ \Sigma\ \ln\ \frac{\mu}{y_i} \qquad \ldots\ (3.2)$$

Decomposability or additive decomposability is the property by which the total inequality of a population can be expressed as the sum of a weighted average of the inequality within subgroups of the population and of the inequality existing between them. Decomposability can be of two kinds depending on the weights given to the inequalities within the various subgroups of the population. The two most natural weighting systems are the population and the income shares of the subgroups. This leads to two distinct definitions of the decomposability property, the "Population weighted decomposability" and the "Income weighted decomposability" (Bourguiguon 1979). The Theil L measure corresponds to the former definition and the Theil T measure corresponds to the latter. This can be seen in the following way.

Suppose the population of size n is divided into k subgroups each of size n_j, $j = 1, \ldots k$. Let T_j, L_j be the Theil measures T and L corresponding to the jth subgroup.

Let y_{ij} be the per capita income (expenditure) of ith household in jth subgroup. Let μ be the mean per capita expenditure of total population and μ_j be the mean per capita expenditure of jth subgroup.

It can be shown that,

$$T = \sum_j \frac{n_j \mu_j}{n \mu} T_j + \sum_j \frac{n_j \mu_j}{n \mu} \ln \frac{\mu_j}{\mu}$$

$$= T_W + T_B \qquad \ldots (3.3)$$

and

$$L = \sum_j \frac{n_j}{n} L_j + \sum_j \frac{n_j}{n} \ln \frac{\mu}{\mu_j}$$

$$= L_W + L_B \qquad \ldots (3.4)$$

Where the first term in (3.3) and (3.4) is the within subgroup contribution (T_W and L_W respectively) and the second term is the between subgroup contribution[5] (T_B and L_B respectively).

The within subgroup contribution can be seen as the value of the inequality index when all between group differences are suppressed by equalising subgroup means to the overall mean through an equiproportionate change in the income of every person within a group. Likewise the between group contribution can be defined as the value of the inequality index when all within group income differences are artificially suppressed, by assigning to each person within a group the mean income of the group.

When inequality measures are used to assess the contribution of one particular factor to total inequality there are two types of questions that can be asked. This can be illustrated by the following example. Consider the question "How much inequality can be attributed to, occupation group variations in income". This can be interpreted in two ways.

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5 For properties of the Theil measures T and L and the derivation of (3.3) and (3.4) from (3.1) and (3.2) see Appendix-A.

i) How much less inequality would be observe, if occupation group differences were the only source of income differences i.e., the value of the inequality measure if inequality is eliminated within each occupation group, but the group means remain constant.

ii) What is the reduction in inequality if occupation group-income differences were eliminated i.e., if between group differences in mean income were eliminated but inequality within each group remains constant.

(i) and (ii) produce the same answer only when the weighting coefficients do not depend on the subgroup means (Shorrocks 1980). This is the case with the Theil L measure and therefore it is said to be decomposable in the strict sense but this is not so with the Theil T measure which is decomposable in the weak sense.

For the Theil measure T we can see the result in this way,

If everyone in group j get income μ_j then $T_j = 0$ for all j So that the first term in (3.3) is zero, and the second term which is the between group component T_B is the value of T when all within group income differences are suppresed. But, if the group mean incomes μ_j are equalised to overall mean μ by equiproportionate changes in the income of every person within a group, the value of the T index becomes $\sum_j \frac{n_j}{n} T_j$ which is not T_W ($= \sum_j \frac{n_j}{n}\frac{\mu_j}{\mu} T_j$). Hence T is not decomposable in the strict sense, and therefore T_B does not measure the reduction in inequality if between-group income differences are eliminated, this reduction (R) is actually $T - \sum \frac{n_j}{n} T_j$

$$\text{i.e.}\quad R = T - \sum \frac{n_j}{n} T_j = T_W + T_B - \sum \frac{n_j}{n} T_j$$

$$= T_B + (T_W - \sum \frac{n_j}{n} T_j)$$

$$\neq T_B \qquad \ldots (3.5)$$

So that (i) and (ii) do not give the same answer. However, T_B still measures the extent of inequality arising from the between group differences in mean income. So that, T_B is the answer to (i) and R is the answer to (ii).

In the case of the Theil L measure, L_B is the value of L when everyone in group j gets μ_j so that $L_j = 0$ for all j and $L = L_B$. When all between group income differences are suppressed i.e., by making $\mu_j = \mu$ for all j, we have the value of L to be $\Sigma \frac{n_j}{n} L_j$ which is nothing but L_W.

Hence, L is decomposable in the strict sense and the answer to (i) and (ii) is the same.

These two measures are the members of the class of additively decomposable measures derived in Shorrocks (1980) and under weaker restrictions in Shorrocks (1984). The square of the coefficient of variation is also a member of this class. However, for these other members of the class the weights are not independent of the between group contribution. Also, only in the case of the

Theil T and L do the weights (decomposition coefficients) sum to unity. Moreover the Theil measure T has maximum sensitivity.[6] (Cowell and Kuga, 1981).

In all these decompositions the between group inequality is measured as the inequality among subgroup means. Alternatively, inter-group inequality could also be measured as the inequality

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6 The authors compare the effect of making a transfer from a person i to a person $k(T_{ik})$ and from a person j to the same person $k(T_{jk})$. Let S_i, S_j and S_k be the corresponding income shares of persons i,j,k. Let $S_i > S_j > S_k$ then T_{ik}/T_{jk} is always greater than unity. It implies that the inequality improving effect of transfers is greater the richer the source of the transfer is. This effect is measured as

$$E(\beta) = \frac{\partial h}{\partial S_k} \frac{S_k}{h} = \beta \quad \frac{1}{(S_j/S_k)^{\beta} - 1} - \frac{1}{(S_i/S_k)^{\beta} - 1}$$

where β is a parameter. Sensitive measure has high $E(\beta)$ and Theil T is found to have maximum sensitively. For a detailed proof. see Cowell and Kuga (1981).

which would be experienced by everyone if each person received his subgroup's 'equally distributed equivalent income' i.e., that income which, if equally distributed, would prove socially indiffe-rent to the original subgroup distribution (Blackorby et al 1981). These indices are found by extending the usual procedure for deriving relative and per capita indices from social-evaluation functions. The indices measure intergroup inequality as the inequality that would result if each person had his subgroup's equally distributed equiva-lent income. Thus, it is claimed that the intergroup inequality index measures differences in the actual economic positions of the subgroups rather than their potential economic positions. This procedure gives rise to the possibility that subgroups may not be ranked unambiguously by their equally distributed equivalent incomes. Blackorby et al found that in the data set studied by them (pertaining to wages and salaries of Canadians) this ambiguity was discovered for men and women in two provinces. For a theoretical treatment of these indices see Blackorby and Donaldson (1980a).

However, the scope of these techniques is limited in the context of a developing economy like India where unemployment and underemployment are high and the ratio of non-earning dependents to earners is also high so that the income approach would be totally irrelevant. It is mainly for this reason that consideration of consumption as a proxy for earnings would be more appropriate.

Cowell (1980) investigates the possibility of decomposition by population subgroups by treating different subgroups in different ways within the overall measure.

Among the usual measures of inequality, the measures based on the ranking of individual incomes (the Gini-Coefficient, Elteto Frigyes indices and other inter-quantile mean-income ratios) are not additively decomposable (Bourguig on 1979). The decomposition of the Gini is possible only if subgroup incomes are non-overlapping. (e.g., in the case of two subgroups where one contains 'the poor[7]' and the other the 'non-poor').

The decomposition of the Gini index presents serious problems of interpretation. However, Pyatt (1976) uses the definition.

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7 People below the 'poverty line' which is defined in some way.

$$G = \frac{\left(\frac{1}{2n^2}\right) \sum_i \sum_j |y_i - y_j|}{\frac{1}{n} \sum_i y_i} \qquad \ldots (3.6)$$

to decompose the Gini into three components on the basis of a game theoretic approach.[8] One component that gives between group inequality and one that depends on the extent to which income distributions overlap one another. Other attempts at decomposing the Gini have been made by Soltow (1960), Bhattacharya and Mahalanobis (1967), Rao (1969), Mehran (1974) and Mangahas (1975).

Das and Parikh (1982) in a review of these studies conclude that the Gini decomposition is defective because Gini coefficients do not possess the additive property. However, Pyatt's decomposition is lauded because of its approach based on a sound theoretical and economic model.

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8 The game-theoretic approach is novel and the derivations neat but the result is exactly the same as in Bhattacharya and Mahalanobis (1967).

Ramakrishnan and Rao (1978) derive a decomposition formula for the Gini for decomposition into sectoral contributions. But the decomposition depends crucially on the definition of the mean difference.[9]

On similar lines Ramakrishnan (1982) while dealing with the problems of grouped data developed an inequality decomposition framework for the Gini ratio. Between group inequality is given by the trapezoidal method and within group inequality is calculated by assuming a uniform distribution of consumption within each expenditure class interval. In a later paper he develops an expression for sectoral decomposition of the Gini index. But even here, the overlap term complicates the interpretation of the between sector and within sector components of inequality.

Decomposable poverty measures are proposed by Kakwani (1980a), Blackorby and Donaldson (1980b) and Chakravarty (1983b) among others.

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9 Op cit, pg 37, Definition 2.1

On the empirical side, the method of decomposition has been used by several researchers.

Mookherjee and Shorrocks (1982) analyse the importance of structural changes on the trend in income inequality. Their study is based on the use of additively decomposable inequality measures. The method involves disaggregating total inequality in each year into various components and examining the time paths of these individual contributions. They decompose inequality in income of households in UK and find that the major disequalising factor over the study period has been the changing age-income profile. The results contribute to a better understanding of the factors affecting the trend in inequality and also throw light on the way to revise observed trend to eliminate spurious influences.

Das and Parikh (1982) decompose Atkinson index [10] and compare it with decompositions of other inequality measures like

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[10] Atkinson index $A = 1 - y_e/\mu$ where y_e is known as 'equally distributed equivalent income'

the Gini coefficient and the Variance of logarithms,[11] the Theil entropy index and the square of the coefficient of variation. Empirical analysis using USA and UK data are performed on the basis of income distribution data classified by family size.

Fei-Ranis-Kuo (1978) Pyatt-Chen-Fei (1980) and Ali (1985) attempt to decompose inequality in the distribution of income/assets in terms of the components of income/assets. Subbarao et al (1984) in an unpublished paper use All India Debt and Investment Survey (1981-82) data to decompose inequality in asset distributions for Maharastra. Iyengar and Suryanarayana (1985) in their recent study attempt to decompose inequality in the distribution of

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11. Variance of logarithms $V = \frac{1}{n} \sum_{i}^{n} (\log y_i - \ln \tilde{\mu})^2$ where $\tilde{\mu}$ is the geometric mean of the distribution of y. The deviation of the logarithms of income is sometimes taken from the logarithms of arithmetic mean $\ln \mu$ rather than the logarithm of the geometric mean $\ln\tilde{\mu}$ (Sene 1973a). This yields a slightly different measure which is also mean independent and turns out to be the sum of Var (lny) defined above and the square of the Theil L measure.

consumption by its constituent items. Suryanarayana (1986) uses a decomposition of Gini ratio developed by Ramakrishnan (1984). Pal, Chakravarty and Bhattacharya (1985) decompose poverty in Rural India.

Anand (1983) defines two classes of inequality measures- one strongly decomposable and the other weakly decomposable. He computes both classes of inequality measures for his income distribution data on Malaysia. He systematically analyses racial, occupational and regional[12] group contributions to total inequality in the distribution of individuals by household per capita income and also the distribution of income recipients according to personal income (this is referred to as the personal income distribution).

Anands' detailed decomposition analysis helps in identifying the areas in which a policy for inequality reduction can be most fruitfully directed. For instance, his finding that between occupation groups inequality contributes 30 per cent to

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12 Anand also touches upon employment sector groups, educational groups, age groups and sex groups briefly.

total inequality, whereas inequality between racial groups[13] contributes only 10 per cent to total inequality indicates that the Malaysian Government's policy of narrowing differences by "restructuring the racial pattern of employment between sectors as well as occupations, without decreasing employment opportunities for any one" would have far reaching effect on income inequality if accompanied by a policy to bridge the gap between occupation groups as a whole also.

Decomposition analysis thus provides an incisive tool to isolate variables affecting income inequality most. It cannot replace a rigorous multiple regression analysis but can be used in an exploratory way to determine the variables to be included in a fuller and more detailed regression analysis. The computation required is simple and therefore does not require large quantities of computer time even in the case of large data sets. This is a definite advantage in situations where the constraints on one's budget are stringent.

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13 Malaysian society mainly consists of Malays, Chinese and Indians.

Sometimes, as in our case, a regression analysis implies several additional assumptions. Our study uses the household as the unit of analysis. The occupation group of the household is the occupation of the main earner according to the definition provided by the National Sample Survey. The data available to us has no information on the identity of the main earner in the household. If household per capita income (expenditure) is taken as the dependent variable and occupation, education, sex are taken as explanatory variables, there are several problems. Since we do not know the main earner, in the household, it is impossible to determine what education level to take as the explanatory variable. So also with sex group. It is also not possible to interpret sex as a household characteristic even if we make some assumptions about education level. Thus, it is not possible to run a human capital type of model either with household characteristics or individual characteristics. Even if the limiting assumption of one earner per household is made we cannot proceed further because we do not know who that one earner is.[14]

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14 One can, however, heurestically try to find out the main earner by looking at the education level, age of each member and the occupation group of each household; this involves manual scrutiny of about 3000 households; an exercise which would take up a phenomenal amount of time.

Thus, limitations of data and problems of interpretation led us to do the analysis through the simpler, albeit rough method of decomposition which has, nevertheless provided us with very useful insights besides having its own merits of interpretation and computation.

It must be noted that as derived the decomposition analysis and the contributions are purely descriptive. There is no attempt to base them on statistical theory and this is not easy because the Theil measures do not follow known statistical distributions (Anand 1983). On the other hand, decompositions of the Varlog V can be tested since the ratio of the between group to within group variance is known to follow an *F* distribution. Since the degrees of freedom are high in the empirical decompositions, all between group contributions turn out to be statistically significant.

3.3 <u>Choice of Engel curve form:</u>

The other part of this study consists of estimating engel functions and then performing a covariance analysis on these estimated functions to determine whether social group (i.e., being an SC/ST or a non/SC/ST) has any effect on consumption pattern.

Engel functions have been estimated again and again by econometricians in the past several years of research.

Household budget data from the NSS or from other enquires have been used for studying the influence of income on consumption. These data provide total consumer expenditure of the different sample households and this is used as the explanatory variable in the absence of satisfactory income data. It may be noted that savings form a very small proportion of total income for the majority of households.

Most studies have been based on grouped data[15] and where individual household observations have been used it is difficult to use logy as dependent variable because a fair proportion of households spend nothing at all on some particular items. Dropping such households leads to serious biases in the estimated elasticities (Iyengar, Jain and Srinivasan 1968).

There have been a large number of studies comparing the goodness of fit of different engel curve forms e.g., the straight line, the parabola, the semi-logarithmic (SL), the constant elasticity (DL), the hyperbola (HYP), the loginverse (LI), the log-log-inverse (LLI) the semi-log-inverse (SLI), exponental (E), and the log parabola (LP). Since the elasticities vary considerably from one form to the other (Sinha, 1966) and each form presents different hypotheses regarding the marginal propensity to consume, the choice of the curve form is important. The criteria for making the choice has generally been those mentioned

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15 Most of the material in this section has been gleaned from Bhattacharya's (1978) survey article.

by Prais and Houthakker (1955), only sometimes instead of R^2 the coeff. of multiple determination), $\bar{R}^2$ (R^2 adjusted for degrees of freedom) has been used.

Sinha (1966) analysed fairly extensive NSS data for rural and urban India and tried six forms, viz., the line, SL, DL, LI, HYP and LLI and judged the goodness of fit by R^2 and (the Durbin-Watson statistic). No single form was suitable for all the items, but LLI appeared to be the best on the whole. The LLI was ultimately chosen somewhat subjectively, as the variation in engel elasticity along the fitted curve seemed to be the slowest and most realistic for the LLI.

The superiority of the LLI was also observed by Maitra (1969) who examined state-level NSS data on the consumption of foodgrains items in rural areas. Maitra compared the hyperbola, SL, DL, LI and LLI forms and found that the SL and the LLI, particularly the latter, gave the most satisfactory fit.

Bhattacharya and Maitra (1969) carried out an extensive analysis of engel curves using grouped NSS data for rural and urban India for 14 or 15 broad commodity groups. Data for 14 rounds from the 7th (Oct, 1953 - March, 1954) to the 22nd (July 1967 - June 1968), excepting the 20th and 21st, were covered in the analysis. Four algebraic forms viz., hyperbola, SL, DL and LLI were compared on the basis of measures of goodness of fit like the coefficient of determination (R^2) and measures of randomness of residuals like the Durbin-Watson statistic (d). The LLI was found to be generally satisfactory and provided the best fit in most cases. The residuals from this curve were nearly random, unlike those from the other forms. The SL and the DL were sometimes nearly as good, but the hyperbola was acceptable only for cereals and substitutes and pulses in the urban sector. The relative standing of SL and DL depend to some extent on whether one directly compares the R^2s for the two curves or recalculates the R^2 for the DL from the observed and expected values of the dependent variable.

Singh (1968b, 1973) compared the R^2s for the ten algebraic forms mentioned in the foregoing paragraphs in course of his investigation of the effects of household composition on consumption patterns (vide infra). The parabolic, the LLI, the LP and the SLI were the most successful and the line and the DL were quite poor. It should be stated, however, that the sample sizes were quite small in this study.

Gupta (1970) tried eight forms on regionwise data on foodgrains and clothings for rural and urban India from NSS rounds 11 and 12 and chose the DL and the LI for inter-regional comparisons. But, presumably, he disfavoured the three-parameter forms on account of their complexity. Gupta (1968b) tried an interesting technique for choosing a curve-type. He examined the scatter diagram showing regionwise elasticities against the corresponding mean expenditures and tried to choose the curve type with similar variation in elasticity along the fitted curve.

Jain and Tendulkar (1973) compared the six two-parameter forms on the basis of R^2 for the engel curves fitted to NSS 19th round data for rural and urban India. The SL appeared to be the best for many items with elasticity below 1 and the DL for many with elasticity above 1. Surprisingly the straight line appeared to be the best in a number of cases.

Iyengar and Rao (1968) estimated the addilog system of Engel curves for the NSS tenth round data. This system has the advantage of being additive and non-negative. It is also found to agree closely with empirical data. However, the assumption of additive preference implies only limited substitution possibilities but this may not be implansible if we consider only broad commodity groups (Houthakker 1960). The underlying engel curves are nonlinear and the error specification is not straight forward (Iyengar and Rao 1968).

Aggregation over consumers of a set of micro-demand functions is only possible under appropriate theoretical restrictions. It can be proved that Muellbauer's notion of consistent aggregation holds for the price independent generalised linear (PIGL) engel curves. The Working-Leser from was originally put forth by Working (1943) and was subsequently used by Leser (1963, 1976). These forms constitute the basis of the Almost ideal Demand system (AIDS) developed by Deaton and Muellbaner (1980). The AIDS is the empirical implementation of the PIGL. Thus Muellbauer's work establishes the economic-theoretic justification for the Working-Leser forms of engel curves.[16]

The AIDS has been put to empirical testing with the Indian NSS budget data separately for rural and urban sectors (Murthy, 1984) Ray (1980, 1982) has included household size variables in the AIDS. The Working-Leser form and the indirect utility function on which it is based is described in detail in Chapter 6.

It is important to mention here that the Leser form is additive and no additional econometric exercise is required to assure its additivity. This is mainly because the Leser forms have expenditure shares on a particular commodity (or commodity group) as the dependent variable. Any number of independent variables in addition to total outlay (or per capita outlay) can be used.

The technique of analysis of coveriance which statistically controls for the effects of uncontrolled variables that

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[16] See Muellbauer (1975).

cannot be standardised between classes has been used by several researchers (Jain and Tendulkar (1973), Gupta (1968b). This technique was used in many studies (Chow 1960 and Fisher 1970). It has also been used for other purposes like:.

1) isolating effects of different varieties of wheat by controlling for variables such as r infall etc.

2) finding out whether production functions for a given industry have same co-efficients in different regions.

3) finding out whether some economic function remains unchanged in different periods.

Jain and Tendulkar (1973) have used this technique to determine if occupation group was a factor affecting the consumption patterns of households. Covariance analysis helped the authors to conclusively reveal that occupation was a factor affecting consumption behaviour.

This technique has been applied here to determine the effect of social group on the consumption pattern of households in Karnataka.

3.4 Concluding Remarks:

The review of studies on decomposition brought out the Theil entropy measures as additively decomposable. These two measures and the Variance of logarithms (which is also additively decomposable) have been used in this study.

None of the various engel forms used by researchers has emerged as best on the basis of the various studies mentioned above. We came to the same conclusion using our data set[17]. Hence, we have chosen the Working-Leser form for our study mainly because it is simple and additive.

The analysis of covariance technique has been used by us to detect social group differences in consumption patterns.

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17 We have attempted to choose the 'best' fitting engel curve in the traditional manner using distance functions. For details see Chapter 6.

CHAPTER 4

DATA ANALYSED

4.1 *Introduction:*

As seen in Chapter 1, this study of the levels of living of the Scheduled Castes and Tribes and their consumer behaviour requires an income distribution and a consumption expenditure distribution. In the absence of income data the consumption expenditure data will serve as a proxy to determine the levels of living and inequality therein of households that belong to the SC/ST and others.

Consumption patterns can be determined by estimating engel functions for which itemwise quantity/value data is required.

In order to determine the components of inequality by decomposing it into between group and within group components we need the characteristics of the group, whether it be social group or occupation group.

For nearly three decades the National Sample Survey (NSS) has been collecting, every year upto 1973-74 and at five year intervals thereafter data on the level and pattern of consumption from a representative sample of households in rural and urban areas of different parts of the country. It is by far the most comprehensive source of information on the subject (Vaidyanathan 1986, Mukherjee 1986). It is still the only source of data which is suitable for the type of questions this study is trying to answer.

The disaggregated household expenditure data collected by the NSS during the course of their survey for the years 1973-74 and 1977-78 was used as it was readily available.[1]

A detailed description of the data used in the study is given in Appendix B. Section 4.2 gives the sample size and other details for the 28th and 32nd Round. In Section 4.3 we briefly review the literature on the reliability and validity of NSS data. Section 4.4 describes some minor points about the data set used by us. The Chapter concludes with Section 4.5.

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1 Preliminary material relating to the 38th Round covering the period Jan-Dec 1983 have been tabulated but could not be secured from the NSSO.

4.2 Sample size and break-up by Sectors and Household group:

The 28th Round sample contained 621 Rural households and 369 urban households for Karnataka. Only this part of the sample was used in the study. The break-up by household group is given in Table 4.1.

Table 4.1 : Distribution of sample households covered in 28th Round by household group

Group	Rural	Urban	Combined
SC/ST	119	36	155
Others	502	333	835
All	621	369	990

The total sample size in the 32nd Round data set used in this study is 3146.[2] The detailed break-up is given below.

Table 4.2 : Distribution of sample households covered in 32nd Round by regions and household group.

	RURAL		URBAN		Combined Sector	
	SC/ST	N.SC/ST	SC/ST	N.SC/ST	SC/ST	N.SC/ST
Region 1 Coastal & Ghats	13	171	4	92	17	263
Region 2 Inland Eastern	46	236	11	80	57	316
Region 3 Inland Southern	116	479	53	505	169	984
Region 4 Inland Northern	134	702	69	435	203	1137
Total	309	1588	137	1112	446	2700 = 3146

2 Originally, there were 3301 households in the sample. But while transferring the data from the raw schedules to the tape errors crept in the case of 155 households. These were deleted from the sample so that the net sample size was reduced to 3146.

4.3 Reliability and validity of NSS data:

The validity and reliability of the much used NSS data has attracted a lot of attention from Social Scientists.

Mukherjee and Chatterjee (1974) have compared the estimates of aggregate private consumption expenditure based on both the NSS data and the official national income statistics both the conventional and the revised series for the years 1954-55 to 1968-69. The study suggests that it would be useful to produce an annual series of private consumption expenditure based on the NSS data.

Rudra's (1972) article staunchly defends the NSS consumption estimates and questions the validity of the criteria used to declare the NSS estimate as good or bad. He points out that the mere fact that the CSO estimates have a 'stamp of authority' does not give these estimates any particular claims to superior scientific value. In fact, he claims superior scientific value for the NSS based estimates because one is able to treat errors by probabilistic methods in the case of NSS based estimates.

Recently Suryanarayana and Iyengar (1986) have also concluded that the NSS and CSO estimates are incomparable because of conceptual and methodological differences in their computation. They admit the inability to assess NSS data because there exists no alternative estimate of the same parameter which would enable them to judge the reliability of the NSS estimates.

Rudra observes that, NSS data will underestimate features that are characteristically associated with the rich. This is because sampling is done from a population without stratification according to income levels and hence there is very high probability that the upper tail area (corresponding to the richer sections of the population) will be completely unrepresented in the sample. Thus, estimates of purchase of gadgets and other durable consumer goods based on NSS data are definite underestimates when compared with the corresponding supply figures based on production and import statistics. He, therefore, suggests modifications in the NSS survey design, e.g., stratification of households according to income levels as well as occupation groups.

However, Srinivasan et al (1974) consider Rudra's contention as false. They point out that the few 'high' income households which the NSS is able to capture results in increasing the variance of the estimate of the average for the population and for the upper 'tail', it does not imply any in built 'bias' in the sampling procedure towards over or under-estimation in any class. After discussing the various attempts to evaluate NSS data they present their own independent attempts to do so and admit that they cannot offer any categorical answers. They, however point to directions in which inquiry would be fruitful. In conclusion they remark that

a) The comparison of NSS and official estimates of national income may diverge because of margins of error for both estimates.

b) Data should be more closely studied in order to detect any changes in methods of estimation, differences in concepts and coverage.

c) Close agreement between the two series of national income estimations is no proof of absence of bias nor is divergence between the two series proof of bias in either series.

d) For incidence of poverty calculations it is sufficient to know the direction of bias in the income of persons near the poverty line even if the precise degree of bias is not known. One can assess the sensitivity of conclusions under alternate assumptions of bias.

e) In order to estimate the magnitude of resource transfers required to reduce the incidence of poverty, it is essential to know the direction and magnitude of the bias over the entire range of consumption.

Chatterjee and Bhattacharya (1974) lament the fact that though the NSS budget data is very important very little technical work has been done in the country to cross examine the data and improve its quality. However, they point to studies that have validated the NSS data viz.,

a) NSS estimates of aggregate consumption of cereals agreed with the corresponding crop production estimates. (Mahalanobis, 1962).

b) Engel elasticities obtained from the NSS data are moderate and sensible (Iyengar 1967).

They remark that one of the major 'weaknesses' of the NSS data should be the unduly high estimates of per capita intake of cereals in rural areas. But the NSS estimate is used by most researchers by assuming that though the absolute levels of this very important indicator of welfare in rural India may be doubtful, the variation in consumption standards over time or across regions might in fact be reasonably correct. Rudra's criticism of possible under enumeration of the rich households is also mentioned here and it is suggested that a systematic record of characteristics of these households be kept and a representative sample of these households be covered for consumer expenditure enquiry. The authors also mention the fact that the NSS possibly under enumerates houseless nomads and destitutes because it covers only households.

More recently Roy (1985) has observed that a long time series is required to draw any conclusions about the validity of NSS data. He studies the data from 1960-61 to 1973-74 and finds that the NSS estimations closely agree with the official estimates in case of cereals consumption (contrary to most findings) and thus he expresses surprise at the controversy that NSS grossly over estimates cereals consumption.

The problem of non-sampling errors in NSS data is discussed by Vaidyanathan (1986) and he tentatively concludes that there is compelling evidence of systematic changes in the degree of non-sampling errors arising from identifiable changes in the design of schedules and in concepts.

Mukherji (1986) is of the view that the NSS is unable to provide useful information on annual changes in household final consumption and its major breakdowns. He advocates the use of overlapping successive samples as recommended by the Fisher Committee of 1957, in which some part of the sample is common among the years and the other part changes.

These observations on the reliability of NSS data recorded in this section do not, however, point to a consenses, that would lead to a rejection of the data nor do they point to a conclusion that would lead to whole hearted acceptance of it. Nevertheless, the criticism of the NSS has been mainly directed at its estimates of aggregates not its use in a disaggregated form for purposes akin to that of a micro-study. So far as this study deals with one section of the people i.e., the SC/ST and that too at a disaggregated household level, the NSS data is reasonably valid and can be used.

In any case, the National Account Statistics do not give disaggregated data (occupation wise/expenditure class wise), which is very important to understand the distributional effects. Moreover, for this problem there was no alternative source of data which was readily available.

4.4 Some minor points:

Monthly per capita expenditure was computed by summing up commodity expenditure and dividing by household size. To compute this, three possibilities exist in the case of 32nd Round data and these are:

a) Monthly per capita expenditure calculated by adding expenditure in the month preceding the data of interview on clothing and durables in the computed total expenditure.

b) Monthly per capita expenditure calculated by adding 1/12th[3] the yearly expenditure on clothing and durables in the computed total expenditure.

c) One could have a third one if imputed rent of owner occupied houses was included. This was not done for this study because the data on imputed rent was not scrutinised and was likely to contain lots of errors.

We have used (a) for our analysis in order to retain comparability with 28th Round data; (b) has been calculated and some comparisons are between (a) and (b) have also been made which are given in Appendix E. As apparent from Appendix E the use of (a) or (b) for calculation of PCE will not affect the substantive results.

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3 Since there are 365 days in a year, monthly expenditure can be calculated by multiplying yearly expenditure by the factor $\frac{30}{365}$ also. We have used 1/12 as a good approximation of this factor.

4.5 Concluding remarks:

The above description of the data (See Appendix B also) for the two periods of time, 1973-74 and 1977-78 shows that we have *fairly comparable* data for the two periods. It is to be noted, however, that the data for 1977-78 is much richer. It has information on each member of the household; describes the homestead; has annual expenditure of household on durables and semi-durables. All this data are not present in 28th Round.

This study analyses the data for the two rounds keeping in view considerations of comparability. After this, it also analyses the richer 32nd Round data in depth to get insights into those aspects of the economic condition of the SC/ST which the 28th Round analysis could not look into.

CHAPTER 5

ANALYSIS OF LEVELS OF LIVING AND DECOMPOSITION OF INEQUALITY

5.1 Introduction:

The level of living of a household is determined by its level of income per capita which in turn determines the consumption level of the household. Also because we have only consumption expenditure data the levels of living of the SC/ST vis-a-vis the non SC/ST is examined here using consumption expenditure per capita of a household.[1] Two periods of time 1973-74 and 1977-78 are considered.

The level of living of a household which is mainly dependent on its per capita income, is determined mostly by the occupa-

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1 Alternative indicess of levels of welfare such such as per unit calorie intake which require stronger assumptions and share of food in total outlay are also used in some recent studies (Iyengar and Mallika (1985)). However, here per capita consumption has been preferred which facilitates comparisons between social groups, intertemporally and inter-regionally.

tion in which its members are engaged, the literacy level of its members, assets owned by it, and, its size and composition. Assets are of two kinds, financial and physical but since we do not have information on financial assets only physical assets (land for rural areas and house etc., for urban areas) are compared here across the SC/ST and non SC/ST groups. The other determinants of the levels of living viz. occupation group, education level and household size and composition are also investigated in this chapter and compared across social groups to discover the root causes of SC/ST backwardness.

The level of living may also be determined by the region in which the household lives, thus giving a spatial dimension to the determination of the living levels. This is investigated by comparing the mean monthly per capita expenditure in the four Regions of Karnataka which are,Coastal and Ghats, Inland Eastern, Inland Southern and Inland Northern.

In any conscientious and just society, the poor must be given adequate attention. Poverty alleviation is one of the most important goals of our planned economy.[2] It is therefore very important to first locate the subgroups of the population in which poverty is most rampant. An attempt has been made to do this by drawing profiles of rural and urban poverty for both the time periods.

Inequality in per capita expenditure (PCE) reveals the distributional aspect of the consumption expenditure distribution. But it is pertinent to investigate into the components of this inequality. This would give us information on what are the important contributors to total inequality. Is inequality caused mainly by the disparities in PCE between the SC/ST and the non SC/ST? Or is it because of the disparities between rich and poor within a social group? How much do inter-occupational differences contribute to inequality? These are some of the questions which we attempt to answer in this chapter, by using decomposable inequality measures to quantify inter and intra group (Social/ Occupational/Spatial) contributions to total inequality.

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2 This is borne out in the allocations to poverty alleviation in the recent budget of 1986, as well as in the Seventh Plan documents.

Section 5.2 describes the methodology followed for comparisons of size distributions of consumer expenditure and Section 5.3 describes the method of decomposing inequality measurements into within-group and between group components. The choice of the unit of measurement used in the analysis is delineated in Section 5.4. The Sections 5.5 through 5.10 present the results. Section 5.5 presents the results pertaining to the levels of living of the two groups and the changes therein over two periods of time. Section 5.6 presents the profiles of rural and urban poverty separately for the two periods of time. Section 5.7 focusses on the results of the measurement of inequality. Section 5.8 and 5.9 describe the results of inequality decomposition by social groups and occupation category, respectively for the two periods 1973-74 and 1977-78. Section 5.10 investigates the determinants of the levels of living of a social group i.e., its occupation structure, literacy level, asset position, household size and composition, and the region it belongs to.

Section 5.2:

Essentially, our analysis involves comparisons of size distributions of consumer expenditure, broadly on the lines of Bhattacharya and Iyengar (1961). We compare the consumption distribution of the SC/ST with that of the non SC/ST at two points of time (1973-74 and 1977-78), for the rural and urban sectors separately.

5.2.2 Levels of Living:

Let $f_{ij}(x_t)$ be the distribution of consumer expenditure (x_t) in period t for social group j of households in sector i (i = rural, urban; j = SC/ST, non SC/ST; t = 1973-74 and 1977-78). This distribution has a mean μ_t and a median m_t for every (i,j). μ and m have been frequently used to measure the standard of living. We have used both these measures for comparing the levels of living of the SC/ST and non SC/ST groups. The intertemporal analysis was carried out in real terms (1970-71 prices) using appropriate price deflators. Differential price deflators were constructed for the specific decile groups by using all-India wholesale prices for 11 selected commodities[3] and the corresponding budget weights obtained from the NSS 28th round data for Karnataka. Using 1970-71 as the base year these indices were computed for 1973-74 and 1977-78 using the conventional Laspeyres' approach. We also estimated the percentage of households below the poverty line. This approach involves the fixing of a poverty level, say c, in terms of overall per capita expenditure needed to ensure a normative calorie intake. Let $F(x)$ be the distribution function of the consumption distribution. Let c be the poverty line, that is, the minimum per capita expenditure needed to ensure a normative calorie intake. Then $F(c)$

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3 These are given in Appendix F for the SC/ST and Non SC/ST separately. The Commodity groups are 1) Cereals 2) Pulses 3) Milk and Milk Products 4) Edible Oil 5) Meat, Fish and Eggs 6) Vegetables, Fruits and nuts 7) Sugar and Gur 8) Other food 9) Fuel and Light 10) Clothing and 11) Miscellaneous products. For these the All-India whole sale price indices broadly corresponding to 1) Cereals 2) Pulses 3) Milk and Milk products 4) Edible Oil 5) Meat, Fish and Eggs 6) Fruits and Vegetables 7) Sugar, Khandsari and Gur 8) Other food articles 9) Fuel, Power, Light and Fabricants 10) Textiles and 11) Miscellaneous products were used. The All-India whole sale price indices are from Reserve Bank of India (1979).

is the measure of absolute poverty. We have compared the level of absolute poverty among the SC/ST in the two sectors with that of the non SC/ST.

In any discussion of poverty of a section of the population (here SC/ST) it is not only important to know what proportion of that section is poor but also what proportion of the poor belong to the section. Therefore, we have worked out the proportion of the SC/ST among the poor.

The most popular method employed in measuring consumption inequality (or more appropriately disparity) between two groups is to compare their mean/median consumption. However, such comparison leaves out the distributional aspect of the problem. We have tried to include this aspect by estimating the percentage of SC/ST in the top 5 and 20 per cent of the general population as well as in the bottom 5 and 20 per cent. However, these percentages are not comparable over time if the percentage of SC/ST in the total population is not same for the two periods.[4] We have tried to make them comparable by correcting the percentages by the following formula:

$$S_c = S_A \times \frac{P_{73-74}}{P_{77-78}} \qquad \ldots (5\text{-}1)$$

Where S_c = 'Corrected' percentage of SC/ST in top n % (for 1977-78 only)

S_A = Actual percentage of SC/ST in top n % (in 1977-78)

P_t = Percentage of SC/ST in total population in time t

This assumes that the decile wise percentage distribution of the SC/ST remains the same over the time period. Hence the correction described above is a rough one.

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4 The removal of area restrictions as a result of the Scheduled Castes and Scheduled Tribes Orders (Amendment) Act, 1976, the population of SC's and ST's is likely to have been increased by about 10 lakhs, (Office of the Director of Scheduled Caste and Tribes, Bangalore)

5.2.3 An alternative method of Comparing Size Distributions:

An alternative method of comparing any two size distributions would consist of finding the relationship R between x_1 and x_2 such that $F_1(x_1) = F_2(x_2)$ where F_1 and F_2 are respectively the cumulative distribution functions of x_1 and x_2 and comparing $R(x_2) = R(x_1)$ against the line $x_1 = x_2$ which, in a sense, represents equality.[5] If the relation R lies above the equality line then we might describe this state as one in which the non SC/ST are better off than the SC/ST.[6] If R lies entirely below the equality line, we might interpret it otherwise. However, when R and the line of equality cross each other, then it might be interpreted as a state in which some SC/ST are better off than some non SC/ST.

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5 If the comparison is over time then this line would represent stagnation (Iyengar and Suryanarayana (1983)). The curves described in this paper can be called I-S curves.

6 That is, if x_1 and x_2 are the consumption distributions of SC/ST and non SC/ST, respectively.

5.2.4 Inequality:

It is natural to expect that any measure of inequality is ultimately concerned with the distribution of a positive valued random variable in relation to its mean, median, or any suitable location parameter. Out of many such indices available, we have chosen the Lorenz ratio (L), which implicitly depends on the distribution of relative consumption (X/μ), to measure inequality within a social group. The reason for this choice is that L is a very widely used measure of inequality in India and elsewhere (ECAFE, 1972); hence it is possible to compare our results with those of others. Moreover, its statistical properties are well known. (Iyengar and Bhattacharya (1978)).

Other inequality indices like the Theil measures T and L and the Variance of Logarithms (varlog) have also been computed but mainly for the purposes of decomposition so that the Lorenz measure L is used to look at the inequality and changes therein over the period under study.

5.3 The methodology of inequality decomposition:

Inequality indices computed from grouped data completely *ignore* within group inequality in expenditure.[7] Availability of ungrouped data enables us to ask how much of total inequality in Karnataka consists of between SC/ST and non SC/ST group inequality and how much consists of within group inequality. The between group contribution can then be defined as the ratio of between group to total inequality (similarly for within group contribution).

As already mentioned in Chapter 3, an inequality index is said to be additively decomposable if, for any grouping, total inequality can be written as the sum, of between group and within group inequality. This property allows the unambigious measurement of the contribution of a particular group to total inequality.

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[7] For an empirical quantification of the effect of grouping on various measures of inequality for this data set see Prasad and Iyengar (1983).

The off-used Gini index is not neatly decomposable into between group and within group terms. But the two measures of Theil, T and L are decomposable.[8] The Variance of logarithms (Varlog, V) is also decomposable according to the following consistent definition of within and between group components which has already been given in Chapter 3 but is worth repeating here.

The between group component is defined as the value of the inequality index when all within group expenditure differences are artificially suppressed. Here within group inequality is eliminated by assigning to each household within the group, the mean expenditure of the group, then the inequality index is calculated for the resulting hypothetical expenditure distribution.

Similarly, the within group component is the value of the inequality index for the hypothetical income distribution which is constructed by equalising group means to overall mean

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8 See Chapter 3 for a detailed review which establishes this point.

through an equi proportionate change in the PCE of each household. In this way, between group inequality is eliminated, but the inequality within each group remains constant (Anand 1983).

One of the Theil measures L and the variance of logarithms of expenditure (varlog) is decomposable in the strict sense.

For the Varlog the result can be seen in the following way[9]

$$\text{let} \quad x_{ij} = \ln y_{ij} \qquad \ldots (5\text{-}2)$$

where y_{ij} is the PCE of ith household in jth group.

Then Varlog (V) is defined as

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9 For Theil measures T and L this property has already been discussed in some detail in Chapter 3. Strict decomposability means that the between group contribution is a measure of (i) inequality when between group differences in mean income is the only source of income variation. (ii) Reduction in overall inequality if between group differences in mean income are eliminated leaving the inequality within each group constant.

$$V = \frac{\sum_i \sum_j (x_{ij} - \ln \tilde{\mu})^2}{n} \qquad \ldots (5\text{-}3)$$

where $\tilde{\mu}$ the overall population geometric mean of household PCE is

$$\tilde{\mu} = \frac{\sum_i \sum_j x_{ij}}{n}$$

which can be written as[10]

$$V = V_W + V_B$$

Where

$$V_W = \sum_j \frac{n_j}{n} V_j \qquad \ldots (5\text{-}4)$$

10 See appendix A for detailed proof and properties of the varlog.

and

$$V_B = \sum_j \frac{n_j}{n} (\ln \tilde{\mu}_j - \ln \tilde{\mu})^2 \qquad \text{... (5-5)}$$

where V is varlog for jth group, $\tilde{\mu}_j$ is geometric mean of household PCE of jth group.

V_W is a weighted average of the variance of log-income (in our case expenditure) within each group where the weights are population shares of the groups. However, V_B is <u>not</u> the variance of log-income when all within group income differences are suppressed but group arithmetic mean incomes are held constant. Rather, V_B is the value of V when everyone in group j, gets the geometric mean μ_j . Thus V_B measures the inequality which arises from between group differences in geometric mean income, not arithmetic mean income. In fact, Varlog is decomposable in the strict sense round geometric means not arithmetic means which can be seen as follows.

If all within group inequality is suppressed by making everyone's income expenditure in group j to be $\tilde{\mu}_j$ then

$V_W = 0$ and $V = V_B$

and if all between group inequality is eliminated by making $\tilde{\mu}_j = \tilde{\mu}$ for all j then $V_B = 0$ and $V = V_W$

So that Varlog is strictly decomposable around geometric means.

A weak definition of the within group component extends the class of decomposable inequality measures (Shorrocks 1984). This requires only that the within group component be constructed from the individual group inequality indices, population sizes and total income of each group, as an additively separable function over groups so that, the contribution of each to overall inequality can be identified. The only functional form possible, if the measure is also to satisfy the basic properties of mean independence and population size independence is the weighted sum of inequality indices for each group, where the weights depend <u>only</u> on the population <u>share</u> and income(consumption) <u>share</u> of the groups. Thus, overall inequality is built up as a sum of its constituent parts which isolates the contribution of each group.

Thus, knowing the changes in constituent parts one can directly compute changes in overall inequality.

The strict decomposability of Theil L measure and the weak decomposability of Theil measure T have been discussed in detail in Chapter 3. Only the formulae for the computation of the Theil measures and their inter and intragroup components are presented here.

Theil measure $T = T_W + T_B$

where

$$T_W = \sum_j \frac{n_j}{n} \frac{\mu_j}{\mu} T_j \qquad \ldots (5\text{-}6)$$

and

$$T_B = \sum_j \frac{n_j}{n} \frac{\mu_j}{\mu} \ln \frac{\mu_j}{\mu} \qquad \ldots (5\text{-}7)$$

and the Theil measure $L = L_W + L_B$

where $$L_W = \Sigma \frac{n_j}{n} L_j \qquad \text{... (5-8)}$$

and $$L_B = \Sigma \frac{n_j}{n} \ln \frac{\mu}{\mu_j} \qquad \text{... (5-9)}$$

where T_j, L_j are the Theil measures T and L respectively for jth group and n_j is its size. n is the size of total population.

Thus we see that in the case of a strictly decomposable inequality index the between group component can be either taken as a measure of reduction in inequality when between group differences are eliminated or as the inequality which arises when these differences are the only source of income expenditure variation. Thus, by computing just the between group component one can answer both questions. Though this is an attractive property it is not essential. Answers to both questions can be found using any index. Strict decomposability only facilitates the computation required to answer the two different questions.

5.4 Unit of measurement:

The first problem that arises in the measurement of the quantities mentioned in 5.2 and 5.3 is the selection of the appropriate unit of measurement. With the data set available to us we could either choose the individual or the household as the unit of analysis. The following kinds of distributions may be considered.

1. Individuals by household expenditure per capita
2. Individuals by household expenditure per equivalent adult
3. Households by household expenditure per capita
4. Households by household expenditure per equivalent adult.

We must use (1) or (2) if we choose individual as our unit of analysis and (3) or (4) if household is chosen.

The survey data available to us is based on households and not individuals. If (1) or (2) is to be used we must make assumptions about the intra household distribution of total expenditure of a household. In case of (1) we assume equal distribution of total expenditure among all members of a household and in case of (2) we assume distribution according to some needs criteria (of our choice) inside the household.

For the decomposition of inequality both (1) and (3) have been used for the 28th Round analysis. For the 32nd round, results are there for all the four types of distributions.

However, results have been presented and discussed only for (3) because the results did not show any substantial variation in inter and intragroup contributions to total inequality when (1), (2), (3) or (4) was used.[11]

However, for profiles of poverty (3) has been used, because it is the household we are inter ested in and also it is the household which can be regarded as the decision unit. One must

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11 Selected tables from (1), (2), (3), and (4) are presented in appendix C. For Conversion of PCE to per adult equivalent (PAE) we used the formula 1 adult male = 1; 1 adult female = .8 and 1 child = .67. which are the conversions used by the NSS in their calculations.

also remember that generally government policies have household as their target for upliftment rather than individuals.

The choice of (3) can be criticised on the grounds that it is too impersonal in the sense that a household cannot for example, feel hungry, only an individual can, and so on. But in the light of the discussion above we feel (3) is an appropriate choice.

However, we have also presented some results on the number of persons in poverty and also on the standard of living of various sections of the population of individuals for both the periods of time under study.

Section 5.5:

Levels of living : The Results:

5.5.1 Levels of Living: (1973-74):

In 1973-74 the mean consumption (in current prices) of the SC/ST in Karnataka in the rural sector was Rs. 40.20, while in the urban sector it was Rs. 54.50 (Table 5.1). The 'Poverty Line' for India in 1973-74, as estimated by the Planning Commission (See Planning Commission 1981) was Rs 49.09 and Rs. 54.64 per person per month for the rural and the urban sectors respectively.[12] Thus, in both the sectors the mean consumption of the SC/ST was below the poverty line.

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[12] Task force on Projections of Minimum Needs and Effective Consumption Demand, set up by the Planning Commission in 1977, defined the poor as those "whose per capita consumption expenditure lies below the mid point of the monthly per capita expenditure class having a per capita daily calorie intake of 2400 calories in rural areas and 2100 calories in urban areas. The estimate of calorie intake is derived from food consumption pattern of the corresponding classes and the calorie content of the food items. This per capita consumption expenditure is then named as the poverty line. Calorie norms as chosen above are estimated after taking into consideration the age, sex and occupation differentials in the total population. The poverty line for these calorie norms (as estimated from per capita monthly expenditure and the associated calorie content of food items from NSS data on consumer expenditure of 1973-74) works out to be Rs 49.09 and Rs.56.65 per capita per month in rural and urban areas respectively in the year 1973-74". (Quoted from Sixth Plan Technical Note, pg 81).

For the 32nd Round poverty line, this poverty line has been inflated by the relevant price indices i.e., Agricultural Labour consumer Price index for Rural Karnataka and Industrial Workers' consumer price index for urban Karnataka (Report on Currency & Finance (1978-79)). Rao et al (1985) have used similar concepts and cut off points for estimating poverty levels in India by 2000 AD.

TABLE 5.1 : Average and median monthly per capita consumption in current prices, Karnataka : 1973-74.

(Rs.)

Sector	SC/ST		Non SC/ST	
	Mean	Median	Mean	Median
Rural	40.20	33.66	54.93	46.76
Urban	54.50	46.91	67.95	57.70

A comparison of the mean consumption of the SC/ST and the non SC/ST brings out the wide gap in the consumption levels of the two groups. In the rural sector the mean consumption of the SC/ST is just about 73 per cent of that of the non SC/ST. In the urban sector it is about 89 per cent. The difference in the median consumption between these two groups is also of the same order. In the rural (urban) sector the SC/ST have a median consumption which is approximately 72 per cent (81 per cent) of the median consumption of the non SC/ST group.

5.5.2 <u>Change in the levels of living (1973-74 to 1977-78):</u>

We find from the data that there has been a general improvement in the standard of living over the two periods of time if one considers the real mean per capita expenditures, except in the case of the SC/ST in the urban sector which shows a marginal decline. (Table 5.2). In the rural sector the SC/ST, however, improved in a less remarkable way compared to the non SC/ST. (The change in the case of the SC/ST is about 50% whereas in the case of the non SC/ST it is 160%).

TABLE 5.2 : Average monthly per capita consumption in constant rupees of 1970-71, Karnataka : 1973-74 and 1977-78.

(Rs.)

Sector	SC/ST			Non SC/ST		
	1973-1974	1977-1978	Change %	1973-1974	1977-1978	Change %
Rural	30.11	45.42	(+) 50.85	40.77	105.21	(+) 158.06
Urban	40.64	40.48	(-) 0.39	51.64	137.91	(+) 167.07

In the urban sector also there is a marginal decline in mean expenditure in the case of SC/ST but the non SC/ST have improved quite a bit (i.e., by 167 per cent).

But when we look at the median consumption we find that there is a decline for both the SC/ST and the non SC/ST and more so for the non SC/ST, in both sectors (Table 5.3).

Tables 5.4 and 5.5 show the changes in mean consumption over the period under study (i.e., 1973-74 to 1977-78) for different sections of the population. The top 20 per cent of the population[13] in terms of consumption per capita, in each group is defined as 'Rich'. This is followed by the "Upper Middle Class" (next 30 per cent), "Lower Middle Class" (next 30 per cent) and the 'Poor' (bottom 20 per cent). From the Tables we find, that only the 'Rich' have improved in the standard of living, all the other classes have declined and the worse hit have been the 'Poor' SC/ST whose real consumption has

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13 The population here is the population of households unless otherwise mentioned.

TABLE 5.3 : Median monthly per capita consumption in constant rupees of 1970-71, Karnataka : 1973-74 and 1977-78.

Sector	SC/ST			Non SC/ST		
	1973-1974	1977-1978	Change %	1973-1974	1977-1978	Change %
Rural	25.87	23.74	(-) 8.23	36.33	31.15	(-) 14.26
Urban	34.61	32.62	(-) 5.75	44.28	38.51	(-) 13.03

TABLE 5.4 : Average monthly per capita consumption of selected groups of households in constant rupees of 1970-71, Rural Karnataka : 1973-74 and 1977-78.

	SC/ST				Non SC/ST			
	1973-1974	1977-1978	Change	%	1973-1974	1977-1978	Change	%
Rich (top 20%)	53.42	206.27	(+)	260.13	77.12	283.13	(+)	267.13
Upper Middle Class (Next 30%)	31.55	31.12	(-)	1.36	42.20	40.81	(-)	3.29
Lower Middle Class (Next 30%)	22.67	20.83	(-)	8.12	29.13	27.46	(-)	5.73
Poor (Bottom 20%)	15.81	12.78	(-)	19.17	19.74	17.85	(-)	9.57

TABLE 5.5 : Average monthly per capita consumption of selected groups of households in constant rupees of 1970-71, Urban Karnataka : 1973-74 and 1977-78.

	SC/ST			Non SC/ST		
	1973-1974	1977-1978	Change %	1973-1974	1977-1978	Change %
Rich	69.02	78.87	(+) 14.27	104.11	317.98	(+) 205.43
Upper Middle Class	44.25	41.42	(-) 6.40	51.82	51.12	(-) 1.35
Lower Middle Class	31.19	27.74	(-) 11.06	35.19	33.24	(-) 5.50
Poor	21.02	14.69	(-) 30.11	23.58	19.76	(-) 16.20

decreased by 19.2 per cent and 30.1 per cent in the rural and urban sector respectively.

The Lower Middle Class and the poor SC/ST in the rural sector have suffered a greater decline than their non SC/ST counterparts, whereas the Upper Middle Class and Rich SC/ST have done slightly better than the corresponding class of non SC/ST.

In the urban sector also we find a similar pattern so that the poorer one is, the more is the decline.

Table 5.6 which like other tables was prepared using the NSS data set available with us presents the percentage of SC/ST in selected decile groups. As mentioned in Section 5.2, the figures for 1977-78 have been 'Corrected' for the difference in the percentage of SC/ST in the total population in the two periods.

Table 5.6 once again brings out the disparity between the two groups. For instance, in the rural sector in 1973-74, 38 per cent of the bottom 5 per cent of the combined population

TABLE 5.6 : Percentage of SC/ST and Non SC/ST in Selected Groups of households, Karnataka : 1973-74 and 1977-78

...(Rural)

	1973-74			1977078		
	SC/ST	Non SC/ST	Total	SC/ST	Non SC/ST	Total
Top 5 %	6.91	93.09	100.00	6.05	93.95	100.00
Top 20 %	6.75	93.25	100.00	7.45	92.55	100.00
Bottom 5 %	37.71	62.29	100.00	55.01	44.99	100.00
Bottom 20 %	33.31	66.69	100.00	35.58	64.42	100.00
Overall	17.99	82.01	100.00	17.99	82.01	100.00

TABLE 5.6 : (Contd.)

(Urban)

	1973-74			1977-78		
	SC/ST	Non SC/ST	Total	SC/ST	Non SC/ST	Total
Top 5 %	3.10	96.90	100.00	6.92	93.08	100.00
Top 20 %	6.53	93.47	100.00	5.05	94.95	100.00
Bottom 5 %	23.11	76.89	100.00	33.43	66.57	100.00
Bottom 20 %	13.53	86.47	100.00	16.98	83.02	100.00
Overall	10.92	89.08	100.00	10.92	89.08	100.00

belonged to the SC/ST. Considering that only 18 per cent of the total population belonged to the SC/ST in the rural sector in 1973-74, 38 per cent may be regarded very high.

We will now look at the changes in these percentages, First, the percentage of SC/ST in the bottom 5 and 20 per cent of the general population has increased over the period of study in both sectors. Secondly, in the rural sector the percentage of SC/ST in the top 5 per cent of the general population has decreased while it has increased in the case of the top 20 per cent. In the urban sector, however, the percentage of the SC/ST in the top 5 per cent of the general population has increased but its percentage in the top 20 per cent has decreased.

These results, generally, support our previous findings, that the position of the SC/ST vis-a-vis the non SC/ST has deteriorated over the period of study except for a small group of the 'Very Rich' SC/ST in the urban sector.

5.6 Profiles of poverty : The Results:

5.6.1 Poverty aspects : Number of Persons[14] below poverty line:

Table 5.7 and 5.8 give the percentage of persons below poverty line[15] for the rural and urban sector in the years 1973-74 and Tables 5.9 and 5.10 give the same figures for 1977-78. We have also computed the percentages of persons below 1.1, 0.9, 0.75 and 0.5 times the poverty line which are given in these tables.

On comparing the percentage of non SC/ST living below the poverty line with that of the SC/ST, we find a wide disparity' Whereas 54.8 per cent of the non SC/ST live below poverty line in the rural sector in 1973-74, 79.9 per cent of the SC/ST are below the poverty line. In the urban sector in 1973-74, the disparity is there but it is a little less than in the rural

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14 We have used individual here for some poverty calculations. We use households as our unit of analysis throughout. Poverty results for households are presented in Section 5.6.3 and 5.6.4.

15 These have been computed according to All India norms. Nayak and Sumithra (1985) have attempted to develop poverty measures for Karnataka using a refinement of the Calorie norms technique on NSS 38th Round (Jan-Dec 1983). This technique is yet to be standardized and hence these norms have not been used here.

TABLE 5.7 : Percentage Distribution of Population by Degree of Poverty, Karnataka : 1973-74.

(Rural)

	Percentage of		Ratio of
	SC/ST	Non SC/ST	(2) to (1)
Persons having a consumption less than:			
Rs. 54.00	84.69	62.18	0.73
Rs. 49.09 (Poverty line)	79.90	54.79	0.69
Rs. 44.18	80.02	45.03	0.64
Rs. 36.82	55.30	31.25	0.57
Rs. 24.55	15.31	6.72	0.44

TABLE 5.8 : Percentage Distribution of Population by Degree of Poverty, Karnataka : 1973-74

(Urban)

	Percentage of		Ratio of
	SC/ST	Non SC/ST	(2) to (1)
Persons having a consumption less than:			
Rs. 62.30	68.22	58.51	0.86
Rs. 56.64 (Poverty line)	63.55	50.37	0.79
Rs. 50.98	52.80	40.06	0.76
Rs. 42.48	45.33	27.97	0.62
Rs. 28.32	12.15	5.50	0.45

TABLE 5.9 : Percentage Distribution of Population by Degree of Poverty, Karnataka : 1977-78.

(Rural)

	Percentage of		Ratio of
	SC/ST	Non SC/ST	(2) to (1)
Persons having a consumption less than:			
Rs. 60.40	78.98	57.37	0.73
Rs. 54.90 (Poverty line)	71.30	49.81	0.63
Rs. 44.53	58.80	31.85	0.54
Rs. 41.24	51.84	25.02	0.48
Rs. 27.49	22.66	5.30	0.23

TABLE 5.10 : Percentage Distribution of Population by Degree of Poverty, Karnataka : 1977-78.

(Urban)

	Percentage of		Ratio of
	SC/ST	Non SC/ST	(2) to (1)
Persons having a consumption less than:			
Rs. 80.41	80.65	66.87	0.84
Rs. 73.10 (Poverty line)	69.73	57.35	0.82
Rs. 65.79	52.51	51.15	0.97
Rs. 54.83	43.93	36.26	0.83
Rs. 36.55	22.99	12.46	0.54

sector. The situation in 1977-78 is about the same.

Tables 5.7 through 5.10 also give the percentage of persons below 1.1, 0.9, 0.75, 0.5, times the minimum requirement the poverty line. We observe that the ratio of column 2 to column 1 is decreasing except in the urban sector of 1977-78, which suggests that in general, the percentage of SC/ST in the lower expenditure classes are more than those in the higher expenditure classes.

5.6.2 <u>Subgroups in poverty</u>:

The broad characteristics of rural and urban poverty are investigated separately in this section for both the periods of the time. Occupation group, social group and household size have been used to draw a map of rural and urban poverty. For 1977-78 region has also been taken as a characteristic to look at poverty groups in the population (of households).

In the rural sector the three occupation subgroups are 'cultivators and farmers', 'agricultural labourers' and 'others'. The urban sector on the other hand has been divided into four occupation groups viz. sales and clerical workers, Farmers, Fishermen etc., production and related workers and 'Others' which captures the residual number of households.

This formation of subgroups in poverty allows the identification of some major components of development policies and projects in Karnataka.

The emphasis placed on certain subgroups in poverty gives importance to the microapproach to the alleviation of poverty. Such an approach helps us to understand better the causes and circumstances of poverty and can also suggest policy packages in specific cases.[16]

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16 Bruno (1977) in his survey paper on distributional issues in development advocates the micro or the partial equilibrium approach which concentrates on specific social or regional groups in which poverty is most concentrated. "With our present knowledge and resource limitations this may be the avenue of highest marginal social product" - Bruno (1977) quoted in Anand (1983), pg 145.

5.6.3 <u>Rural Poverty, 1973-74 and 1977-78</u>:

This subsection examines the characteristics of rural poverty.

The percentage of households below poverty line in Rural Karnataka was 53.9 in 1973-74 which decreased to 48.6 in 1977-78. For the SC/ST the incidence of poverty decreased from 74.8 in 1973-74 to 64.2 in 1977-78 and for the non SC/ST from 48.9 to 45.6 (Tables 5.11 and 5.12).

Agricultural labour households account for nearly half the poor and also show the highest incidence of poverty. This is not surprising because of prevalent landlessness in this occupation group, and the extremely skewed distribution of land with most of it concentrated with the few landlords and the rest of it distributed in scattered small holdings.

As expected, incidence of poverty is highest for larger households than smaller ones.

TABLE 5.11 : Profile of the Rural Poor*, Karnataka : 1973-74

Household Charac- teristics	% distn among all hhs (1)	% distn among poor hhs (2)	% distn among non poor hhs (3)	Incidence of pov. (4)	Rel. Incidence of pov. (5) = (2)/(1)
SOCIAL GP.					
SC/ST	19.2	26.6	10.5	74.8	1.39
Non SC/ST	80.8	73.4	89.5	48.9	0.91
Total	100.00	100.00	100.00		
OCCUPATION**					
1	50.8	43.4	59.4	46.0	0.85
2	36.2	47.0	23.4	70.1	1.30
3	13.0	9.6	17.2	39.5	0.74
Total	100.00	100.00	100.00		
HH SIZE					
1	4.8	1.5	8.7	16.7	0.31
2	8.3	2.4	15.6	15.4	0.29
3	10.3	10.2	10.5	53.1	0.99
4	17.6	16.8	18.5	51.4	0.95
5	15.3	16.8	13.6	58.9	1.10
6	11.8	13.5	9.8	61.6	1.14
7	9.4	13.2	4.9	75.9	1.4
8	7.7	8.4	7.0	58.3	1.09
9	5.2	6.0	4.2	62.5	1.15
10	9.6	[illegible].2	7.4	64.4	1.17
Total	[illegible]	[illegible]	[illegible]		

* The rural poor a[illegible] those h[illegible] below the monthly PCE [illegible] 73 [illegible] prices.

** [illegible]

TABLE 5.12 : Profile of the Rural Poor*, Karnataka : 1977-78.

Household Charac-teristics	% distn among all hhs. (1)	% distn among poor hhs (2)	% distn among non poor hhs (3)	Incidence of pov. (4)	Rel. Incidence of pov. (5) = (2)/(1)
SOCIAL GP.					
SC/ST	16.34	21.56	11.44	64.17	1.32
Non SC/ST	83.66	78.44	88.56	45.61	0.94
Total	100.00	100.00	100.00		
REGION					
1	8.30	4.92	11.51	28.80	0.59
2	14.52	15.03	14.04	50.35	1.04
3	29.37	25.97	32.58	43.03	0.88
4	47.81	54.08	41.87	55.02	1.13
Total	100.00	100.00	100.00		
OCCUPATION					
1	42.60	31.61	53.01	36.10	0.74
2	38.18	51.06	25.99	65.05	1.34
3	19.22	17.33	21.00	43.87	0.90
Total	100.00	100.00	100.00		

TABLE 5.12 : (Contd.)

Household Charac-teristics	% distn among all hhs (1)	% distn among poor hhs (2)	% distn among non poor hhs (3)	Incidence of pov. (4)	Rel. Incidence of pov. (5) = (2)/(1)
HH SIZE					
1	4.44	1.54	7.18	16.74	0.35
2	8.77	4.39	12.43	24.13	0.50
3	11.11	8.15	13.93	35.35	0.73
4	14.26	14.92	13.71	50.42	1.05
5	14.99	16.26	13.88	52.26	1.08
6	14.64	17.28	12.24	56.88	1.18
7	11.57	13.57	9.76	56.52	1.17
8	7.46	9.32	5.76	60.18	1.25
9	4.10	4.73	3.53	55.60	1.15
10	8.67	9.85	7.60	54.76	1.14

* Poverty line = Rs. 54.98 in prices, 1977-78.

Also smaller households form a smaller proportion of the poverty households than larger ones.

Region 1 (Coastal Karnataka) which is made up of Dakshin Kannada and Uttar Kannada districts shows the least incidence of poverty and also has the least percentage among the poor.[17]

Region 4 (Inland Northern Karnataka) which is made up of mostly dry drought prone districts like Raichur, Gulbarga, Bidar, and Other districts like Belgaum, Bellary, Bijapur, Chitradurga and Dharwar, has the highest incidence of poverty and also about 55 per cent of the poor come from this region.

5.6.4 Urban Poverty : 1973-74 and 1977-78:

In urban Karnataka the incidence of poverty increased from 41.7 per cent in 1973-74 to 50.4 per cent in 1977-78.

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17 This is for 1977-78 because we have done regional breakup only for this period.

In this sector the percentage of poor in the SC/ST increased from 58.3 to 63.3 from 1973-74 to 1977-78 and for the Non SC/ST from 39.9 to 40.8 (Tables 5.13 and 5.14).

Households classified as Production and Related Workers or Farmers, Fishermen, Hunters, Loggers etc., have among the highest incidence of poverty in the urban sector.

However, in this sector, households of all sizes (excluding single member households) have high incidence of poverty.

In this sector also Region 4 has the highest incidence of poverty. It is to this region that the highest percentage of the poor belong. The smallest percentage of the poor come from Region 1.

5.7.1 An alternative method of comparing two size distributions:

The mean consumption of the decile classes of the Non SC/ST (Y-axis) have been plotted against the corresponding

TABLE 5.13 : Profile of the Urban Poor*, Karnataka : 1973-74.

Household Charac-teristics	% distn among all hhs (1)	% distn among poor hhs (2)	% distn among non poor hhs (3)	Incidence of pov. (4)	Rel. Incidence of pov. (5) = (2)/(1)
SOCIAL GP.					
SC/ST	9.76	13.64	6.98	58.33	1.40
Non SC/ST	90.24	86.36	93.02	39.94	0.96
Total	100.00	100.00	100.00		
OCCUPATION**					
1	32.25	24.68	37.67	31.93	0.77
2	33.06	50.00	20.93	63.11	1.51
3	11.92	18.18	7.44	63.64	1.53
4	22.77	7.14	33.96	13.10	0.31
HH SIZE					
1	14.91	1.95	24.19	5.45	0.13
2	8.13	6.49	9.30	33.33	0.80
3	9.49	5.84	12.09	25.71	0.62
4	12.20	13.64	11.16	46.67	1.12
5	11.65	14.29	9.77	51.16	1.23
6	10.30	11.04	9.77	44.74	1.72
7	9.21	10.39	8.37	47.06	1.13
8	9.76	12.34	7.91	56.78	1.26
9	4.33	7.14	2.33	68.75	1.65
10	10.02	16.88	5.11	70.27	1.67
Total	100.00	100.00	100.00		

* Poverty line = Rs.56.64 on 1973-74 prices.

** 1. Sales, Clerical and related workers, 2. Farmer, fishermen etc., 3. Production and related workers, 4. The residual group 'other' in the Urban sector.

TABLE 5.14 : Profile of the Urban Poor*, Karnataka : 1977-78.

Household Charac-teristics	% distn among all hhs (1)	% distn among poor hhs (2)	% distn among non poor hhs (3)	Incidence of pov. (4)	Rel. Incidence of pov. (5)
SOCIAL GP.					
SC/ST	11.03	13.87	8.15	63.31	1.26
Non SC/ST	88.97	86.13	91.85	48.75	0.98
Total	100.00	100.00	100.00		
REGION					
1	7.18	7.43	6.93	52.06	1.03
2	9.92	8.44	11.42	42.86	0.85
3	43.25	35.86	50.75	41.76	0.83
4	39.65	48.27	30.90	61.31	1.22
Total	100.00	100.00	100.00		
OCCUPATION					
1	33.34	31.80	34.89	48.05	0.95
2	12.99	17.34	8.58	67.22	1.33
3	33.36	39.06	27.58	58.96	1.17
4	20.31	11.80	28.95	29.25	0.58
Total	100.00	100.00	100.00		

TABLE 5.14 : (Contd.)

Household Charac- teristics	% distn among all hhs (1)	% distn among poor hhs (2)	% distn among non poor hhs (3)	Incidence of pov. (4)	Rel. Incidence of pov. (5)
HH SIZE					
1	12.01	6.04	18.25	25.75	0.50
2	6.67	3.79	9.69	29.05	0.57
3	10.52	6.87	14.35	33.39	0.65
4	12.62	11.51	13.78	46.66	0.91
5	15.17	16.45	13.83	55.47	1.08
6	12.38	12.81	11.92	52.95	1.03
7	10.38	14.97	5.57	73.79	1.44
8	7.87	10.35	5.27	67.27	1.32
9	4.29	5.82	2.69	69.37	1.36
10	8.10	11.39	4.65	71.92	1.41

*Poverty line = Rs. 73.10 in 1977-78 prices.

values for the SC/ST (Y-axis) for each period (1973-74 and 1977-78) and for the rural and urban sector separately (Figures 5.1 and 5.2).

Generally, all points lie below the line of equality which, of course, suggests that the SC/ST have lower consumption level than the non SC/ST. We further find that the points for the year 1973-74 lie closer to the line of equality (in terms of the perpendicular distance from this line) than the corresponding points for 1977-78 which suggests that the position of the SC/ST vis-a-vis the non SC/ST has deteriorated at all levels of living. In the urban sector also most of the points for 1973-74 lie closer to the equality line than the corresponding 1977-78 points, though, there are a few cases where this is not so. Hence, we cannot make any unequivocal statement as we did in the case of the r ural sector from these I-S curves.

5.7.2 Inequality:

Several inequality indices were computed for the two time periods for both the social groups and separately for the two sectors.

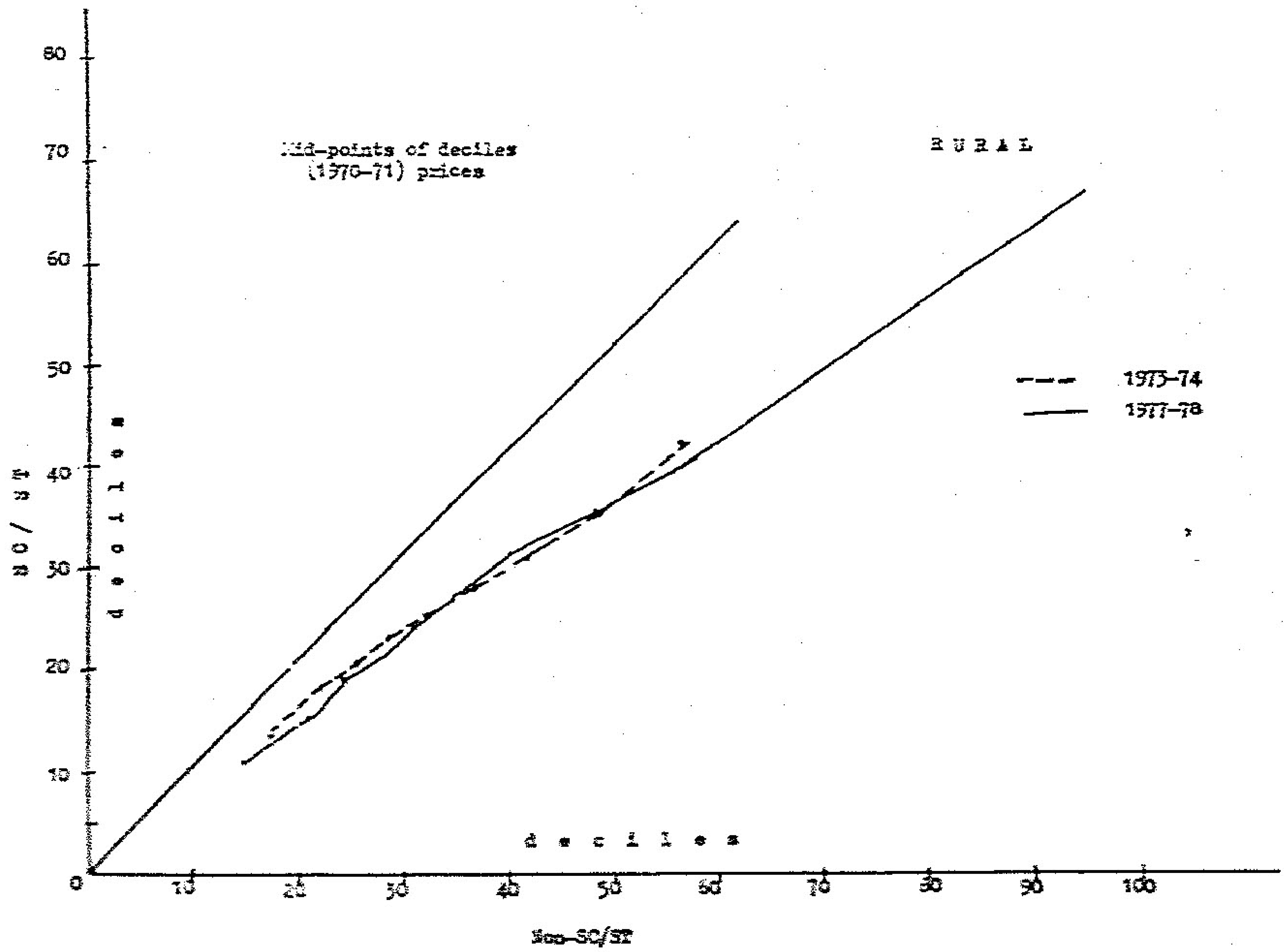

Fig 5.1 : Differentials in levels of living between SC/ST and Non SC/ST,
Rural Karnataka : 1973-74 and 1977-78

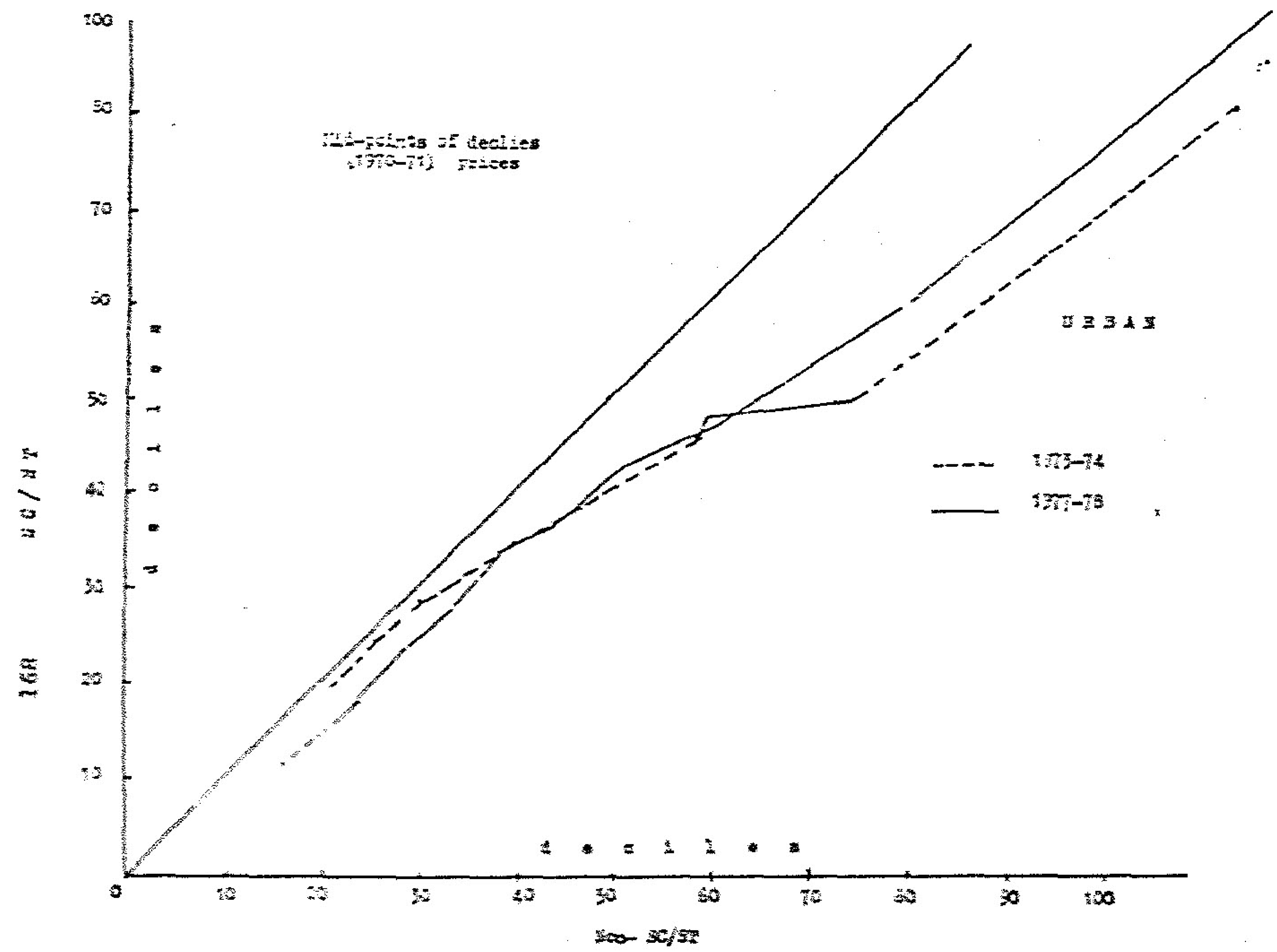

Fig 5.2 : Differentials in levels of living between SC/ST and Non SC/ST,
Urban Karnataka : 1973-74 and 1977-78

For intertemporal comparisons however the Lorenz Ratio figures are used.

We find from our analysis that the inequality in real consumption (as measured by Lorenz Ratios) is relatively less within the SC/ST as compared to the non SC/ST in all cases (Table 5.15) which suggests existence of greater homogeneity with regard to consumption within the SC/ST.

We also find that for all groups the inequality in consumption has increased over time. However, the intertemporal increase was much higher for the SC/ST than for the non SC/ST. The Lorenz ratio for the SC/ST increased by 13.3 per cent and 39.4 per cent in the rural and urban sectors, respectively. However, for the non SC/ST the increase was much lower at 4.8 per cent and 10.2 per cent for the rural and urban sectors, respectively.

There is a view (Isaacs 1965, Singh 1985) that a well recognised heirarchy exists among the SC/ST both in terms of social and economic status. The SC/ST belonging to the higher

TABLE 5.15 : Lorenz Ratios of consumption distribution at constant Prices of 1970-71, Karnataka : All regions, 1973-74 and 1977-78.

	SC/ST			Non SC/ST		
	1973-1974	1977-1978	Change %	1973-1974	1977-1978	Change %
Rural	.2504	.2836	13.26	.2814	.2948	4.76
Urban	.2317	.3230	39.40	.3040	.3351	10.23

heirarchal levels have a stronger tendency to segregat themselves from their fellow SC/ST than their heterogeneous counterparts in the non SC/ST groups. This, coupled with the fact that the government benefits for the SC/ST go mainly to those better off SC/ST, results in a larger increase in the inequality among the SC/ST than among the non SC/ST. Our results would appear to strengthen this view.

Table 5.16 gives the inequality levels in the 4 regions of Karnataka in 1977-78.

In all regions except region 2 inequality is higher among the non SC/ST than among the SC/ST, in both the sectors. In the rural sector, the non SC/ST of Region 3 are most unequal among the non SC/ST of all regions. Among the SC/ST it is the SC/ST of Region 2 who are most unequal.

In urban sector it is Region 4 which shows most inequality among all the non SC/ST and Region 2 among the SC/ST.

TABLE 5.16 : Lorenz Ratios of the consumption distribution at constant prices across Regions, Social groups and sectors, Karnataka : 1977-78

(1970-71 = 100)

Regions / Sector	1		2		3		4	
	SC/ST	Non SC/ST	SC/ST	Non SC/ST	SC/ST	Non SC/ST	SC/ST	Non SC/ST
Rural	.2491	.3148	.3224	.3045	.2683	.3913	.2597	.2820
Urban	.2122	.3054	.8925	.3830	.3039	.5502	.3003	.7142

If one were to use the Atkinson type of index[18] mechanically at three plausible values of ϵ [19] 1.5, 2.0 and 2.5 (Table 5.17) separately for SC/ST and non SC/ST and for 1977-78, by occupation subgroups also (Tables 5.18 and 5.19)

We see that the 'equally distributed equivalent income' (yede) and the Atkinson index (I) both have increased over time in both the sectors for all values of ϵ. In the rural sector, the SC/ST and the non SC/ST inequality coefficients are

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18 Atkinson index which has assumed considerable popularity (Atkinson, 1970) is based explicitly on a Social Welfare function of income distribution if the function

$$U(Y) = \begin{cases} \frac{1}{1-\epsilon} \; y^{1-\epsilon}, & \epsilon \neq 1 \\ \log y, & \epsilon = 1 \end{cases}$$

is taken as the utility function.
(Where measures the degree of inequality aversion) then the equally distributed equivalent income (yede) is given by n U(yede) $= \Sigma\ U(y_i)$ where $y \geq 0$ is the income of ith individual and the Atkinson index I is defined as $(1 - \frac{yede}{\mu})$.

19 Stern (1977) after reviewing the literature on the elasticity of marginal utility of income presents a number of arguments in support of values between 1.5 and 2.5.

TABLE 5.17 : Equally distributed consumption (in current rupees) and Atkinson Inequality index, across social groups. Karnataka : 1973-74 and 1977-78.

(Rural)

Households	0		1.5		2.0		2.5		Sample size (of hhs)	
	1973-1974	1977-1978	1973-1974	1977-1978	1973-1974	1977-1978	1973-1974	1977-1978	1973-1974	1977-1978
SC/ST	43.66	82.73	35.72 (.18)	42.61 (.48)	33.10 (.24)	39.88 (.52)	29.94 (.31)	37.52 (.56)	119	309
Non SC/ST	59.88	138.05	48.57 (.19)	57.10 (.58)	45.91 (.23)	53.13 (.61)	43.59 (.27)	49.71 (.64)	501	1588
All	56.77	129.04	45.61 (.20)	54.10 (.58)	42.74 (.25)	50.23 (.61)	39.82 (.30)	46.90 (.63)	620	1897

TABLE 5.17 : (Contd.)

(Urban)

Households	0		1.5		2.0		2.5		Sample size (of hhs)	
	1973-1974	1977-1978	1973-1974	1977-1978	1973-1974	1977-1978	1973-1974	1977-1978	1973-1974	1977-1978
SC/ST	54.50	72.21	63.01 (.22)	55.01 (.24)	58.58 (.28)	49.77 (.31)	54.79 (.32)	43.77 (.40)	36	135
Non SC/ST	67.95	252.23	61.41 (.22)	68.29 (.73)	54.15 (.27)	56.55 (.78)	53.59 (.32)	36.15 (.86)	333	1112
All	66.64	232.74	49.12 (.12)	61.58 (.74)	46.99 (.13)	54.60 (.77)	44.96 (.16)	53.72 (.77)	369	1247

TABLE 5.10 : Equally distributed consumption (in current rupees) and Atkinson inequality index, across Social groups and occupation groups and regions, Karnataka : 1973-74 and 1977-78.

Rural SC/ST

Region 1	Yede			I		
Occupation ∈	1.5	2.0	2.5	1.5	2.0	2.5
Occupation						
1	..	..	..	..	..	..
2	48.07	46.88	45.73	.6937	.7013	.7085
3	68.99	66.09	63.42	.1341	.1705	.2041
Region 2						
Occupation						
1	56.03	51.13	46.19	.1693	.2418	.3151
2	36.85	34.64	32.86	.2243	.2707	.3082
3	32.77	31.08	29.57	.1616	.2050	.2436
Region 3						
Occupation						
1	71.09	62.44	54.88	.6578	.6994	.7358
2	42.97	40.43	38.26	.6898	.7082	.7238
3	53.76	51.20	48.78	.1317	.1729	.2121
Region 4						
Occupation						
1	43.44	40.68	38.38	.2089	.2592	.3009
2	37.10	35.34	33.73	.1481	.1884	.2254
3	43.08	41.04	39.07	.1310	.1723	.2120

TABLE 5.10 : (Contd.)

Rural Non SC/ST

Region	Yede			I		
Occupation	1.5	2.0	2.5	1.5	2.0	2.5
Region 1						
Occupation						
1	..	..	..	..	..	..
2	61.77	58.09	55.51	.7777	.7909	.8002
3	77.84	72.97	69.00	.4656	.4990	.5262
Region 2						
Occupation						
1	66.91	61.12	56.78	.8073	.8240	.8365
2	50.64	46.67	42.47	.1876	.2514	.3188
3	53.84	49.41	45.96	.7720	.7908	.8059
Region 3						
Occupation						
1	66.26	61.41	57.33	.6519	.6774	.6998
2	50.63	48.23	46.00	.1406	.1813	.2191
3	65.14	61.57	58.08	.1559	.2021	.2474
Region 4						
Occupation						
1	60.76	57.84	55.17	.1601	.2005	.2374
2	42.46	40.37	38.46	.6340	.6519	.6685
3	53.20	48.72	44.65	.5529	.5905	.6248

TABLE 5.19 : Equally distributed consumption (in current rupees) and Atkinson inequality index, across Social groups and occupation groups and regions, Karnataka : 1973-74 and 1977-78.

Urban SC/ST

Region	Yede			I		
Occupation	1.5	2.0	2.5	1.5	2.0	2.5
Region 1						
Occupation						
1	..	..	..	..	..	..
2	..	..	..	..	..	..
3	52.09	50.74	49.48	.0074	.1013	.1235
4	159.77	159.63	159.49	.0027	.0036	.0045
Region 2						
Occupation						
1	30.37	27.10	24.39	.2447	.3262	.3935
2	..	..	..	..	..	..
3	35.30	32.29	29.84	.7441	.7657	.7837
4	216.65	135.87	114.15	.9892	.9932	.9943
Region 3						
Occupation						
1	69.62	66.67	64.29	.1654	.2008	.2293
2	34.86	33.96	33.11	.0861	.1097	.1320
3	67.27	63.85	60.84	.1697	.2119	.2490
4	57.66	47.03	37.76	.3348	.4574	.5643
Region 4						
Occupation						
1	51.90	48.36	44.98	.1780	.2341	.2876
2	49.36	45.94	43.11	.2159	.2702	.3152
3	44.84	42.18	39.66	.1590	.2089	.2563
4	63.83	55.59	48.34	.2659	.3606	.4440

TABLE 5.19 : (Contd.)

Urban Non SC/ST

Region	Yedo			I		
Occupation	1.5	2.0	2.5	1.5	2.0	2.5
Region 1						
Occupation	74.54	70.10	66.55	.2351	.2806	.3171
1	74.54	70.10	66.55	.2351	.2806	.3171
2	64.00	63.09	62.17	.0421	.0557	.0695
3	64.33	60.04	57.71	.1613	.2069	.2477
4	87.62	79.95	73.76	.3162	.3761	.4244
Region 2						
Occupation						
1	77.55	70.10	64.17	.2996	.3669	.4204
2	59.99	56.38	53.13	.1706	.2205	.2654
3	65.91	59.13	53.34	.2752	.3497	.4133
4	144.62	129.37	116.04	.2708	.3477	.4149
Region 3						
Occupation						
1	79.10	70.23	60.15	.8091	.8306	.8549
2	64.60	61.90	59.47	.1214	.1580	.1921
3	69.60	65.54	61.81	.1876	.2358	.2793
4	67.27	27.60	11.44	.5354	.8008	.9210
Region 4						
Occupation						
1	70.37	63.86	58.37	.0788	.8099	.8994
2	50.63	47.50	45.07	.2162	.2634	.3023
3	56.16	53.22	50.77	.8761	.8825	.8880
4	72.62	59.58	44.58	.3342	.4537	.5913

close to each other showing that the SC/ST and non SC/ST distributions are similar about their respective means. But in the urban sector this is not true. The inequality coefficients are different here for the two distributions.

For the larger data set of 1977-78, yede and the Atkinson index were computed for different occupations (3 in the Rural sector and 4 in the urban sector). (Table 5.18 and 5.19). Here we see that the yede does not vary much over occupation group within a social group. Same is the case with the Atkinson index. This shows that the occupation group wise distributions are similar, in each sector and social group.

The Atkinson index is a special case of the class of measures described in Bentzel (1970) which rest on the assumption of convexity of the aggregate welfare function. For a survey on these measures see Iyengar (1978).

However, as pointed out earlier the use of these indices is questionable in the Indian context where we do not have any data on inter-personal distribution of income.

Another measure of inequality which is a formalised version of the range is the Extreme Mean Disparity Ratio (EMDR) described in Iyengar and Vani (1986). EMDR is the ratio of the mean per capita expenditure of the topmost decile group to that of the bottom-most one. These ratios are tabulated in Table 5.20. In general these ratios have increased over time.

5.8 Decomposition by Social group : The results:

Inequality in household expenditure per capita has been decomposed into the within social group component and the between social group component by using the three decomposable inequality measures already described in chapter 3 and discussed in Section 5.3. These three inequality measures are the Theil entropy index T, the Theil second measure L, and the variance of log-income V, or varlog. The decompositions have been done with respect to social group (i.e., SC/ST and Non SC/ST) separately for each Sector.[20]

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[20] Rural and Urban sector were treated separately because of social and cultural differences in the life styles in the two sectors.

TABLE 5.20 : Extreme Mean Disparity Ratio by sectors, Karnataka : 1973-74 and 1977-78.

Sector	1973-74		1977-78							
	All Regions		Region 1		Region 2		Region 3		Region 4	
	SC/ST	Non SC/ST	SC/ST	Non SC/ST	SC/ST	Non SC/ST	SC/ST	Non SC/ST	SC/ST	Non SC/ST
Rural	4.85	5.52	4.15	6.73	6.86	6.41	6.18	10.85	4.98	5.60
Urban	4.64	6.19	..	6.73	7.85	10.67	7.22	4.59	7.02	5.03

Table 5.21 and Table 5.22 presents a breakdown of the household per capita expenditure distribution by social group (SC/ST Vs non SC/ST) for Rural Karnataka in 1973-74 and 1977-78 respectively.

The between social group contribution to inequality is 3.9 per cent by Theil T, 4.8 per cent by Theil L and 3.7 per cent by Varlog in 1973-74. For 1977-78 the corresponding numbers are 0.7 per cent, 4.7 per cent and 4.2 per cent.

The fact that Theil L yields a between social group contribution of 4.8 per cent (in 1973-74) means that if the between social group differences in arithmetic mean expenditure (used here as a proxy for income) were eliminated, but inequality within each social group remained the same the reduction in overall inequality would be just 4.8 per cent. The fact that Varlog yields a between social group contribution of 3.7 per cent (in 1973-74) implies that if the differences in geometric mean between the SC/ST and non SC/ST were eliminated but inequality within each of the two groups remained the same, the reduction in overall inequality would be a mere 3.7 per cent.

TABLE 5.21 : Decomposition* of inequality in consumption by Social Groups, Rural Karnataka : 1973-74

Social Group	Gini	Theil T	Theil L	Varlog	GM	AM	Sample Size
SC/ST	.2786	.1502	.1351	.26	38.14	43.66	119
Non SC/ST	.3017	.1704	.1477	.26	51.66	59.88	501
All	.3051	.1744	.1525	.27	48.74	56.77	620

Between Social Group	Theil T	3.9
Contribution to	Theil L	4.8
Inequality (%)	Varlog	3.7

* All calculations for the decompositions are in current prices.

TABLE 5.22 : Decomposition of inequality in consumption by Social Groups, Rural Karnataka : 1977-78

Social Group	Gini	Theil T	Theil L	Varlog	GM	AM	Sample Size
SC/ST	0.2836	1.3989	.5806	.3921	46.29	82.73	309
Non SC/ST	0.2948	1.8798	.7645	.4460	64.27	138.05	1588
All	0.3498	1.8430	.7704	.4565	59.72	129.04	1897

Between Social Group	Theil T	.72
Contribution to	Theil L	4.65
Inequality (%)	Varlog	4.22

Thus, if the governments preferential policies aimed at the amelioration of the SC/ST can be taken to imply the elimination of inequality (in arithmetic incomes) between the SC/ST and the rest of the population (i.e., the non SC/ST), leaving unchanged the inequality within each group the very limited effect of these policies would be to bring about a reduction of atmost 4.8 per cent in inequality.

For 1977-78 these numbers have been calculated for each of the four regions separately. The between social group contribution in rural Karnataka is atmost 9.7 per cent. (Tables 5.23 to 5.26, last three rows)

Decompositions for Urban Karnataka also present a very similar picture (Table 5.27 and 5.28). The between social group contribution to total inequality is 2.8 per cent by Theil T, 3.2 per cent by Theil L and 2.2 per cent by Varlog in 1973-74. The corresponding numbers of 1977-78 are 1.4, 4.0 and 9.3.

TABLE 5.23 : Decomposition of inequality in consumption by Social Group and occupation, Rural Karnataka : Region 1, 1977-78

Social Group \ Occupation		Cultivators & Farmers Occ Gp 1	Agricultural Labourers Occ Gp 2	Others Occ Gp 3	All Occ.	Bet Occ. Gp. Cont. to ineq. (%)
1		2	3	4	5	6
SC/ST	Gini	0	.7269	.1135	.2491	
	Theil T	0	.0583	.0931	.1063	T 12.57
	Theil L	0	.0575	.0874	.1032	L 14.08
	Varlog V	0	.1100	.1633	.2000	V 13.03
	GM	134.61	49.39	67.42	66.17	
	AM	134.61	52.31	73.58	73.37	
	Range	0	42.55	122.70	123.44	
	S Size	1	3	9	13	
Non SC/ST	Gini	.2866	.7962	.6755	.3148	
	Theil T	.1426	2.3474	1.6340	1.7405	T 5.28
	Theil L	.1322	1.3833	.8765	.8347	L 12.18
	Varlog V	.2400	.7600	.6300	0.5200	V 0.92
	GM	82.07	69.67	86.99	79.99	
	AM	94.58	277.85	209.01	184.30	
	Range	300.61	10055.34	6319.95	10055.34	
	S Size	67	50	54	171	

TABLE 5.23 : (Contd.)

1		2	3	4	5	6
All	Gini	0.2854	0.7910	0.6546	0.3214	
	Theil T	.1426	2.3834	1.5879	1.7089	T 3.00
	Theil L	.1322	1.3557	.8158	.8046	L 10.68
	Varlog V	.2400	.7295	.5712	.4998	V 1.08
	GM	83.30	60.33	83.89	78.92	
	AM	95.17	265.08	189.66	176.46	
	Range	300.61	10055.34	6319.95	10055.34	
	S Size	60	53	63	184	
Between Social Gp. Cont. to ineq. (%)						
	Theil T	2.08	1.19	2.47	9.59	
	Theil L	1.47	3.50	6.38	2.68	
	Varlog V	1.47	.87	1.38	.48	

Between Social Group and Occupation Group Contribution to Inequality (%)

Theil T 6.23
Theil L 14.68
Varlog V 2.24

TABLE 5.24 : Decomposition of Inequality in consumption, by social group and Occupation, Rural Karnataka : Region 2, 1977-78.

Social Group \ Occupation		Cultivators & Farmers Occ Gp 1	Agricultural Labourers Occ Gp 2	Others Occ Gp 3	All Occ.	Bet. Occ. Gp. Cont. to Ineq. (%)	
1		2	3	4	5	6	
SC/ST	Gini	.2101	.3300	.2562	.3224		
	Theil T	.0049	.2033	.1222	.1040	T	6.60
	Theil L	.1009	.1014	.1190	.1752	L	6.57
	Varlog V	.2700	.3100	.2300	.3219	V	7.15
	GM	60.40	39.62	34.67	41.65		
	AM	67.44	47.5J	39.09	49.62		
	Range	04.63	140.90	60.44	140.98		
	S Size	7	34	5	46		
Non SC/ST	Gini	.0219	.2023	.7645	.3045		
	Theil T	2.4245	.1202	2.2160	2.3672	T	7.19
	Theil L	1.4959	.1342	1.3400	1.2606	L	10.33
	Varlog V	.9000	.2000	.0300	.7160	V	3.62
	GM	77.01	54.51	61.95	66.79		
	AM	347.29	62.34	236.60	237.50		
	Range	16715.47	169.56	7150.01	16726.42		
	S Size	120	75	41	236		

TABLE 5.24 : (Contd.)

1		2	3	4	5	6	
All	Gini	0.8164	0.3094	0.7036	0.3189		
	Theil T	2.4253	.1548	2.2342	2.3500	T	8.59
	Theil L	1.4630	.1566	1.3080	1.2704	L	26.58
	Varlog V	.0606	.3279	.0075	.6868	V	5.41
	GM	76.04	49.35	64.32			
	AM	331.06	57.71	215.13	206.85		
	Range	16715.64	169.56	7150.81	16726.42		
	S Size	127	109	46	282		
Between Social Gp. Cont. to ineq. (%)							
	Theil T	1.12	4.75	2.67	3.03		
	Theil L	3.07	4.08	7.69	9.71		
	Varlog V	.00	11.76	5.29	4.44		

Between Social Group and Occupation Group Contribution to Inequality (%)	Theil T 9.08 Theil L 29.65 Varlog V 8.01

TABLE 5.25 : Decomposition of Inequality in consumption, by social group and Occupation group Rural Karnataka - Region 3, 1977-78

Social Group \ Occupation		Cultivators & Farmers Occ Gp 1	Agricultural Labourers Occ Gp 2	Others Occ Gp 3	All Occ.	Bet.Occ. Gp. Cont. to Ineq. (%)
1		2	3	4	5	6
SC/ST	Gini	.2343	.3566	.1235	.2603	
	Theil T	1.3090	2.2544	.0900	1.9169	T 2.43
	Theil L	.9005	1.0006	.0930	.9500	L 5.56
	Varlog V	.8900	.5100	.1900	.5762	V 0.26
	GM	84.40	47.02	56.41	53.41	
	AM	207.71	130.53	61.91	139.23	
	Range	2631.08	7155.56	99.80	7157.43	
	S Size	20	79	17	116	
Non SC/ST	Gini	.6972	.2516	.2635	.3913	
	Theil T	1.9936	.1036	.1161	1.6801	T 7.03
	Theil L	.9405	.1020	.1139	.6941	L 19.31
	Varlog V	.5700	.2000	.2200	.4220	V 4.73
	GM	73.73	53.20	60.86	66.63	
	AM	190.35	50.91	77.17	132.99	
	Range	16722.59	156.09	214.47	16722.59	
	S Size	250	135	86	479	

TABLE 5.25 : (Contd.)

1		2	3	4	5	6
ALL	Gini	0.6967	0.5297	0.2620	0.3572	
	Theil T	1.9405	1.4397	0.2264	1.7202	T 4.12
	Theil L	0.9453	0.5523	0.1136	0.7457	L 11.50
	Varlog V	0.5954	0.3179	0.2214	0.4586	V 6.05
	GM	74.45	50.03	66.64	63.67	
	AM	191.60	80.30	74.65	134.20	
	Range	16722.59	156.09	214.47	16722.59	
	S Size	278	214	103	595	
Between Social Gp. Cont. to ineq. (%)						
	Theil T	.01	6.28	1.34	0.01	
	Theil L	.03	16.13	2.80	0.02	
	Varlog V	.40	1.12	2.88	1.63	

Between Social Group and Occupation Group Contribution to Inequality (%)

Theil T	6.00
Theil L	15.80
Varlog V	6.80

TABLE 5.26 : Decomposition of Inequality in consumption, by social group and Occupation, Rural Karnataka : Region 4, 1977-78

Social Group \ Occupation		Cultivators & Farmers Occ Gp 1	Agricultural Labourers Occ Gp 2	Others Occ Gp 3	All Occ.	Bet. Occ. Gp. Cont. to Ineq. (%)
1		2	3	4	5	6
SC/ST	Gini	.3104	.2596	.2370	.2597	
	Theil T	.1646	.1165	.0914	.1244	T 3.19
	Theil L	.1610	.1096	.0929	.1181	L 3.25
	Varlog V	.3100	.2100	.1900	.2200	V 2.28
	GM	46.74	39.03	44.44	40.97	
	AM	54.91	43.55	49.58	46.10	
	Range	122.74	149.07	86.93	149.07	
	S Size	19	94	21	134	
Non SC/ST	Gini	.2737	.6799	.6056	.2820	
	Theil T	.1379	2.5647	1.5937	1.5408	T 1.76
	Theil L	.1218	.9415	.7033	.5524	L 5.08
	Varlog V	.2200	.3300	.4800	.3400	V 9.00
	GM	64.05	45.25	46.41	55.72	
	AM	72.34	116.01	118.99	96.80	
	Range	543.94	16722.24	7170.83	16722.24	
	S Size	318	249	135	702	

TABLE 5.26 : (Contd.)

1		2	3	4	5	6	
All	Gini	0.2779	0.6292	0.5864	0.2743		
	Theil T	.1400	2.3269	1.5307	1.4406	T	1.01
	Theil L	.1259	.7943	.6571	.5139	L	2.05
	Varlog V	.2090	.3014	.4412	.3334	V	12.85
	GM	62.92	43.45	46.14	53.04		
	AM	71.36	96.15	109.65	88.68		
	Range	543.94	16722.24	7170.83	16722.24		
	S Size	337	343	156	836		
Between Social Gp. Cont. to ineq. (%)							
	Theil T	1.22	2.04	1.86	1.70		
	Theil L	1.40	10.17	5.40	6.07		
	Varlog V	.64	1.45	.05	3.21		

Between Social Group and Occupation Group Contribution to Inequality (%)

Theil T	3.53
Theil L	10.75
Varlog V	11.50

TABLE 5.27 : Decomposition of Inequality in Consumption by Social Group, Urban Karnataka : 1973-74

Indices / Social Group	S Size	Gini	Theil T	Theil L	Varlog V	GM	AM
SC/ST	36	.2296	.0841	.0862	.1800	51.33	55.95
Non SC/ST	333	.3287	.1773	.1721	.3300	68.19	80.99
All	369	.3260	.1757	.1692	.3200	66.33	78.55

Between Social Group
Contribution to Inequality (%)

Theil T	2.8
Theil L	3.2
Varlog V	2.2

TABLE 5.28 : Decomposition of Inequality in Consumption, by Social Group, Urban Karnataka : 1977-78.

Social Group	Gini	Theil T	Theil L	Varlog V	GM	AM	S Size
SC/ST	0.3215	.1709	.1734	.3851	60.71	72.21	135
Non SC/ST	0.6583	2.8877	1.1986	.6172	76.07	252.23	1112
All	0.7123	2.8349	1.3926	.7260	57.82	232.74	1247

Between Social Group Contribution to Inequality (%)

Theil T	1.35
Theil L	3.95
Varlog V	9.28

For the urban sector in 1977-78 also the decompositions have been done for each of the four regions separately (Tables, 5.29 to 5.32). The between social group contribution is at most 7.3 per cent.

5.9 Decomposition by occupation category : The Results:

The government, through its ameliorative policies of education and economic uplift of the SC/ST is making an attempt to reduce (and eventually eliminate) the traditional identification of the SC/ST with low paying and degrading occupations. This section examines the extent to which the SC/ST are identified with particular occupations, and the effects of this on inequality in the distribution of households by household expenditure per capita.

Tables 5.23 to 5.26 and 5.29 to 5.32 present the breakdown of households according to three broad occupational categories cross classified by social group. The table shows the four inequality measures (Gini, Theil T, Theil L and Varlog),

TABLE 5.29 : Decomposition of inequality in consumption by Social Group and Occupation, Urban Karnataka : Region 1, 1977-78.

Occupation / Social Group	Sales, Clerical and rel. workers Occ. Gp 1	Farmers, fishermen Occ Gp 2	Prod. and rel. workers Occ Gp 3	Others Occ Gp 4	All Occ.	Bet. Occ. Gp. Cont. to Ineq. (%)
1	2	3	4	5	6	7
SC/ST						
Gini	-	-	.1142	.1158	.2122	
Theil T	-	-	.0515	.0018	.1343	T 89.01
Theil L	-	-	.0534	.0018	.1578	L 82.51
Varlog V	-	-	.2174	.0071	.4118	V 72.74
GM	-	-	53.52	159.91	92.52	
AM	-	-	56.46	160.20	108.33	
Range	-	-	35.93	19.12	35.93	
S Size	0	0	2	2	4	
Non SC/ST						
Gini	.3481	.1344	.2710	.3988	.3054	
Theil T	.2269	.0280	.1161	.3000	0.2106	T 10.29
Theil L	.1943	.0286	.1178	.2724	0.1785	L 11.80
Varlog V	.3200	.0600	.2400	.4700	0.3373	V 5.31
GM	80.24	62.92	68.19	97.59	75.66	
AM	97.45	66.81	76.71	128.15	90.45	
Range	404.74	47.20	167.32	378.48	409.07	
S Size	31	10	37	14	92	

TABLE 5.29 : (Contd.)

1	2	3	4	5	6	7
All						
Gini	.2879	.1523	.2704	.4775	.2253	
Theil T	.2269	.0280	.1153	.2578	.2075	T 12.50
Theil L	.1943	.0286	.1166	.2415	.2091	L 26.67
Varlog V	.3200	.0600	.2417	.4388	.3430	V 18.10
GM	80.24	64.92	67.34	103.80	73.99	
AM	97.45	66.81	75.67	132.16	91.20	
Range	404.74	47.20	167.32	378.48	409.07	
S Size	31	10	39.	16	96	
Between Social Gp. Cont. to ineq. (%)						
Theil T	-	-	1.45	1.17	.32	
Theil L	-	-	1.80	1.20	.35	
Varlog V	-	-	1.18	6.08	.75	

Between Social Group and Occupation Group Contribution to Inequality (%)

Theil T	13.19
Theil L	27.31
Varlog V	19.74

TABLE 5.30 : Decomposition of inequality in consumption by Social Group and Occupation, Urban Karnataka : Region 2, 1977-78.

Occupation / Social Group	Sales, Clerical and rel. workers Occ Gp 1	Farmers, fishermen Occ Gp 2	Prod. and rel. workers Occ Gp 3	Others Occ Gp 4	All Occ.	Bet. Occ. Gp. Cont. to Ineq. (%)
1	2	3	4	5	6	7
<u>SC/ST</u>						
Gini	.2387	-	.2949	.0984	.3103	
Theil T	.1325	-	.1535	.0186	.2150	T 50.3
Theil L	.1709	-	.1716	.0181	.2398	L 49.90
Varlog V	.4200	-	.3700	.0350	.5452	V 49.60
GM	33.90	-	116.20	82.97	68.88	
AM	40.22	-	137.95	84.48	87.55	
Range	43.23	-	61.04	7.35	65.67	
S Size	3	-	3	3	9	
<u>Non SC/ST</u>						
Gini	.3840	.2734	.3504	.3403	.3830	
Theil T	.2405	.1187	.1068	.1952	.2688	T 23.69
Theil L	.2431	.1237	.2113	.2058	.2716	L 22.60
Varlog V	.4700	.2500	.4400	.4300	.5327	V 20.60
GM	86.43	63.91	73.61	161.43	93.66	
AM	110.73	72.33	90.93	198.32	122.89	
Range	347.63	126.58	192.66	601.41	621.26	
S Size	31	11	18	20	80	

TABLE 5.30 : (Contd.)

1	2	3	4	5	6	7
All						
Gini	.3969	.2734	.4559	.3503	.3942	
Theil T	.2602	.1187	.2009	.2112	.2692	T 18.77
Theil L	.2682	.1237	.2173	.2148	.2732	L 17.81
Varlog V	.4730	.2500	.4555	.4240	.5425	V 20.99
GM	79.92	63.91	78.58	148.01	90.79	
AM	104.51	72.33	97.65	183.47	119.32	
Range	361.73	126.58	194.00	621.26	626.83	
S Size	34	11	21	23	89	
Between Social Gp. Cont. to ineq. (%)						
Theil T	9.00	-	6.40	12.58	1.62	
Theil L	11.76	-	5.40	15.59	1.70	
Varlog V	15.05	-	5.6	11.85	1.60	

Between Social Group and Occupation Group Contribution to Inequality (%)

Theil T 31.67
Theil L 26.39
Varlog V 24.79

TABLE 5.31 : Decomposition of inequality in consumption by Social Group and Occupation, Urban Karnataka : Region 3, 1977-78.

Occupation / Social Group	Sales, Clerical and rel. workers Occ Gp 1	Farmers, fishermen Occ Gp 2	Prod. and rel.workers Occ Gp 3	Others Occ Gp 4	All Occ.	Bet.Occ.Gp. Cont. to Ineq.(%)
1	2	3	4	5	6	7
SC/ST						
Gini	.2776	.1915	.2781	.3403	.3039	
Theil T	.1500	.0637	.1424	.1927	.1663	T 8.33
Theil L	.1301	.0616	.1297	.2393	.1647	L 10.49
Varlog V	.2200	.1200	.2400	.6000	.3348	V 9.84
GM	73.24	35.86	71.17	68.23	67.35	
AM	83.42	38.14	81.02	86.68	79.41	
Range	191.95	37.40	236.08	196.15	253.44	
S Size	10	4	28	11	53	
Non SC/ST						
Gini	.8281	.2318	.2962	.3637	.5502	
Theil T	3.1791	.0845	.1554	.2188	2.4787	T 9.74
Theil L	1.5252	.0861	.1433	.3245	.9209	L 27.96
Varlog V	.6800	.1700	.2700	1.1000	.5999	V 3.50
GM	90.18	67.54	74.31	104.67	84.77	
AM	414.48	73.61	85.76	144.79	212.91	
Range	50650.82	131.61	445.45	456.25	50650.82	
S Size	178	41	181	105	505	

TABLE 5.31 : (Contd.)

1	2	3	4	5	6	7
<u>All</u>						
Gini	0.8226	0.2463	0.2946	0.3697	.7842	
Theil T	3.1707	.0958	.1539	.2258	2.4158	T 9.87
Theil L	1.4928	.0986	.1417	.3263	.8813	L 28.31
Varlog V	.6577	.1981	.2663	1.0683	.5793	V 3.44
GM	89.19	63.05	73.88	100.51	82.94	
AM	396.71	70.46	85.13	139.28	200.23	
Range	50650.82	138.44	445.45	456.25	50650.82	
S Size	188	45	209	116	558	
<u>Between Social Gp. Cont. to ineq. (%)</u>						
Theil T	.80	12.87	.12	3.77	1.00	
Theil L	2.80	14.88	.13	3.02	3.66	
Varlog V	.33	16.39	.10	1.47	0.79	

Between Social Group and Occupation Group Contribution to Inequality (%)

Theil T 10.64
Theil L 30.28
Varlog V 4.60

TABLE 5.32 : Decomposition of inequality in consumption, by Social Group and Occupation, Urban Karnataka : Region 4, 1977-78.

Occupation / Social Group	Sales, Clerical and rel. workers Occ Gp 1	Farmers, fishermen Occ Gp 2	Prod. and re.workers Occ Gp 3	Others Occ Gp 4	All Occ.	Bet.Occ.Gp. ... Cont. to Ineq.(%)
1	2	3	4	5	6	7
SC/ST						
Gini	.2634	.3205	.2591	.2912	.3003	
Theil T	.1247	.1651	.1081	.1465	.1457	T 7.99
Theil L	.1281	.1652	.1133	.1855	.1506	L 7.38
Varlog V	.2700	.3200	.2400	.4500	.3093	V 4.96
GM	55.55	53.37	47.61	72.23	53.83	
AM	63.14	62.95	53.32	86.95	62.58	
Range	150.12	141.46	112.25	130.58	155.39	
S Size	20	18	23	8	69	
Non SC/ST						
Gini	.8855	.3300	.8867	.5703	.7142	
Theil T	3.1817	.1899	3.7852	.2811	3.356	T 6.6
Theil L	1.9579	.1723	2.0022	.2631	1.7057	L 23.09
Varlog V	.9300	.3100	0.5588	.5300	.6640	V 5.72
GM	81.92	54.38	61.19	83.84	64.65	
AM	580.39	64.60	453.10	109.07	355.89	
Range	50214.42	244.91	50200.60	700.35	50222.02	
S Size	141	78	129	87	435	

TABLE 5.32 : (Contd.)

1	2	3	4	5	6	7
All						
Gini	0.8782	0.3292	0.8752	0.3792	.8641	
Theil T	3.2200	.1854	3.8089	.2736	3.3415	T 6.20
Theil L	1.8900	.1709	1.8969	.2585	1.6110	L 21.97
Varlog V	.8600	.3119	.5112	.5244	.6194	V 5.21
GM	78.07	54.19	58.90	81.97	63.05	
AM	516.14	64.29	392.61	107.21	315.73	
Range	50214.42	244.91	50207.06	700.35	50222.02	
S Size	161	96	152	95	504	
Between Social Gp. Cont. to ineq. (%)						
Theil T	2.59	.03	2.60	.64	2.17	
Theil L	8.38	.03	9.51	.72	7.34	
Varlog V	1.90	.02	1.58	.22	.64	

Between Social Group and Occupation Group Contribution to Inequality (%)

Theil T	8.64
Theil L	28.52
Varlog V	6.26

the geometric means and arithmetic mean, the sample size and range for Rural and Urban Karnataka and the between occupation gp social gp contributions to total inequality.

In 1973-74, the SC/ST constitute about 19 per cent of the population which is almost identical with the SC/ST proportion in the population of the State of Karnataka as a whole (1971 census). The SC/ST are, however, not represented in these proportions within various occupations, and severe divergence exists in some. For example, the SC/ST constitute 33 per cent of all agricultural labourers but only 11 per cent of the cultivators and formers in Rural Karnataka. In the urban sector in 1973-74 the SC/ST constitute about 10 per cent of the population but about 21 per cent of the production and related workers, transport, equipment and other workers belong to the SC/ST, 14 per cent of the occupation group Farmers, Fishermens, Hunters etc., are SC/ST and in the category of sales workers and clerical workers about 8 per cent are SC/ST.

In 1977-78 the SC/ST constitute about 16 per cent of the population in Rural Karnataka. But 29 per cent of all agricultural labourers are SC/ST and only 9 per cent of the cultivators and farmers are SC/ST.

In the urban sector in 1977-78 about 11 per cent of the population is SC/ST. The occupational distribution is a little more encouraging in this case with 8 per cent of the clerical and sales workers being SC/ST, 13 per cent of Farmers, Fishermen etc., and 13 per cent of production and related workers being SC/ST. (Tables 5.33 and 5.34)

But the picture in the rural sector shows imbalances in the pattern of employment, with the SC/ST concentrated in less remunerative occupations and the non SC/ST in the more remunerative ones. These imbalances account for a large part of the disparities between the two social groups.

In 1973-74, within each occupation group the SC/ST mean income is invariably less than the non SC/ST mean income for both rural and urban Karnataka. (Table 5.35)

TABLE 5.33 : Percentage of SC/ST in various occupation groups, Rural Karnataka : 1973-74 and 1977-78.

Occupation / Social Group	Cultivators and farmers		Agricultural Labourers		Others	
	1973-1974	1977-1978	1973-1974	1977-1978	1973-1974	1977-1978
SC/ST	11.11	9.11	33.48	29.23	11.11	14.07
Non SC/ST	88.89	90.89	66.52	70.77	88.89	85.93
Total	100.00	100.00	100.00	100.00	100.00	100.00

TABLE 5.34 : Percentage of SC/ST in various occupation groups, Urban Karnataka : 1973-74 and 1977-78.

Occupation Group / Social Group	Sales, Clerical and rel. workers		Farmers Fishermen, etc.,		Prod. and rel. workers		Others	
	1973-1974	1977-1978	1973-1974	1977-1978	1973-1974	1977-1978	1973-1974	1977-1978
SC/ST	7.56	8.20	12.30	13.30	20.45	13.40	3.57	10.40
Non SC/ST	92.44	91.80	87.70	86.70	79.55	86.60	96.43	89.60
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

TABLE 5.35 : Disparity Ratios by occupation groups: Rural Karnataka : 1973-74 and 1977-78.

Occupation	1973-74	1977-78
Cultivators and Farmers	1.25	1.27
Agricultural Labourers	1.23	1.36
Others	1.12	2.44
All	1.37	1.70

The overall disparity ratio[21] between the SC/ST and non SC/ST in 1973-74 for the rural sector is 1.4 whereas the disparity ratios within occupation are somewhat less than this number (1.3 for cultivators and farmers, 1.2 for Agricultural labourers and 1.1 for others).

In 1977-78, the overall disparity r atio has increased to 1.7 in the rural sector as a whole. Region 2 shows the highest disparity ratio of 4.8 whereas in Region 3 the SC/ST are actually slightly better off on the average with a disparity (.9)!

Within each occupation group, however, the disparities have widened, in general, with disparity ratios going as high as 6.1. (Table 5.36).

In the urban sector the overall disparity ratio is 1.5 in 1973-74 and the disparity ratios within occupations are a little less than this 1.4 for sales and clerical workers,

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$$\text{Disparity Ratio} = \frac{\text{Mean income of non SC/ST}}{\text{Mean income of SC/ST}}$$

TABLE 5.36 : Disparity Ratios, by region and occupation, Rural Karnataka : 1977-78.

Occupation \ Region	1	2	3	4
Cultivators and Farmers	.71	5.15	.92	1.32
Agricultural Labourers	5.31	1.31	.43	2.66
Others	2.84	6.05	1.25	2.40
All	2.51	4.79	.96	2.10

1.4 for farmers, fishermen, loggers etc., 1.1 for production and related workers and 1.2 for others) (Table 5.37).

However, in 1977-78 the overall disparity in the urban sector increased to 3.5, with the highest disparity in Region 4 and the lowest in Region 1 which actually shows a higher mean for the SC/ST than the non SC/ST. It must be remembered however that the SC/ST sample of Region 1 is only 4 households and to that extent the result is very much subject to sampling error. In this sector, the disparity r·tios within occupation group are low in some cases and high in others. (Table 5.38).

The between occupation contribution to inequality for the whole rural population in 1973-74 is 9.5 per cent by Theil T, 11.3 per cent by Theil L, and 11.2 per cent by Varlog whereas the between social group contribution is 4.8 per cent or less. In 1977-78 the between occupation group contribution was only .7 per cent by Theil T, 4.7 per cent by Theil L and 6.1 per cent by varlog. (Tables 5.39 and 5.40).

TABLE 5.37 : Disparity Ratios by occupation groups, Urban Karnataka : 1973-74 and 1977-78.

Occupation Group	1973-74	1977-78
Sales, Clerical and Rel. Workers	1.40	6.33
Farmers, Fishermen, Etc.,	1.35	1.16
Production and Rel. Workers	1.08	2.99
Others	1.26	1.07
All	1.45	3.49

TABLE 5.38 : Regional Disparity Ratios by region and occupation, Urban Karnataka : 1977-78.

Occupation Group \ Region	1	2	3	4
Sales, Clerical Rel. Workers	-	2.75	4.97	9.19
Farmers, Fishermen Etc.,	-	-	1.93	1.03
Production and Rel. Workers	1.36	.66	1.06	8.50
Others	.80	2.35	1.67	1.25
All	.83	1.40	2.68	5.67

TABLE 5.39 : Decomposition of inequality consumption, by Social Group and Occupation, Rural Karnataka : 1973-74.

Social Group \ Occupation		Cultivators and Farmers Occ Gp 1	Agricultural Labourers Occ Gp 2	Others Occ Gp 3	All Occ.	Bet. Occ. Gp. Cont. to ineq. (%)
1		2	3	4	5	6
SC/ST	Gini	.2769	.2313	.4014	.2786	
	Theil T	.1337	.0911	.3535	.1566	T 10.90
	Theil L	.1258	.0966	.2841	.1351	L 11.60
	Varlog V	.2400	.2100	.4200	.2600	V 9.70
	GM	45.52	34.30	46.42	38.14	
	AM	51.63	37.78	61.67	43.66	
	Range	160.60	83.89	116.98	234.76	
	S Size	35	75	9	119	
Non SC/ST	Gini	.3065	.2563	.2809	.3017	
	Theil T	.1830	.1149	.1309	.1704	T 6.80
	Theil L	.1537	.1055	.1264	.1477	L 8.30
	Varlog V	.2600	.1900	.2400	.2600	V 8.10
	GM	55.55	41.66	60.76	51.66	
	AM	64.78	46.29	68.95	59.88	
	Range	510.82	155.00	187.89	514.41	
	S Size	280	149	72	501	

TABLE 5.39 : (Contd.)

1		2	3	4	5	6
All	Gini	.3056	.2536	.3005	.3051	
	Theil T	.1808	.1124	.1539	.1744	T 9.50
	Theil L	.1530	.1070	.1445	.1525	L 11.30
	Varlog V	.2261	.2100	.2700	.2700	V 11.20
	GM	54.34	39.03	58.97	48.74	
	AM	63.32	43.44	68.14	56.77	
	Range	513.92	164.35	221.20	523.76	
	S Size	315	224	81	620	
Between Social Gp. Cont. to ineq. (%)						
	Theil T	1.3	3.9	0.4	3.87	
	Theil L	1.6	4.2	0.41	4.75	
	Varlog V	1.7	4.1	2.7	3.75	

Between Social Group and Occupation Group Contribution to Inequality (%)

Theil T 11.11
Theil L 12.59
Varlog V 12.69

TABLE 5.40 : Decomposition of inequality in consumption by social group and occupation group, Rural Karnataka : 1977-78.

Occ. Gp. / Social Gp.	Cultivators and Farmers Occ Gp 1	Agricultural Labourers Occ Gp 2	Others Occ Gp 3	All Occ.	Bet. Occ. Gp. Cont. to Ineq. (%)
SC/ST					
Gini	0.5916	0.5742	0.2606	0.2836	
Theil T	1.1532	1.6710	0.0934	1.3989	T 1.97
Theil L	0.6592	0.6425	0.1116	0.5806	L 4.29
Varlog V	0.6290	0.3457	0.2268	0.3921	V 5.95
GM	63.88	42.10	58.76	46.29	
AM	123.49	80.04	56.76	82.73	
Range	2631.08	7159.58	182.60	7159.58	
S Size	47	210	52	309	
Non SC/ST					
Gini	0.6443	0.6226	0.6213	0.2948	
Theil T	1.8647	2.0843	1.6002	1.8798	T .65
Theil L	0.7986	0.6906	0.7373	0.7645	L 1.66
Varlog V	0.4578	0.3534	0.4999	0.4460	V 2.98
GM	70.84	54.57	66.13	64.27	
AM	157.44	108.86	138.25	138.05	
Range	16722.59	16725.12	7170.83	16727.37	
S Size	763	509	316	1588	

TABLE 5.40 : (Contd.)

Occ. Gp. / Social Gp.	Cultivators and Farmers Occ Gp. 1	Agricultural Labouers Occ Gp 2	Others Occ Gp 3	All Occ.	Bet. Occ. Gp. Cont. to Ineq. (%)
All					
Gini	0.5542	0.6893	0.5492	0.3498	
Theil T	1.8349	2.0003	1.5579	1.8430	T .70
Theil L	0.1219	0.7386	0.6847	0.7704	L 3.97
Varlog V	0.4579	0.3569	0.5054	0.4565	V 6.06
GM	70.43	47.99	63.71	59.72	
AM	155.47	100.44	126.34	129.03	
Range	16721.53	16725.12	7170.83	16727.37	
S Size	810	719	368	1897	
Between Social Gp. Cont. to Ineq. (%)					
Theil T	0.16	0.61	3.11	0.72	
Theil L	0.18	8.40	5.21	4.65	
Varlog V	2.15	1.61	8.72	4.22	

Between Social Group and Occupation Group Contribution to Inequality (%)

Theil T 1.11
Theil L 3.32
Varlog V 4.82

In the urban sector the between occupation gp. Contribution is slightly higher in 1973-74. It is 12.2 per cent by Theil T, 12.7 per cent by Theil L and 16.3 per cent by Varlog. In 1977-78 it is 4.8, 31.3, 23.0 by Theil T, Theil L, and Varlog respectively. (Tables 5.41 and 5.42).

To compute the between occupation contribution social group was not held constant in any sense and the between occupation contribution observed may be really the effect of the household's social group. This is because the inequality decomposition analysis method does not allow the measurement of the pure contribution of a factor to overall inequality: the effect of all variables correlated with the factor is also included so that the between group contribution measures the effect of being a Scheduled Caste or Tribe or not both on its own and in association with other factors, such as occupation, education and so on i.e., the between social group contribution simply measures the fraction of overall inequality attributable to differences in mean income across social group, however these differences came about, Same is the case with between occupation group contributions. These are not pure contributions.

TABLE 5.41 : Decomposition of Inequality in Consumption by Social Group and Occupation, Urban Karnataka : 1973-74.

Occupation Group / Social Group	Sales, Clerical and rel. workers Occ Gp 1	Farmers Fishermen Occ Gp 2	Prod. and rel. workers Occ Gp 3	Others Occ Gp 4	All Occ.	Bet. Occ. Gp. Cont. to Ineq. (%)
1	2	3	4	5	6	7
SC/ST						
Gini	.2275	.2229	.1912	.1499	.2296	
Theil T	.0839	.0782	.0651	.0422	.0841	T 14.20
Theil L	.0882	.0805	.0652	.0409	.0862	L 9.70
Varlog V	0.1800	.1600	.1300	.0800	.1800	V 12.70
GM	54.55	46.79	48.55	80.23	51.33	
AM	59.58	50.72	51.82	83.58	55.95	
Range	45.42	57.92	63.45	11.32	68.89	
S Size	9	15	9	3	36	
Non SC/ST						
Gini	.3053	.3579	.2539	.2489	.3287	
Theil T	.1559	.2421	.1177	.0964	.1773	T 11.10
Theil L	.1497	.2077	.1063	.1025	.1721	L 11.50
Varlog V	.2800	.3400	.1900	.2200	.3300	V 15.50
GM	72.01	55.51	50.42	94.68	68.19	
AM	83.64	68.32	56.08	104.91	80.99	
Range	100.59	200.22	68.85	205.83	205.83	
S Size	110	107	35	81	333	

TABLE 5.41 : (Contd.)

1	2	3	4	5	6	7
All						
Gini	.3041	.3477	.2439	.2479	.3260	
Theil T	.1553	.2307	.1081	.0955	.1757	T 12.20
Theil L	.1487	.1964	.0982	.1011	.1692	L 12.70
Varlog V	.2800	.3200	.1800	.2200	.3200	V 16.30
GM	70.51	54.35	50.04	94.13	66.33	
AM	81.82	66.15	55.20	104.15	78.55	
Range	100.59	200.22	75.25	205.83	205.83	
S Size	119	122	44	84	369	
Between Social Gp. Cont. to ineq. (%)						
Theil T	2.20	1.80	.50	.80	2.80	
Theil L	2.40	2.20	.30	.80	3.20	
Varlog V	1.90	0.90	.10	.40	2.20	

Between Social Group and Occupation Group Contribution to Inequality (%)

Theil T 13.60
Theil L 14.40
Varlog V 17.80

TABLE 5.42 : Decomposition of inequality in consumption by Social Group and Occupation Group, Urban Karnataka : 1977-78

Occupation Group / Social Group	Sales, Clerical and rel. workers Occ Gp 1	Farmers Fishermen Occ Gp 2	Prod. and rel. workers Occ Gp 3	Others Occ Gp 4	All Occ.	Bet. Occ. Gp. Cont. to Ineq. (%)
1	2	3	4	5	6	7
<u>SC/ST</u>						
Gini	.2668	.3209	.3408	.3142	.3215	
Theil T	.1525	.1680	.1681	.1389	.1709	T 6.81
Theil L	.1516	.1631	.1509	.2272	.1734	L 1.35
Varlog V	.3265	.3071	.3061	.4838	.3857	V 10.49
GM	57.73	49.65	61.27	74.59	60.71	
AM	67.18	58.44	71.82	93.62	72.21	
Range	216.03	141.46	248.58	196.15	253.44	
S Size	33	22	56	24	135	
<u>Non SC/ST</u>						
Gini	.8413	.2911	.7425	.3905	0.6578	
Theil T	3.1523	.1411	3.1779	.2573	2.8877	T 5.01
Theil L	1.5992	.1347	1.1399	.3040	1.1986	L 16.50
Varlog V	.7284	.2566	.3823	.8155	.6172	V 7.15
GM	85.95	59.43	68.75	99.43	76.02	
AM	425.37	68.00	214.93	134.75	252.23	
Range	50650.82	244.91	50203.08	703.50	50655.27	
S Size	381	140	365	226	1112	

TABLE 5.42 : (Contd.)

1	2	3	4	5	6	7
<u>All</u>						
Gini	.8346	.2962	.7236	.3456	.7576	
Theil T	3.1564	.1463	3.0705	.2559	2.8349	T 4.78
Theil L	1.5603	.1392	1.0624	.3018	1.3926	L 31.32
Varlog V	.7074	.2673	.3737	.7844	.7260	V 23.78
GM	83.19	57.99	67.70	96.72	57.82	
AM	396.03	66.66	195.89	130.80	232.74	
Range	50650.82	244.91	50207.06	703.50	50655.27	
S Size	415	162	421	250	1247	
<u>Between Social Gp. Cont. to ineq. (%)</u>						
Theil T	1.45	1.28	1.28	1.84	1.35	
Theil L	5.11	0.48	4.99	1.72	3.95	
Varlog V	1.68	1.42	0.41	0.10	9.28	

Between Social Group and Occupation Group Contribution to Inequality (%)

Theil T 6.10
Theil L 26.65
Varlog V 15.33

Rather, the effect of other correlated factors are also included in it. Thus, 2.5 per cent or 4.3 per cent is the total contribution of occupation group to inequality in 1977-78, not the contribution of occupation group with other factors held constant, similarly, 3.7 to 4.8 per cent is the total contribution of social group to inequality in 1973-74, not the contribution of social group with other factors held constant. If other factors could be held constant the extent of inequality due to discrimination could be found.

In both the years, for most cases the between occupation group contribution within each social group is of the same order of magnitude as the between occupation group contribution overall which suggests that the overall contribution is mainly one of occupation. However, in 1973-74, and 1977-78 the between occupation contribution within the SC/ST was higher than the between occupation contribution within the non SC/ST. This suggests that the SC/ST are more unequal among themselves in the various occupation groups than the non SC/ST.

The contributions of the factors to overall inequality can be calculated in another way by a two-way decomposition of inequality by social group and occupation (2 times 3 separate occupation groups for the rural sector and 2 times 4 separate occupation groups for the urban sector)

With this finer partition, the between group contribution becomes 11.1 per cent, 13.2 per cent and 12.6 per cent by Theil T, Theil L and Varlog, respectively in 1973-74 for the rural sector. In 1977-78 (Rural Karnataka) also the between group (social group x occupation group) contribution improved slightly but was not more than 16 per cent except in one case.

Any two-way contribution can be shown to be always greater than or equal to each of the one-way contributions, and less than or equal to their sum. If the between social group-and-occupation contribution is equal to the sum of the between social group contributions, the factors might be called orthogonal.

Thus, the divergence of the two-way contribution from the sum of the one-way contributions might then be said to indicate the degree of association (or dependence). The sum of the between social group and between occupation group contributions is (for 1973-74) 13.4 per cent by Theil T, 16.1 per cent by Theil L and 14.9 per cent by Varlog, while the corresponding between-social group and occupation contributions are 11.1, 13.2 and 12.6 per cent. This indicates association but not a very strong one between occupation and social group in their contribution to overall inequality.

The urban sector throws up substantially similar results, except that the between occupation group contributions to overall inequality are larger in this sector. The between occupation contribution to income inequality for all social groups in 1973-74 is 12.2 per cent by Theil T, 12.7 per cent by Theil L and 11.3 per cent by Varlog and in 1977-78 the between occupation contributions were 4.5 per cent, 12.4 per cent and 5.2 per cent.

The between occupation group contributions within a social group are of the same order of magnitude and hence the

the overall contribution is genuinely that of occupation (Tables 5.29 to 5.32).

The finer partition into 2 x 4 groups (2 social groups and 4 occupation groups) yields between social-group and occupation group contributions to inequality of 13.6 per cent by Theil T, 14.4 per cent by Theil L and 17.8 per cent by varlog in 1973-74 and the sum of the two one-way contributions is 15 per cent, 15.9 per cent and 18.5 per cent respectively which is not very different from the two way contributions. The same is true in 1977-78 also.

Thus, the association between occupation group and social group in their contribution to overall inequality is weak in both the rural and the urban sector.

The conclusion from the social group-occupation group decomposition is that occupational differences contribute much more to inequality in household expenditure per capita distribution than do social group differences.

The decompositions of overall inequality by social group or occupation group or both has not accounted for much of the inequality in household per capita expenditure distribution. This suggests that the existing groups must be further broken down, or other variables added, or both.

In the case of the 32nd Round data, one has tried to see if spatial differences contribute to inequality. To this end, the inter-regional contributions to total inequality have been computed (Tables 5.43 to 5.55).

The between regions contribution for the entire rural sector was atmost 6.8 per cent in 1977 78, with no other divisions (Table 5.48). Within the SC/ST, however, the regional contributions were higher than within the non SC/ST which means that the SC/ST in the various regions were far apart from each other whereas the non SC/ST were not.

Within an occupation group also, the SC/ST had higher inter-regional contributions to total inequality than

TABLE 5.43 : Decomposition of Inequality in consumption, by Occupation Group and Region, Rural Karnataka : SC/ST 1977-78

Region \ Occupation	Cultivators and Farmers Occ Gp 1	Agricultural Labourers Occ Gp 2	Others Occ Gp 3	All Occ.	Bet. Occ. Gp. Cont. to ineq. (%)
1	2	3	4	5	6
Gini	0	.7269	.1135	.2491	
Theil T	0	.0583	.0931	.1063	T 12.57
Theil L	0	.0575	.0874	.1032	L 14.08
1 Varlog V	0	.1100	.1633	.2000	V 13.03
GM	134.61	49.39	67.42	66.17	
AM	134.61	52.31	73.58	73.36	
Range	0	42.55	122.70	123.44	
S Size	1	3	9	13	
Gini	.2101	.3380	.2562	.3224	
Theil T	.0849	.2033	.1222	.1840	T 6.60
Theil L	.1089	.1814	.1198	.1752	L 6.57
2 Varlog V	.2700	.3100	.2300	.3219	V 7.15
GM	60.48	39.62	34.67	41.65	
AM	67.44	47.50	39.09	49.62	
Range	84.63	148.98	60.44	148.98	
S Size	7	34	5	46	

TABLE 5.43 : (Contd.)

1		2	3	4	5	6
	Gini	.2343	.3566	.1235	.2683	
	Theil T	1.3098	2.2544	.0900	1.9169	T 2.43
	Theil L	.9005	1.0806	.0930	.9580	L 5.56
3	Varlog V	.8900	.5100	.1900	.5762	V 8.26
	GM	84.40	47.02	56.41	53.41	
	AM	207.71	138.53	61.91	139.23	
	Range	2631.00	7155.56	99.88	7157.43	
	S Size	20	79	17	116	
	Gini	.3184	.2596	.2370	.2597	
	Theil T	.1646	.1165	.0914	.1244	T 3.19
	Theil L	.1610	.1096	.0929	.1181	L 3.25
4	Varlog V	.3100	.2100	.1900	.2200	V 2.28
	GM	46.74	39.03	44.44	40.97	
	AM	54.91	43.55	49.58	46.10	
	Range	122.74	149.07	86.93	149.07	
	S Size	19	94	21	134	
Between Region Cont. to ineq. (%)						
	Theil T	15.55	9.26	15.31	9.40	
	Theil L	19.91	24.39	15.32	2.40	
	Varlog V	13.47	2.35	16.33	6.11	

Between Social Group and Region Contribution to Inequality (%)

Theil T 12.15
Theil L 28.23
Varlog V 12.25

TABLE 5.44 : Decomposition of Inequality in Consumption by Occupation Group and Region, Rural Karnataka: Non SC/ST 1977-78.

Region \ Occupation		Cultivators and Farmers Occ Gp 1	Agricultural Labourers Occ Gp 2	Others Occ Gp 3	All Occ.	Bet. Occ. Gp. Cont. to ineq. (%)
1		2	3	4	5	6
	Gini	.2866	.7962	.6755	.3148	
	Theil T	.1426	2.3474	1.634	1.7405	T 5.28
	Theil L	.1322	1.3833	.8765	.8347	L 12.18
1	Varlog V	.2400	.7600	.6300	0.5200	V .92
	GM	82.87	69.67	86.99	79.99	
	AM	94.58	277.85	209.01	184.30	
	Range	300.61	10055.34	6319.95	10055.34	
	S Size	67	50	54	171	
	Gini	.8219	.2022	.7645	.3045	
	Theil T	2.4245	.1282	2.2160	2.3672	T 7.19
	Theil L	1.4959	.1342	1.3400	1.2686	L 18.33
2	Varlog V	.9000	.2800	.8300	.7168	V 3.62
	GM	77.81	54.51	61.95	66.79	
	AM	347.29	62.34	236.60	237.50	
	Range	16715.47	169.56	7158.81	16726.42	
	S Size	120	75	41	236	

TABLE 5.44: (Contd.)

1		2	3	4	5	6	
	Gini	.6972	.2516	.2635	.3913		
	Theil T	1.9936	.1036	.1161	1.6801	T	7.03
	Theil L	.9485	.1020	.1139	.6941	L	19.31
3	Varlog V	.5700	.2000	.2200	.4228	V	4.73
	GM	73.73	53.20	68.86	66.63		
	AM	190.35	50.91	77.17	132.99		
	Range	16722.59	156.09	214.47	16722.59		
	S Size	258	135	86	479		
	Gini	.2737	.6799	.6056	.2820		
	Theil T	.1379	2.5647	1.5937	1.5408	T	1.76
	Theil L	.1218	.9415	.7033	.5524	L	5.08
4	Varlog V	.2200	.3300	.4800	.3400	V	9.00
	GM	64.05	45.25	46.41	55.72		
	AM	72.34	116.01	118.99	96.80		
	Range	543.94	16722.24	7170.83	16722.24		
	S Size	318	249	135	702		
Between Region G. Cont. to ineq. (%)							
	Theil T	9.45	6.34	5.15	3.11		
	Theil L	22.57	6.85	11.18	4.25		
	Varlog V	2.34	6.58	3.92	1.27		

Between Social Group and Region Contribution to Inequality (%)

Theil T 8.41
Theil L 17.11
Varlog V 6.67

TABLE 5.45 : Decomposition of inequality in consumption by Social Group and Region, Rural Karnataka : Cultivators and Farmers, 1977-78.

Regions / Social Group	1	2	3	4	All Regions	Bet. Regions Cont. to ineq. (%)
1	2	3	4	5	6	7
SC/ST						
Gini	0	.2101	.2343	.3184	0.5916	
Theil T	0	.0849	1.3098	.1646	1.1532	T 15.55
Theil L	0	.1089	.9005	.1610	.6592	L 19.91
Varlog V	0	.2700	.8900	.3100	.6290	V 13.12
GM	134.61	60.48	84.40	46.74	63.88	
AM	134.61	67.44	207.71	4.91	123.49	
Range	0	84.63	2631.08	122.74	2631.08	
S Size	1	7	20	19	47	
Non SC/ST						
Gini	.2866	.8219	.6972	.2737	0.6443	
Theil T	.1426	2.4245	1.9936	.1379	1.0647	T 9.45
Theil L	.1322	1.4959	.9485	.1218	.7986	L 22.57
Varlog V	.2400	.9000	.5700	.2200	.4578	V 2.34
GM	82.87	77.81	73.73	64.05	70.84	
AM	94.58	347.29	190.35	72.34	157.44	
Range	300.61	16715.47	16722.59	543.94	16722.59	
S Size	67	120	258	318	763	

TABLE 5.45 : (Contd.)

1	2	3	4	5	6	7	
All							
Gini	.2867	.7856	.5654	.3146	.5542		
Theil T	.1426	2.4253	1.9405	.1408	1.8349	T	9.17
Theil L	.1322	1.4630	.9453	.1259	.7919	L	22.05
Varlog V	.2400	.8686	.5954	.2098	.4579	V	2.17
GM	83.38	76.84	74.45	62.92	70.43		
AM	95.17	331.86	191.60	71.36	155.47		
Range	300.61	16715.67	16722.59	543.94	16721.53		
S Size	68	127	278	337	810		
Between Social Gp. Cont. to ineq. (%)							
Theil T	2.08	1.12	.01	1.22	.16		
Theil L	1.47	3.07	.03	1.48	.18		
Varlog V	1.47	.003	.40	.64	2.15		

Between Social Group and Region Contribution to Inequality (%)

Theil T 9.69
Theil L 23.04
Varlog V 1.14

TABLE 5.46 : Decomposition of Inequality in Consumption by Social Group and Region, Rural Karnataka : Agriculture Labourers, 1977-78

Regions / Social Group	1	2	3	4	All Regions	Bet. Regions Cont. to ineq. (%)
1	2	3	4	5	6	7
SC/ST						
Gini	.7269	.3380	.3566	.2596	0.5742	
Theil T	.0583	.2033	2.2544	.1165	1.6710	T 9.26
Theil L	.0575	.1814	1.0806	.1096	.6425	L 24.39
Varlog V	.1100	.3100	.5100	.2100	.3457	V 2.35
GM	49.39	39.62	47.02	39.025	42.10	
AM	52.31	47.50	138.53	43.55	80.04	
Range	42.55	148.98	7155.56	149.07	7159.58	
S Size	3	34	79	94	210	
Non SC/ST						
Gini	.7962	.2822	.2516	.6799	0.6226	
Theil T	2.3474	.1282	.1036	2.5647	2.0843	T 6.38
Theil L	1.3833	.1342	.1020	.9415	.6906	L 6.05
Varlog V	.7600	.2800	.2000	.3300	.3534	V 6.58
GM	69.67	54.51	53.20	45.25	54.57	
AM	277.85	62.34	58.91	116.01	108.86	
Range	10055.34	169.56	156.09	16722.24	16725.12	
S Size	50	75	135	249	509	

TABLE 5.46 : (Contd.)

1	2	3	4	5	6	7
All						
Gini	.7895	.3235	.4246	.5867	.6893	
Theil T	2.3834	.1548	1.4397	2.3269	2.0003	T 4.30
Theil L	1.3557	.1566	.5523	.7943	.7386	L 9.70
Varlog V	.7295	.3279	.3179	.3014	.3569	V 4.20
GM	68.33	49.35	50.83	43.45	47.99	
AM	265.08	57.71	88.30	96.15	100.44	
Range	10055.34	169.56	7155.56	16722.24	16725.12	
S Size	53	109	214	343	719	
Between Social Gp. Cont. to ineq. (%)						
Theil T	1.19	4.75	6.28	2.84	.61	
Theil L	3.50	4.88	16.13	10.17	8.4	
Varlog V	.87	11.76	1.12	1.45	1.61	

Between Social Group and Region Contribution to Inequality (%)

Theil T 7.50
Theil L 19.13
Varlog V 6.80

TABLE 5.47 : Decomposition of Inequality in Consumption by Social Group and Region, Rural Karnataka : Others, 1977-78.

Regions / Social Group	1	2	3	4	All Regions	Bet. Regions Cont. to ineq. (%)
1	2	3	4	5	6	7
SC/ST						
Gini	.1135	.2562	.1235	.2370	0.2606	
Theil T	.0931	.1222	.0900	.0974	.0934	T 15.31
Theil L	.0874	.1198	.0930	.0929	.1116	L 15.32
Varlog V	.1633	.2300	.1900	.1900	.2268	V 16.33
GM	67.42	34.67	56.41	44.44	50.76	
AM	73.58	39.09	61.91	49.58	56.76	
Range	122.70	60.44	99.88	86.93	142.60	
S Size	9	5	17	21	52	
Non SC/ST						
Gini	.6755	.7645	.2635	.6056	0.6213	
Theil T	1.6340	2.2160	.1161	1.5937	1.6002	T 5.15
Theil L	.8765	1.3400	.1139	.7033	.7375	L 11.18
Varlog V	.6300	.8300	.2200	.4800	.4999	V 3.92
GM	86.99	61.95	68.86	46.41	66.13	
AM	209.01	236.60	77.17	118.99	138.25	
Range	6319.95	7158.81	214.47	7170.83	7170.83	
S Size	54	41	86	135	316	

TABLE 5.47 : (Contd.)

1	2	3	4	5	6	7	
All							
Gini	.5467	.7849	.3456	.6653	.5492		
Theil T	1.5879	2.2342	.2264	1.5307	1.5579	T	5.03
Theil L	.8158	1.3080	.1136	.6571	.6847	L	10.41
Varlog V	.5712	.8075	.2214	.4412	.5054	V	11.40
GM	83.88	64.32	66.64	46.14	63.71		
AM	189.61	215.13	74.65	109.65	126.34		
Range	6319.95	7158.81	214.47	7170.83	7170.83		
S Size	63	46	103	156	368		
Between Social Gp. Cont. to ineq. (%)							
Theil T	2.47	2.67	1.34	1.86	3.11		
Theil L	6.37	7.69	2.80	5.48	5.21		
Varlog V	1.39	5.29	2.88	.05	8.72		

Between Social Group and Region Contribution to Inequality (%)

Theil T 8.07
Theil L 15.89
Varlog V 13.10

TABLE 5.48 : Decomposition of Inequality in Consumption by Social Group and Region, Rural Karnataka : 1977-78, All Occupations.

Regions / Social Group	1	2	3	4	All Regions	Bet. Regions Cont. to ineq. (%)	
1	2	3	4	5	6	7	
SC/ST							
Gini	.2491	.3224	.2683	.2597	.2836		
Theil T	.1063	.1840	1.9169	.1244	1.3989	T	9.37
Theil L	.1032	.1752	.9580	.1181	.5806	L	23.99
Varlog V	.2000	.3219	.5762	.2200	.3921	V	6.12
GM	66.17	41.65	53.41	40.97	46.29		
AM	73.36	49.62	139.23	46.10	82.73		
Range	123.44	148.98	7157.43	149.07	7159.58		
S Size	13	46	116	134	309		
Non SC/ST							
Gini	.3148	.3045	.3913	.2820	.2948		
Theil T	1.7405	2.3672	1.6001	1.5408	1.8798	T	3.11
Theil L	.8347	1.2686	.6941	.5524	.7645	L	4.25
Varlog V	0.5200	.7168	.4228	.3400	.4460	V	1.27
GM	79.99	66.79	66.63	55.72	64.27		
AM	184.30	237.50	132.99	96.89	138.05		
Range	10055.34	16726.42	16722.59	16722.24	16727.37		
S Size	171	236	479	702	1588		

TABLE 5.48 : (Contd.)

1	2	3	4	5	6	7	
All							
Gini	0.3214	0.3189	0.3572	0.2743	.3498		
Theil T	1.7089	2.3500	1.7282	1.4486	1.8430	T	2.88
Theil L	.8046	1.2704	.7457	.5139	.7704	L	6.81
Varlog V	.4998	.6868	.4586	.3334	.4565	V	3.35
GM	78.92	58.07	63.67	53.04	59.72		
AM	176.46	206.85	134.20	88.68	129.03		
Range	10055.34	16726.42	16722.59	16722.24	16727.37		
S Size	184	282	395	836	1897		
Between Social Gp. Cont. to ineq. (%)							
Theil T	.96	3.03	.009	1.78	.72		
Theil L	2.69	9.71	.02	6.07	4.65		
Varlog V	4.7	4.44	1.63	3.21	4.22		

Between Social Group and Region Contribution to Inequality (%)

Theil T 4.34
Theil L 11.13
Varlog V 6.12

TABLE 5.49 : Decomposition of Inequality in consumption by Occupation Group and Region, Urban Karnataka : SC/ST, 1977-78.

Region	Occupation	Sales, Clerical and rel. workers Occ Gp 1	Farmers, fishermen Occ Gp 2	Prod. and rel. workers Occ Gp 3	Others Occ Gp 4	All Occ.	Bet. Occ. Gp. Cont. to ineq. (%)
1		2	3	4	5	6	7
	Gini	-	-	.1565	.1131	.2122	
	Theil T	-	-	.0515	.0018	.1342	T 89.01[a]
	Theil L	-	-	.0534	.0018	.1578	L 82.51[a]
1	Varlog V	-	-	.2174	.0071	.4138	V 72.87[a]
	GM	-	-	53.52	159.91	92.52	
	AM	-	-	56.47	160.20	108.33	
	Range	-	-	35.93	19.12	35.93	
	S Size	0	0	2	2	4	
	Gini	.2387	-	.2949	.0984	.3103	
	Theil T	.1325	-	.1535	.0186	.2150	T 50.30[a]
	Theil L	.1709	-	.1716	.0181	.2398	L 49.90[a]
	Varlog V	.4200	-	.3700	.0350	.5452	V 49.60[a]
	GM	33.90	-	116.20	82.97	68.88	
	AM	40.22	-	137.95	84.48	87.55	
	Range	43.23	-	61.04	20.54	65.67	
	S Size	3	0	3	3	9	

TABLE 5.49 : (Contd.)

1		2	3	4	5	6	7	
	Gini	.2776	.1915	.2781	.3403	.3039		
	Theil T	.1500	.0637	.1424	.1927	.1663	T	8.33
	Theil L	.1301	.0616	.1297	.2393	.1647	L	10.49
3	Varlog V	.2200	.1200	.2400	.6000	.3348	V	9.84
	GM	73.24	35.86	71.17	68.23	67.35		
	AM	83.42	38.14	81.02	86.68	79.41		
	Range	191.95	37.40	236.08	196.15	253.44		
	S Size	10	4	28	11	53		
	Gini	.2634	.3205	.2591	.2912	.3003		
	Theil T	.1247	.1651	.1081	.1465	.1457	T	7.99
	Theil L	.1281	.1652	.1133	.1855	.1506	L	7.38
4	Varlog V	.2700	.3200	.2400	.4500	.3093	V	4.96
	GM	55.55	53.37	47.61	72.23	53.83		
	AM	63.14	62.95	53.32	86.95	62.58		
	Range	150.12	141.46	112.25	130.58	155.39		
	S Size	20	18	23	8	69		
Between Region Cont. to ineq. (%)								
	Theil T	11.[illegible]	8.88	22.35	6.80	6.55		
	Theil L	12.[illegible]	10.25	22.94	23.46	6.33		
	[illegible]rlo[illegible] V	17.[illegible]	7.66	19.58	11.14	12.34		

Bet[illegible]n R[illegible]ion a[illegible] O[illegible]p[illegible]io[illegible]
Con[illegible]b[illegible]t[illegible] to [illegible]eq[illegible]i[illegible] ([illegible])

Theil T 76.69
Theil L 90.23
Varlog V 35.44

[illegible]s[illegible]ua[illegible]h[illegible]t[illegible]but[illegible]ons are for very [illegible]s[illegible]kel[illegible] to be

TABLE 5.50 : Decomposition of Inequality in Consumption by Occupation and Region, Urban Karnataka : Non SC/ST, 1977-78.

Region \ Occupation		Sales,Clerical and rel. workers Occ Gp 1	Farmers fishermen etc., Occ Gp 2	Prod. and rel. workers Occ Gp 3	Others Occ Gp 4	All Occ.	Bet.Occ.Gp. Cont. to ineq.(%)
1		2	3	4	5	6	7
	Gini	.3481	.1344	.2710	.3988	.3054	
	Theil T	.2269	.0280	.1161	.3000	.2106	T 10.29
	Theil L	.1943	.0286	.1178	.2724	.1785	L 11.80
1	Varlog V	.3200	.0600	.2400	.4700	.3373	V 5.31
	GM	80.24	64.92	68.19	97.59	75.66	
	AM	97.45	66.81	76.71	128.15	90.45	
	Range	404.74	47.20	167.32	378.48	409.07	
	S Size	31	10	37	14	92	
	Gini	.3840	.2734	.3504	.3403	.3830	
	Theil T	.2405	.1187	.1968	.1952	.2688	T 23.69
	Theil L	.2431	.1237	.2113	.2858	.2716	L 22.60
2	Varlog V	.4700	.2500	.4400	.4300	.5327	V 20.60
	GM	86.43	63.91	73.61	161.43	93.66	
	AM	110.73	72.33	90.93	198.32	122.89	
	Range	347.63	126.58	192.66	601.41	621.26	
	S Size	31	11	18	20	80	

TABLE 5.50 : (Contd.)

1		2	3	4	5	6	7
	Gini	.8281	.2318	.2962	.3637	.5502	
	Theil T	3.1791	.0845	.1554	.2188	2.4787	T 9.74
	Theil L	1.5252	.0861	.1433	.3245	.9209	L 27.96
3	Varlog V	.6800	.1700	.2700	1.1000	.5999	V 3.50
	GM	90.18	67.54	74.31	104.61	84.77	
	AM	414.48	73.61	85.76	144.19	212.91	
	Range	50650.82	131.61	445.45	456.25	50650.82	
	S Size	178	41	181	105	505	
	Gini	.8855	.3300	.8867	.5703	.7142	
	Theil T	3.1817	.1899	3.7852	.2811	3.356	T 6.60
	Theil L	1.9579	.1723	2.0022	.2631	1.7057	L 23.09
	Varlog V	.9300	.3100	0.5500	.5300	.664	V 5.72
	GM	81.92	54.38	61.19	83.84	64.65	
	AM	580.39	64.60	453.10	109.07	355.89	
	Range	50214.42	244.91	50200.60	700.35	50222.02	
	S Size	141	78	129	87	435	
Between Region Cont. to ineq. (%)							
	Theil T	2.83	1.38	18.03	6.79	2.40	
	Theil L	7.91	1.29	29.73	5.54	6.58	
	Varlog V	.32	3.96	2.10	4.07	3.05	

Between Region and Occupation Group Contribution to Inequality (%)

Theil T 9.96
Theil L 29.56
Varlog V 8.99

TABLE 5.51 : Decomposition of Inequality in Consumption by Social Group and Region , Urban Karnataka : Sales, Clerical and Related Workers, 1977-78.

Social Group \ Regions	1	2	3	4	All Regions	Bet. Regions Cont. to ineq. (%)
1	2	3	4	5	6	7
<u>SC/ST</u>						
Gini	-	.2387	.2776	.2634	0.2668	
Theil T	-	.1325	.1500	.1247	.1525	T 11.75
Theil L	-	.1709	.1301	.1281	.1516	L 12.51
Varlog V	-	.4200	.2200	.2700	.3265	V 17.77
GM	-	33.90	73.24	55.55	57.73	
AM	-	40.22	83.42	63.14	67.18	
Range	-	43.23	191.95	150.12	216.03	
S Size	0	3	10	20	33	
<u>Non SC/ST</u>						
Gini	.3481	.3840	.8281	.8855	0.8413	
Theil T	.2269	.2405	3.1791	3.1817	3.1523	T 2.83
Theil L	.1943	.2431	1.5252	1.9579	1.5992	L 7.91
Varlog V	.3200	.4700	.6800	.9300	.7284	V .32
GM	70.76	86.43	90.18	81.92	85.95	
AM	97.45	110.73	414.48	580.39	425.3709	
Range	404.74	347.63	50650.82	50214.42	50650.82	
S Size	31	31	178	141	381	

TABLE 5.51: (Contd.)

1	2	3	4	5	6	7
All						
Gini	.3481	.3951	.8542	.8051	0.8346	
Theil T	.2269	.2602	3.1707	3.2200	3.1564	T 2.51
Theil L	.1943	.2682	1.4928	1.8900	1.5603	L 7.34
Varlog V	.3200	.4730	.6577	.8600	.7074	V 1.86
GM	70.76	79.92	89.19	78.07	83.19	
AM	97.45	104.51	396.87	516.14	396.03	
Range	404.74	361.73	50650.82	50214.42	50650.82	
S Size	31	34	188	161	414	
Between Social Gp. Cont. to ineq. (%)						
Theil T	-	9.00	.80	2.59	1.45	
Theil L	-	11.76	2.80	8.38	5.11	
Varlog V	-	15.05	.33	1.90	1.68	

Between Social Group and Region Contribution to Inequality (%)

Theil T 4.25
Theil L 12.67
Varlog V 2.74

TABLE 5.52 : Decomposition of Inequality in the Consumption by Social Group and Region, Urban Karnataka : Farmers, Fishermen, etc., 1977-78.

Social Group \ Regions	1	2	3	4	All Regions	Bet.Regions Cont. to ineq. (%)
1	2	3	4	5	6	7
SC/ST						
Gini	-	-	.1915	.3205	0.3209	
Theil T	-	-	.0637	.1651	.1680	T 8.88
Theil L	-	-	.0616	.1652	.1631	L 10.25
Varlog V	-	-	.1200	.3200	.3071	V 7.66
GM	-	-	35.86	53.37	49.65	
AM	-	-	38.14	62.95	58.44	
Range	-	-	37.40	141.46	141.46	
S Size	0	0	4	18	22	
Non SC/ST						
Gini	.1344	.2734	.2318	.3300	0.2911	
Theil T	.0280	.1187	.0845	.1899	.1411	T 1.38
Theil L	.0286	.1237	.0861	.1723	.1347	L 1.29
Varlog V	.0600	.2500	.1700	.3100	.2566	V 3.96
GM	64.92	63.91	67.54	54.38	59.43	
AM	66.81	72.33	73.61	64.60	68.00	
Range	47.20	126.58	131.61	244.91	244.91	
S Size	10	11	41	78	140	

TABLE 5.52 : (Contd.)

1	2	3	4	5	6	7
All						
Gini	.1344	.2734	.3017	.3231	0.2962	
Theil T	.0280	.1187	.0958	.1854	.1463	T 1.18
Theil L	.0286	.1237	.0986	.1709	.1392	L .26
Varlog V	.0600	.2500	.1981	.3119	.2673	V 2.53
GM	64.93	63.91	63.85	54.19	57.99	
AM	66.81	72.33	70.46	64.29	66.66	
Range	47.20	126.58	138.44	244.91	244.91	
S Size	10	11	45	96	162	
Between Social Gp. Cont. to ineq. (%)						
Theil T	-	-	12.87	.03	1.28	
Theil L	-	-	14.88	.03	.48	
Varlog V	-	-	16.39	.02	1.42	

Between Social Group and Region Contribution to Inequality (%)

Theil T 3.67
Theil L 3.17
Varlog V 5.92

TABLE 5.53 : Decomposition of Inequality in Consumption by Social Group and Region, Urban Karnataka, Production and related workers 1977-78.

Region / Social Group	1	2	3	4	All Regions	Bet. Region Cont. to ineq. (%)
1	2	3	4	5	6	7
SC/ST						
Gini	.1154	.2949	.2781	.2591	0.3408	
Theil T	.0515	.1535	.1424	.1081	.1681	T 22.35
Theil L	.0534	.1716	.1297	.1133	.1589	L 22.94
Varlog V	.2174	.3700	.2400	.2400	.3061	V 19.58
GM	53.52	116.20	71.17	47.61	61.27	
AM	56.46	137.95	81.02	53.32	71.82	
Range	35.93	61.04	236.08	112.25	248.58	
S Size	2	3	28	23	56	
Non SC/ST						
Gini	.2710	.3504	.2962	.8867	0.7425	
Theil T	.1161	.1968	.1554	3.7852	3.1779	T 10.03
Theil L	.1178	.2113	.1433	2.0022	1.1398	L 29.73
Varlog V	.2400	.4400	.2700	.5500	.3823	V 2.10
GM	68.19	73.61	74.31	61.19	68.75	
AM	76.71	90.93	85.76	453.10	214.93	
Range	167.32	192.66	445.45	50200.00	50203.08	
S Size	37	18	181	129	365	

TABLE 5.53 : (Contd.)

1	2	3	4	5	6	7
All						
Gini	.2715	.3516	.3014	.7863	0.7236	
Theil T	.1156	.2009	.1539	3.8089	3.0705	T 8.86
Theil L	.1166	.2173	.1417	1.8969	1.0624	L 26.88
Varlog V	.2418	.4555	.2663	.5112	.3737	V 3.16
GM	67.34	78.58	73.88	59.90	67.70	
AM	75.67	97.65	85.13	392.6083	195.89	
Range	167.32	134.63	445.45	50207.06	50207.06	
S Size	39	21	209	152	421	
Between Social Gp. Cont. to ineq. (%)						
Theil T	1.16	6.4	.12	2.61	1.28	
Theil L	1.77	5.4	.13	9.51	4.99	
Varlog V	1.22	5.6	.10	1.58	0.41	

Between Social Group and Region Contribution to Inequality (%)

Theil T 11.21
Theil L 33.10
Varlog V 4.40

TABLE 5.54 : Decomposition of Inequality in Consumption by Social Group and Region, Urban Karnataka : Others, 1977-78.

Region / Social Group	1	2	3	4	All Regions	Bet. Regions Cont. to ineq. (%)
1	2	3	4	5	6	7
SC/ST						
Gini	.0317	.0984	.3403	.2912	.3142	
Theil T	.0018	.0186	.1927	.1465	.1389	T 6.80
Theil L	.0018	.0181	.2393	.1855	.2272	L 23.46
Varlog V	.0071	.0350	.6000	.4500	.4838	V 11.14
GM	159.91	82.97	68.23	72.23	74.59	
AM	160.2	84.48	86.68	86.95	93.62	
Range	19.12	20.54	196.15	130.58	196.15	
S Size	2	3	11	8	24	
Non SC/ST						
Gini	.3988	.3403	.3637	.5703	0.3905	
Theil T	.3000	.1952	.2188	.2811	.2573	T 6.75
Theil L	.2724	.2058	.3245	.2631	.3040	L 5.56
Varlog V	.4700	.4300	1.1000	.5300	.8155	V 4.07
GM	97.59	161.43	104.67	83.84	99.43	
AM	128.15	198.32	144.79	109.07	134.75	
Range	378.48	601.41	456.25	700.35	703.50	
S Size	14	20	105	87	226	

TABLE 5.54 : (Contd.)

1	2	3	4	5	6	7
All						
Gini	.3451	.3310	.3531	.4531	.3817	
Theil T	.2578	.2112	.2258	.2736	.2559	T 5.94
Theil L	.2415	.2149	.3263	.2585	.3018	L 5.61
Varlog V	.4388	.4261	1.0683	.5244	.7844	V 2.82
GM	103.80	147.99	100.51	81.97	96.72	
AM	132.16	183.47	139.28	107.21	130.80	
Range	378.48	601.41	456.25	700.35	703.50	
S Size	16	23	116	95	250	
Between Social Gp. Cont. to ineq. (%)						
Theil T	1.17	12.59	3.77	.64	1.84	
Theil L	1.20	15.58	3.02	.72	1.72	
Varlog V	6.08	11.16	1.47	.22	.10	

Between Social Group and Region Contribution to Inequality (%)

Theil T 9.35
Theil L 12.07
Varlog V 4.58

TABLE 5.55 : Decomposition of Inequality in Consumption by Social Group and Region, Urban Karnataka : All Occupations, 1977-78.

Region / Social Group	1	2	3	4	All Regions	Bet. Regions Cont. to ineq. (%)
1	2	3	4	5	6	7
SC/ST						
Gini	.2122	.3103	.3039	.3003	.3215	
Theil T	.1342	.2150	.1663	.1457	.1709	T 6.55
Theil L	.1578	.2398	.1647	.1506	.1734	L 6.33
Varlog V	.4138	.5452	.3348	.3093	.3857	V 12.34
GM	92.52	68.88	67.35	53.83	60.71	
AM	108.33	87.55	79.41	62.58	72.21	
Range	35.93	65.67	253.44	155.39	253.44	
S Size	4	9	53	69	135	
Non SC/ST						
Gini	.3054	.3830	.5502	.7142	.6583	
Theil T	.2106	.2688	2.4787	3.3569	2.8877	T 2.40
Theil L	.1785	.2716	.9209	1.7057	1.1986	L 6.58
Varlog V	.3373	.5327	.5999	.6640	.6172	V 3.05
GM	75.66	93.66	84.71	64.65	76.07	
AM	90.45	122.89	212.91	355.89	252.23	
Range	409.07	621.26	50650.82	50222.02	50655.27	
S Size	92	80	505	435	1112	

TABLE 5.55 : (Contd.)

1	2	3	4	5	6	7
<u>All</u>						
Gini	.2253	.3942	.7842	.8641	.7123	
Theil T	.2075	.2691	2.4158	3.3415	2.8349	T 1.99
Theil L	.1784	.2732	.8813	1.6110	1.3926	L 22.53
Varlog V	.3421	.5426	.5793	.6194	.7260	V 20.86
GM	76.30	90.79	82.94	63.05	57.82	
AM	91.20	119.32	200.23	315.73	232.74	
Range	409.07	626.83	50655.27	50222.02	50655.27	
S Size	96	89	558	504	1247	
Between Social Gp. Cont. to ineq. (%)						
Theil T	.32	1.60	1.00	2.17	1.35	
Theil L	.42	1.75	3.66	7.34	3.95	
Varlog V	.47	1.58	.78	.64	9.26	

Between Social Group and Region Contribution to Inequality (%)

Theil T 3.74
Theil L 27.03
Varlog V 21.45

the non SC/ST. (Tables 5.45, 5.46, 5.47) The same conclusions are true for the urban sector as well (Tables 5.51 to 5.55).

The three way partition into 2 social groups x 4 regions x 3 occupation groups for Rural Karnataka only accounts for about one - fourth of the total inequality in the household per capita expenditure distribution. In the urban sector also the 3 way partition accounts for about $\frac{1}{3}$ the total inequality.

This suggests that the existing occupation groups are too coarse being only at two digit level. Any further breakup is however, precluded because we have very few SC/ST households in certain regions and occupation groups.

Other variables of interest could be employment sector, but occupation and industry codes are closely correlated and decomposition by sector of employment would, thus not be very illuminating, nor would it provide any special insights, even if one had a larger sample in order to attempt further division.

Age, sex and education variables are not available in the 28th Round (1973-74) data for each member, though these variables could definitely be expected to have greater power in explaining inequality in the consumption distribution. For the 32nd Round, we do have this information for each member in the household. However, there is one problem. The occupation group of the household is the ooccupation of the main earner of the household and we do not have information on who, among the members of the household is the main earner. There is thus, no obvious way in which the age, sex or education characteristics of each member can be connected with the occupation group of the household. Apart from this, one does not have information on the occupation of each member nor on his/her earnings so that it would be well nigh impossible to relate individual characteristics to the household expenditure and decompose inequality into further components based on age, sex and education characteristics of the members of a household.

one way to overcome this problem would be to pick up the households with a nuclear family (i.e., One male, one female and children) from the existing sample and fit a human capital type of model on these households with the household expenditure as dependent variable and human capital variables like years of schooling, age, sex and occupation as independent variables. This method was however, not attempted in this study and could be an area of further research.

Nevertheless, the above decomposition analysis of inequality has given valuable insights into the various effects of occupation social group and spatial position on overall inequality though these results may be of value in the negative sense. Interestingly, though, inequality is within social group rather than between the SC/ST and non SC/ST. The result is important because it suggests that getting rid of inbalances between SC/ST and others is not very helpful in getting rid of overall inequality in the State-there is the within group inequality to consider.

5.10 <u>Determinants of levels of living of a household:</u>

The level of living of a household is determined by the income its members earn, the assets owned by it and other characteristics of the household like its age-sex composition. Income in turn depends on the occupation of its members and their skills.

This section investigates these determinants of the level of living of a household.

As mentioned before there are several problems with running a regression model of the 'human capital' type with log-expenditure as dependent variable and other determinants of expenditure (income) like occupation education etc., as explanatory variables. Hence, the material of this section is a prelimnary exploration to get insights into the variation across social groups of occupation structure, education pattern, asset distribution and household size and composition.

5.10.2 Education:

Education affects consumption levels by enhancing the earning capacity of the individual. It has been found in numerous studies on 'human capital' that incomes of individuals varies directly with the levels of education, assuming their experience is same.

Tables 5.56 and 5.57 give the percentage distribution of households by level of education of the head of the household in 1977-78 where data on education level of each member of the households is available.

In the rural sector 84.9 per cent of the SC/ST households have illiterate heads while only 59.0 per cent of the heads among the non SC/ST households are illiterate. As expected, in the urban sector the level of literacy is much higher but the disparity between the SC/ST and non SC/ST is even greater. While only 25.2 per cent of the non SC/ST households have illiterate 'heads', 48.3 per cent of the SC/ST households are headed by illiterates.

The disparity in the education level is probably one of the major causes for the disparity in the consumption level since education is the 'poor's most potent weapon for self advancement'.

TABLE 5.56 : Percentage Distribution of household by Level of Education of the Head of Household Rural Karnataka : 1977-78.

Level of Education	SC/ST	Non SC/ST	Total
1 Illiterate	84.90	59.01	63.18
2 Literate but below primary	6.58	16.32	14.75
3 Primary	2.83	11.95	10.48
4 Middle	0.26	6.72	5.68
5 Secondary	0.58	3.98	3.43
6 Graduate and above in agriculture	0.00	0.12	0.10
7 Graduate and above in engineering	0.00	0.00	0.00
8 Graduate and above in medicine	0.00	0.00	0.00
9 Graduate and above in other subjects	0.33	0.54	0.51
10 Non Response	4.52	1.36	1.87
	100.00	100.00	100.00

TABLE 5.57 : Percentage Distribution of households by Level of Education of the Head of Household Urban Karnataka : 1977-78.

Level of Education	SC/ST	Non SC/ST	Total
1 Illiterate	48.31	25.17	27.60
2 Literate but below Primary	9.72	15.83	15.19
3 Primary	12.86	15.11	14.88
4 Middle	8.85	13.62	13.12
5 Secondary	9.44	20.24	19.10
6 Graduate and above in agriculture	0.00	1.77	1.58
7 Graduate and above in engineering	0.00	0.76	0.68
8 Graduate and above in medicine	0.00	0.43	0.38
9 Graduate and above in other subjects	0.00	5.08	4.55
10 Non Response	10.82	1.99	2.92
	100.00	100.00	100.00

We have used in the above analysis the level of education of the head of the household as a proxy for the level of education of the entire household. This may not be an appropriate proxy. It is possible, and very likely, that there are others in the household who contribute more towards income and consumption so that the education of head of the households has practically no significance, as a determinant of the households level of living.

To overcome this problem one could have attempted to combine the years of schooling of the members of the household to get a composite measure of the earning capacity of the household and this could have been tabulated instead. This was not attempted in this study and can be an area for further investigation.

5.10.3 Occupation:

Another determinant of the level of living of a household is its occupational status. It is argued that the low level of living of the SC/ST households is because they follow traditional and low-paying occupations and hence they are unable to enjoy the fruits of development. We have tried to look at the occupation pattern of the two groups (Tables 5.58 and 5.59). We used the broad occupational groups given in the National Occupational Classification (NOC) for classifying the households. In the rural sector, since the majority of the population are engaged in agriculture we have further divided agricultural occupations into three groups as per the NOC definiton.

i) Cultivators and Farmers (People owning land)

ii) Agricultural labourers

iii) Other workers for farms, fisheries etc.

It may be noted here that by occupation of the household we mean the main occupation of the household, that is, the occupation that contributes most to the income of the household. It is possible that a household which owns land may also sell its labour and income from selling its labour is more than the income from the land owned by it. In such a case the household is classified an 'Agricultural Labourer household'.

TABLE 5.58 : Distribution of Households by Occupation, Rural Karnataka 1973-74 and 1977-78.

	1973-74			1977-78		
Occupation	SC/ST	Non SC/ST	Total	SC/ST	Non SC/ST	Total
Cultivators and Farmers	27.97	55.86	50.56	15.17	47.96	42.60
Agriculture, Plantation and Other farmworkers	64.41	29.62	36.23	68.29	32.30	38.18
Others	7.62	14.52	13.21	16.54	19.74	19.22
All	100.00	100.00	100.00	100.00	100.00	100.00

TABLE 5.59 : Distributiono of Households by Occupation, Urban Karnataka 1973-74 and 1977-78

	1973-74			1977-78		
Occupation	SC/ST	Non SC/ST	Total	SC/ST	Non SC/ST	Total
Clerical and Rel. Workers	25.00	32.13	31.59	24.92	34.38	33.34
Farmers, Fishermen, etc.,	25.00	11.41	15.96	15.64	12.66	12.98
Production and Rel. Workers	41.67	31.53	33.60	40.39	32.49	33.36
Others	8.33	24.93	20.44	19.05	20.47	20.31
All	100.00	100.00	100.00	100.00	100.00	100.00

On looking at Table 5.58 (rural sector) for 1973-74 we find that a higher per cent of the SC/ST are agricultural labourers (64.4 per cent) as compared to non SC/ST (29.6 per cent). The non SC/ST are mainly cultivators (55.9 per cent). Only 29 per cent of the SC/ST households are cultivators. Agricultural labour and other workers, due to lack of any asset, can earn income only by selling their labour and hence will generally have a lower level of living than the Farmers and Cultivators who own productive assets like land, which brings interest.

In 1977-78, the percentage of both SC/ST and non SC/ST population that are cultivators and farmers has decreased and this decrease is more for the SC/ST. The percentage of Agricultural and other labour in both the SC/ST and non SC/ST populations has also increased but not much.

The residual group going under the name of 'others' has, in 1977-78 more than double the percentage of SC/ST population than in 1973-74 This percentage has also increased for the non-SC/ST.

The 'others' group contains the following occupation groups in the case of the rural sector.

1) Professional and Technical Workers
2) Administrative, Executive and Managerial Workers
3) Clerical, Sales, Service and Related Workers
4) Production and related workers

and 5) Non response or non workers.

so that the percentage of the SC/ST in this group of occupations (1 through 5) has increased from 1973-74 to 1977-78 and this increase is more than what can be'attributed'to the population increase.

In the urban sector there is a difference in the occupational pattern of the two groups (Table 5.59). We find that higher per cent of SC/ST households are engaged in agricultural or industrial labour than non SC/ST households. This is ture in 1977-78 also. The percentage of Farmers etc., in urban areas has decreased in both the SC/ST and the non SC/ST cases. The percentage of 'clerical, sales and service workers' and 'Production and related' 'Workers' has not changed much. Once again the 'others' group which contains (for the urban sector)

1) Professional and technical and related workers

2) Administrative and Executive and Managerial Workers

and 3) Non response or non Workers.

has increased for the SC/ST group and decreased for the non SC/ST group. This shows that the gove:nment's policy to help this group of people by reservation has had some effect and there is some evidence of inter occupational mobility. Also the occupational disparity seems to be much lower in the urban sector than in the rural sector.

5.10.4 Household size and Composition:

The size of a household and the age-sex composition of its members is an important variable to be considered in any study of the living levels.

Tables 5.60 and 5.61 give the average household composition and size for decile groups separat ly for the rural and urban sectors for the whole state.

The household size on the average does not seem to differ much across social groups. On looking at the proportions of male, female and children in Rural Karnataka we find that this also is not very different across social groups.

However, these assertions have to be tested rigorously by doing a Statistical analysis, which has not been possible due to reasons already mentioned.

In the urban sec tor, the proportion of males in SC/ST households on the average is lower than that in the non SC/ST households, generally. The proportion of females follows a reverse pattern whereas the proportion of children in both populations is about the same.

These tables are presented only for the time period 1977-78 because they can be regarded as more accurate for this

TABLE 5.60 : Decile group wise average composition of SC/ST and Non SC/ST Households, All Regions, Rural Karnataka : 1977-78.

Decile Group	Prop.of males N_m		Prop.of females N_f		Prop.of children N_c		Average hh size N	
	SC/ST	Non SC/ST	SC/ST	Non SC/ST	SC/ST	Non SC/ST	SC/ST	Non SC/ST
1	.23	.24	.24	.24	.53	.52	6.89	6.22
2	.27	.26	.24	.25	.49	.49	6.31	6.27
3	.28	.28	.24	.27	.48	.45	5.73	6.49
4	.29	.28	.29	.28	.42	.44	5.40	6.03
5	.31	.29	.24	.28	.45	.43	6.38	5.60
6	.32	.29	.31	.28	.37	.43	4.89	5.82
7	.34	.33	.30	.29	.36	.38	4.85	5.33
8	.34	.32	.35	.29	.31	.39	4.34	5.19
9	.33	.33	.34	.31	.34	.36	4.34	5.06
10	.36	.34	.36	.33	.27	.33	4.01	4.60

TABLE 5.61 : Decile wise average composition of SC/ST and Non SC/ST Households, All Regions Urban Karnataka : 1977-78.

Decile Group	Prop.of males N_m		Prop.of females N_f		Prop.of children N_c		Average hh size N	
	SC/ST	Non SC/ST	SC/ST	Non SC/ST	SC/ST	Non SC/ST	SC/ST	Non SC/ST
1	.21	.31	.26	.26	.53	.43	5.69	6.69
2	.25	.27	.30	.27	.45	.45	5.84	6.54
3	.22	.26	.40	.30	.38	.44	5.62	6.55
4	.30	.32	.31	.28	.39	.40	5.18	6.05
5	.25	.31	.25	.31	.49	.38	5.77	5.78
6	.26	.35	.35	.29	.39	.36	5.91	5.77
7	.29	.34	.33	.29	.38	.37	5.47	4.99
8	.21	.36	.26	.31	.53	.33	5.55	4.27
9	.31	.40	.33	.34	.36	.26	3.28	3.94
10	.58	.42	.31	.33	.11	.25	2.63	2.85

time period because of larger sample size. Moreover variation of household size or composition over time is not of very great interest from the point of view of this study. One is more interested in variation of these variables across the two social groups, SC/ST and non SC/ST.

5.10.5 Asset Position:

Land is the single most important physical asset which is important in any consideration of the level of living specially in the rural sector.

In the urban sector, ownership of a house is an important asset.

In our study we have considered the distribution of land across decile groups for the two social groups separately for the rural and urban sector.

Though the data on ownership of houses and the imputed rent in case of owner occupied houses was available to us for

1977-78, we have not processed it for this study, basically because the data for this block has not been cleaned and verified as correct. Information on type of dwelling (kuchha or pucca), type of flooring etc., were also available but not used for the same reason.[22]

Tables give both NSS expenditure classwise land distribution for the the SC/ST and Non SC/ST. We see the wide disparity in the land owned[23]. Per capita across Social groups, so that the SC/ST own much less land than the non SC/ST even when they are at the same level of per capita income (expenditure) (Tables 5.62 and 5.63).

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22 For details about the data available and the way it has been stored on magnetic tapes See Nayak and Prasad (1983).

23 By the NSS definition land owned is defined as land owned + land leased in - land leased out so that the table gives operational land holding

TABLE 5.62 : Land owned per capita (in acres) by NSS expenditure class across regions and Social Groups, Rural Karnataka : 1977-78.

Region / Exp. Class	1 SC/SC	1 Non SC/ST	2 SC/ST	2 Non SC/ST	3 SC/ST	3 Non SC/ST	4 SC/ST	4 Non SC/ST
0-10	-	-	-	.38	-	-	-	-
10-15	-	-	-	-	.22	.50	1.34	.20
15-20	-	-	.07	.11	.07	.26	.09	.39
20-30	-	.002	.12	.16	3.71	.17	.44	.34
30-35	.002	.12	.17	.29	.09	.33	.33	.89
35-40	.01	.25	.13	.27	.17	.40	.16	.95
40-50	.26	.22	.06	.38	.22	.39	.23	1.01
50-60	.007	.24	.30	.61	.32	.49	.39	1.44
60-70	.00	.26	.51	.57	.55	.54	.25	1.62
70-80	.002	.20	.00	.65	.26	.66	.83	2.43
80-100	.01	.51	.66	1.12	.43	.85	.01	2.52
100-150	.60	.68	.63	1.11	.90	1.05	1.08	3.12
150-200	.00	.41	.11	.98	1.51	.92	2.01	3.94
200-300	-	.04	-	3.08	-	.73	-	6.04
300 +	-	.51	-	.43	.37	1.16	-	1.34

TABLE 5.63 : Land owned per capita (in acres) by NSS expenditure classes across regions and Social groups, Urban Karnataka :1977-78.

Region / Exp. Class	1		2		3		4	
	SC/ST	Non SC/ST	SC/ST	Non SC/ST	SC/ST	Non SC/ST	SC/ST	Non SC/ST
0-10	-	-	-	-	-	.001	-	1.83
10-15	-	-	.001	-	.01	.00	-	-
15-20	-	-	.001	.002	-	.01	.003	.01
20-30	-	.05	-	.004	.001	.002	.15	.24
30-35	-	1.07	-	-	.002	.05	.01	.11
35-40	.005	.01	-	.008	.002	.05	.003	.44
40-50	-	.07	.003	.17	.002	.34	.003	.25
50-60	-	.04	.003	.12	.003	.07	.05	.16
60-70	-	.02	-	.005	.002	.09	.005	.28
70-80	.00	.08	.002	.005	.002	.09	.49	.22
80-100	-	.08	-	.13	.003	.08	.02	.29
100-150	-	.09	.003	.21	.003	.81	.006	.48
150-200	.00	.006	-	.44	.11	.06	.008	1.32
200-300	-	.025	-	1.41	.002	.13	-	.68
300 +	-	.06	.00	.003	-	2.12	-	.008

5.10.6 Spatial Dimension:

As already mentioned in Chapter 1 the dry districts of Northern Karnataka (Region 4) are backward compared to the rain fed districts of Coastal Karnataka (Region 1). This is what our study also brings out.

The bottom 10 per cent of the Rural households in Region 1 are richer than the bottom 10 per cent of the households in any other region and the bottom 10 per cent of Region 4 are poorer than the bottom 10 per cent of the households in any other region. (Table 5.64).

Similarly, the richest top 10 per cent of the rural households in Region 1 are better off than the richest top 10 per cent of other regions (with the exception of the non SC/ST of Region 3). In fact, in any decile group we find that mostly the households of Region 1 to be the richest and households of Region 4 to be the poorest.

TABLE 5.64 : Average consumption in constant rupees of 1970-71, Karnataka : 1977-78

(Rural)

Decile \ Region	1 SC/ST	1 Non SC/ST	2 SC/ST	2 Non SC/ST	3 SC/ST	3 Non SC/ST	4 SC/ST	4 Non SC/ST
1	19.99	20.31	10.01	14.75	11.39	15.93	10.92	[illegible].97
2	20.21	25.88	13.04	20.65	16.30	20.85	14.32	19.04
3	25.12	29.09	14.83	24.16	20.67	22.83	16.29	22.02
4	28.12	33.74	17.40	27.07	24.03	29.15	18.50	25.03
5	31.80	36.80	20.63	30.31	28.07	32.84	20.59	28.65
6	35.95	42.72	22.82	36.74	31.77	36.55	24.37	32.39
7	43.97	51.98	28.45	42.30	34.17	41.69	26.63	36.41
8	44.51	60.08	33.76	51.56	37.91	50.18	31.42	42.62
9	50.19	70.79	43.40	66.97	43.69	62.56	36.08	51.67
10	82.91	136.75	68.66	94.62	70.39	172.87	54.36	78.23

TABLE 5.64 : (Contd.)

(Urban)

Region / Decile group	1		2		3		4	
	SC/ST	Non SC/ST	SC/ST	Non SC/ST	SC/ST	Non SC/ST	SC/ST	Non SC/ST
1	-	19.16	7.61	16.58	15.54	18.92	11.31	13.27
2	-	25.66	9.97	24.26	21.11	25.71	15.31	20.90
3	-	29.68	22.77	30.96	25.27	31.91	19.25	25.90
4	-	32.34	27.76	35.78	32.17	37.59	26.01	29.34
5	-	36.26	31.95	44.64	36.55	43.08	29.61	33.39
6	-	41.92	38.82	52.79	38.24	48.02	31.92	37.97
7	-	48.12	41.90	69.49	43.93	57.10	36.99	44.53
8	-	55.80	44.23	92.71	48.93	67.86	43.07	51.64
9	-	67.23	59.72	118.66	61.45	86.80	52.16	66.10
10	-	129.04	2347.49	176.85	112.14	507.13	79.44	1031.91

On the other hand, in urban Karnataka this distinction between regions is not so clearcut which is to be expected because in the urban sector spatial disparities will be less compared to the rural sector. This is because the urban sector's mainstay is industry and trade which depends less on the physical features of the region than the agriculture based rural sector which depends wholly on rainfall, soil fertility etc., of the region.

Thus we see that a household (whether SC/ST or non SC/ST) is more likely to be poor if it belongs to Region 4 than if it belongs to Region 1.

The study thus points to the differences between the SC/ST and others in the levels of education, occupation status and ownership of land of the households and suggests that this may be a major factor accounting for the observed disparities in levels of living. But this aspect needs further analysis.

CHAPTER 6

ANALYSIS OF CONSUMPTION PATTERNS : THE ENGEL CURVE APPROACH AND THE TREATMENT OF HETROSCEDASTICITY

6.1 Introduction:

The foregoing chapter looked at the levels of living, the inequality therein and its major determinants. and tried to figure out the main causes of inequality through decomposition analysis.

However, the analysis will not be complete without investigating the structure and pattern of consumer expenditure of the two social groups, the SC/ST and the non SC/ST. The knowledge of the structure is important for policy purposes eg., in the determination of the type of subsides to be given to the very poor within the SC/ST group. The following chapters address themselves to these aspects using standard analytical methods of engel curve approach.

Socio-occupational factors have been known to be important determinants of the pattern of consumer expenditure. Several studies have demonstrated this on the basis of Jndian data.[1] In this context, the present study attempts to answer the following questions for the two periods of time 1973-74 and 1977-78.[2]

Do engel functions for a given item of expenditure differ between the two social groups, the SC/ST and the non SC/ST? That is, do the SC/ST and the non SC/ST behave differently in terms of their consumption patterns on certain selected item groups?

This chapter describes the methodology, the model and other related aspects of the analysis used to answer the above questions.

Some results are described in this chapter. Most of the results of the analysis are presented in the next chapter.

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[1] See Ganguly (1960), Gupta (1968), Singh (1968), Jain and Tendulkar (1973).

[2] Corresponding to the 28th and 32nd Round of the NSS consumer expenditure data, respectively.

Section 6.2 describes the model used to estimate the engel functions, Section 6.3 gives an account of the method of covariance analysis as applied to the model. Section 6.4 describes the estimation problems encountered while working on the model and presents the procedure by which these problems were overcome. Section 6.5 describes the grouping of commodities formed for the analysis. Section 6.6 presents the results of comparative study of the goodness of fit of different engel curve forms. Section 6.7 gives a general description of the estimated engel curves and presents the results of the half-sample (sub-sample)[3] analysis. Section 6.8 concludes the chapter.

6.2 Description of the model:

The analysis of covariance to determine whether engel functions are different (across social groups) first requires the estimation of the engel functions.

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[3] See Section 7 for a description of half-samples (sub-samples).

Several functional forms[4] have been tried by researchers and these have been reviewed in detail in chapter 3. As has already been said, the choice among different curve forms is neither straight forward nor unambigious.[5] Nevertheless, a choice amongst these forms has to be made before one can continue further with the analysis.

For this analysis, the Working-Leser form of engel function was chosen. This model satisfies the criteria of additivity without any cross-equation restrictions. The OLS procedure itself assures this property.[6] Apart from this, engel curves estimated here show that the choice among forms is not clearcut. Therefore this model was chosen as an adequate one to run analysis of covariance tests on.

The model can be writen as

$$W_i = \alpha_i + \beta_i \ln \bar{E} \qquad \text{.... (6.1)}$$

[4] For instance, linear, loglinear, hyperbolic, semilog, doublelog.

[5] Fitting of curve forms on our own data leads to the same result. For details see Section 6 of this chapter.

[6] As shown later, and this is a well known property (See Deaton and Muellbauer (1980).

where E is total outlay. And W_i is ith item's share of expenditure in the total budget E

$$\text{ie.} \quad W_i = \frac{\text{Expenditure on } i^{th} \text{ item}}{\text{Total outlay (E)}}$$

α_i and β_i are parameters to be estimated.

This form of engel function thus relates, linearly, budget share of the commodity to logarithm of total outlay. It was first estimated by Working (1943) and was later used successfully by Leser (1963, 1976). Adding up constraint requires that $\sum_i W_i = 1$, which is satisfied provided $\Sigma \alpha_i = 1$ and $\Sigma \beta_i = 0$. It can be shown that if $W_i = \alpha_i + \beta_i \ln E$ is estimated equation by equation by ordinary least squares then the adding up criterion is automatically satisified.[7] Luxury goods whose expenditure elasticity is greater than one are described by $\beta_i > 0$ and necessities and inferior goods by $\beta_i \leq 0$.

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[7] For a proof of this assertion see the end of the Section.

The engel curves describes by this model belong to the family discussed by Gorman (1981) and can be derived from the indirect utility function of the general form.

$$u = \psi_1 + \frac{\psi_2}{\ln E - \psi_3} \qquad \ldots (6.2)$$

for appropriately chosen functions ψ_1, ψ_2, ψ_3. The price vector p may also be considered in (6.1). So that α_i and β_i become functions of p in which case the functions ψ_1, ψ_2, and ψ_3 also became functions of p.

In particular, let the expenditure function be denoted by C(u,p). C(u,p) defines the minimum expenditure necessary to attain a specific utility level (u) at given prices (p).

The price-independent generalised log linear (PIGLOG) class of preferences is defined by

$$\ln (C(u,p)) = (1-u) \ln a(p) + u \ln b(p) \qquad \ldots (6.3)$$

If one takes specific functional forms for $\ln a(p)$ and $\ln b(p)$ ie.

$$\ln a(p) = \alpha_0 + \Sigma\alpha_k \ln p_k + \frac{1}{2} \sum_k \sum_j \gamma^*_{kj} \ln p_k \ln p_j \qquad \ldots (6.4)$$

$$\ln b(p) = \ln a(p) + \beta_0 \prod_k p_k^{\beta_k} \qquad \ldots (6.5)$$

so,

$$\ln c(u,p) = \alpha_0 + \sum_k \alpha_k \ln p_k + \frac{1}{2} \sum_k \sum_j \gamma^* \ln p_k \ln p_j$$

$$+ u \beta_0 \prod_k p_k^{\beta_k} \qquad \ldots (6.6)$$

where α_i, β_i and γ_{ij} are parameters. $c(u,p)$ is linearly homogeneous in p provided $\sum_i \alpha_i = 1;\ \sum_j \gamma^*_{kj} = \sum_j \beta_j = 0$

Differentiating (6.6)

$$\frac{\ln c(u,p)}{\ln p_i} = W_i = \alpha_i + \sum_j \gamma_{ij} \ln p_j + \beta_i u \beta_0 \prod p_k^{\beta_k} \qquad \ldots (6.7)$$

where $\gamma_{ij} = \frac{1}{2} (\gamma^*_{ij} + \gamma^*_{ji}),$ $\qquad \ldots (6.8)$

For a utility maximising consumer, total E is equal to $c(u,p)$ and this can be inverted to give u as a function of p and E, the indirect utility function.

After doing this,

$$W_i = \alpha_i + \sum_j \gamma_{ij} \ln p_j + \beta_i \ln \left(\frac{E}{P}\right) \qquad \ldots (6.9)$$

where P is a price index defined by

$$\ln P = \alpha_0 + \Sigma\alpha_k \ln p_k + \frac{1}{2} \sum_j \sum_k \gamma_{kj} \ln p_k \ln p_j \qquad \ldots (6.10)$$

For homogeniety , $\sum_j \gamma_{ij} = 0$ ... (6.11)

For symmetry, $\gamma_{ij} = \gamma_{ji}$ ... (6.12)

and for additivity $\sum_i \alpha_i = 1,\ \sum_i \gamma_{ij} = 0\ ,\ \sum_i \beta_i = 0.$ ... (6.13)

In this model changes in relative prices work through γ_{ij} and changes in real expenditure work through β_i.

This demand system called the Almost Ideal Demand System (AIDS) is a member of the PIGLOG family and hence of PIGL (Price independent generalised linear) engel curves.

The PIGL class is related to two other well known models. It includes all models with Linear engel curves eg. the LES, and the Quadratic utility function as special cases. A weakly restricted form of the indirect translog is also PIGLOG.[8]

Model (6.1) is a PIGLOG engel curve for cross-section data where it is assumed that prices are the same across households. (6.1) does not have any variable pertaining to household size which is another important explanatory variable. Household size can be brought in in two ways; use ln (per capita outlay), or use ln (total outlay) and ln (household size) as two separate explanatory variables, ie. the model could be written as

$$W_i = \alpha_i' + \beta_i' \ln \left(\frac{E}{N} \right) + u_i' \qquad \ldots (6.14)$$

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8 See Deaton and Muellbauer (1980) for further reference.

Where N is household size

Alternatively, one can use ln (household size) and ln (total outlay) as two distinct explanatory variables ie. the model could be written as.

$$W_i = \alpha_i'' + \beta_i'' \ln E + \gamma_i \ln N + u_i'' \quad \ldots (6.15)$$

Equations 6.14 and 6.15 are linear relations. Since the data set is quite large the model can be improved[9] by including a quadratic term so that (6.14) can be written as

$$W_i = \alpha_i^* + \beta_i^{**} \ln \left(\frac{E}{N} \right) + \gamma_i^* \left(\ln \frac{E}{N}\right)^2 + u_i^* \quad \ldots (6.16)$$

and (6.15) can be written as

$$W_i = \alpha_i^{**} + \beta_i^{**} \ln E + \gamma_i^{**} \ln N + \delta_i^{**} (\ln E)^2$$

$$+ \pi_i^{**} (\ln N)^2 + u_i^{**} \quad \ldots (6.17)$$

[9] The explained sum of sequares did, in fact, increase significantly on the inclusion of $(\ln E)^2$.

It must be noted that (6.16) uses ln (per capita expenditure) and (ln (per capita expenditure))^2 as explanatory variables. This model implicity forces the coefficient of (ln N) to be equal in absolute magnitude to the coefficient of ln E ie. both are $|\beta_i^*|$.

On the other hand model (6.17) allows the coefficients of ln E and ln N, β_i^{**} and γ_i^{**}, to be completely different.

Model (6.17) allows separate descrition of the effect of total outlay (E) and household size (N) on share of expenditure on particular item (W_i) whereas (6.16) present the combined effect of total outlay and household size on budget share and the separate effects are confounded in this model because of the use of per capita expenditure. However, a slightly different version of 6.16 is used by Deaton et al (1984). They quote empirical experience to say that, Engel curves of the form (6.14) or (6.17) when fitted to different groups of households that are demographically homogeneous within groups are well approximated across groups by replacing total household expenditure by <u>per capita</u> household expenditure. The residual effects of demographic structure can be approximated by including the household composition variables linearly.

So that one has

$$W_i = \alpha_i^{***} + \beta_i^{***} (\ln \frac{E}{N}) + \gamma_i^{***} (\ln \frac{E}{N})^2$$

$$+ \delta_{i1} N_m + \delta_{i2} N + \delta_{i3} N_c + u_i^{***} \qquad \ldots (6.18)$$

where N_m is number of males in the household.

N_f is number of females in the household.

and N_c is number of children in the household.

and δ_{ij} , j = 1, 2, 3 are parameters to be estimated

However, and (6.17) was chosen without the quadratic term on (ln N) and the specified model is as follows:

$$W_i = \alpha_i + \beta_i \ln E + \gamma_i \ln N + \delta_i (\ln E)^2 + u_i \qquad \ldots (6.19)$$

We chose this instead of (6.18) for three reasons

1) We are able to get the separate effects of ln E and ln N in 6.19.

2) We are concentrating on social group effects and (ln N) would serve as the correction for household size. It is likely that Household composition and hence its effects do not differ significantly across social groups.

3) (6.19) has fewer explanatory variables than 6.17 or 6.16 . This is an important consideration because data on certain groups in certain regions consist only of 11 observations. Problems with regard to enough degrees of freedom as well as maintenance of comparability between regions forced us not to include N_m, N_f and N_c as additional explanatory variables. For the same reason neither the subround dummy variables were included

nor were the interaction terms between total outlay and household size considered.[10]

To show that an equation by equation estimation of (6.19) for all commodities/commodity groups by OLS automatically satisfies the additivity criterion let us rewrite (6.19) in matrix notation so that more than one explanatory variable is included. Let the data matrix E be denoted by $\underset{\sim}{E} = \left[C \ \ln \underset{\sim}{E} \ (\ln \underset{\sim}{E})^2 \ \ \ln \underset{\sim}{N} \right]$

where C is a column vector of T ones (if model is to be estimated for T observations), $\ln \underset{\sim}{E}$ is a vector observations on ln E, $\ln \underset{\sim}{N}$ is a vector of observations on ln N and $(\ln \underset{\sim}{E})^2$ is a vector of observation on $(\ln E)^2$

The OLS estimator of the parameter vector β_i of ith regression is given by $\hat{\underset{\sim}{\beta}}_i = (E'E)^{-1} \ E'\underset{\sim}{W}_i$ for vector $\underset{\sim}{W}_i$.

Let $\underset{\sim}{j}$ be the vector $\begin{pmatrix} 1 \\ 0 \\ 0 \\ 0 \end{pmatrix}$

10 Subround dummies were included in an earlier attempt and found insignificant for most commodity groups.

So that $\underset{\sim}{E}\,\underset{\sim}{j} = \Sigma\, W_i$ ... (6.20)

We know that $\sum_i W_i = 1$ because W_i are shares, $\Sigma\, \underset{\sim}{W}_i$ is vector of $\Sigma\, W_i$ ie. $\underset{\sim}{E}\,\underset{\sim}{j}$ is a vector of 1's.

$$\therefore \quad \Sigma\, \hat{\beta}_i = \Sigma\, (\underset{\sim}{E}'\underset{\sim}{E})^{-1}\, \underset{\sim}{E}'\, \underset{\sim}{W}_i = (\underset{\sim}{E}'\underset{\sim}{E})^{-1}\, \underset{\sim}{E}'\, \Sigma\, W_i$$

$$= (E'E)^{-1}\, \underset{\sim}{E}'\underset{\sim}{E}\,\underset{\sim}{j} = \underset{\sim}{j}$$

Thus the intercept term sums to 1 and the others to zero, satisfying additivity.

The model 6.19 was therefore estimated by applying OLS equation by equation.

Expenditure elasticity for ith item (η_i) is given by

$$\eta_i = \frac{\beta_i + 2\delta_i \ln E}{W_i} + 1 \qquad \ldots (6.21)$$

and can be derived from 6.19

We see that

$$\frac{\partial W_i}{\partial \ln E} = \beta_i + 2\delta_i \ln E \qquad \ldots (6.22)$$

We know that $W_i = \frac{p_i X_i}{E}$ where $p_i X_i$ is expenditure on commodity i and p_i is its price.

So that

$$\frac{\partial W_i}{\ln E} = \frac{\partial W_i}{\partial E} \cdot \frac{\partial E}{\partial \ln E} = \frac{\partial \frac{p_i X_i}{E}}{\partial E} \cdot E \qquad \ldots (6.23)$$

$$\frac{\partial W_i}{\ln E} = E \left[\frac{p_i}{E} \frac{\partial X_i}{\partial E} - \frac{p_i X_i}{E^2} \right] = p_i \frac{\partial X_i}{\partial E} - \frac{p_i X_i}{E}$$

$$= p_i \frac{\partial X_i}{\partial E} - \frac{p_i X_i}{E} \qquad \ldots (6.24)$$

We define $\eta_i = \frac{\partial X_i}{\partial E} \cdot \frac{E}{X_i}$ ... (6.25)

$$\therefore \quad \frac{\partial X_i}{\partial E} = \frac{\eta_i X_i}{E} \qquad \ldots (6.26)$$

$$\therefore \quad \frac{\partial W_i}{\ln E} = \frac{p_i \eta_i X_i}{E} - \frac{p_i X_i}{E} \qquad \ldots (6.27)$$

$$\beta_i + 2\delta_i \ln E = W_i \left[\eta_i - 1 \right] \qquad \ldots (6.28)$$

$$\eta_i - 1 = \frac{\beta_i + 2\,\delta_i \ln E}{W_i} \qquad \ldots (6.29)$$

$$\eta_i = 1 + \frac{\beta_i + 2\,\delta_i \ln E}{W_i} \qquad \ldots (6.30)$$

$\therefore$ The estimated expenditure elasticity η_i is given by equation 6.30.

η_i's have been calculated separately for overall regional means of the explanatory variables and for social group specific regional means.

To determine the effect of an increase in total expenditure E from E_1 (say) to E_2 keeping N constant we have (dropping subscript i)

$$W_1 = \alpha + \beta \ln E_1 + \gamma \ln N + \delta(\ln E_1)^2 \qquad \dots (6.31)$$

and

$$W_2 = \alpha + \beta \ln E_2 + \gamma \ln N + \delta(\ln E_2)^2 \qquad \dots (6.32)$$

So that

$$W_2 - W_1 = (\ln E_2 - \ln E_1) \left[\beta + \delta (\ln E_1 + \ln E_2)\right] \qquad \dots (6.33)$$

$$W_2 - W_1 > 0 \text{ if } \beta + \delta (\ln E_1 + \ln E_2) > 0 \qquad \dots (6.34)$$

and $W_2 - W_1 < 0$ if $\beta + \delta (\ln E_1 + \ln E_2) < 0$ ... (6.35) ie. expenditure share increases

$$\text{if} \quad \beta + \delta \; (\ln E_1 + \ln E_2) > 0$$

and decreases if

$$\beta + \delta \; (\ln E_1 + \ln E_2) < 0$$

This means that the magnitude of $E_1 E_2$ is crucial.

6.3 The method of covariance analysis:

Finally, the following model was used to estimate the engel function.[11]

$$W_{ij} = \alpha_i + \beta_i \ln E_j + \gamma_i \ln N_j + \delta_i \; (\ln E_j)^2 + u_{ij} \qquad \ldots (6.36)$$

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[11] The analysis of covariance technique has been well described in standard text books eg. See Johnston (1963), Maddala (1977). only an outline is given here.

Where W_{ij} is share of i^{th} item in the monthly budget of j^{th} household

E_j is monthly total expenditure of j^{th} household

N_j is the size of j^{th} household

U_{ij} is the random error term which follows the usual assumptions of a linear regression model.

The subscript i for item groups, sums from 1...... 10 because we have considered ten broad commodity groups. These commodity groups are described in Section 6.5 below.

For the 28^{th} Round 2 separate exercises have been carried out, one for the rural sector and one for the urban sector. For the 32nd Round 8 separate exercises have been carried out for 2 sectors X 4 regions.

In all, therefore, 10 separate exercises have been done.

The subscript j, denotes households in the sample for each analysis (eg. for 28th Round Rural Sector j = 1, 619 and for 32nd Round Rural Sector Region 1(j = 1, 184).

Model (6.36) does not take into account the differences, if any, in the consumption patterns between the two social groups of our interest.

To investigate the possibility of group effects in the form of differential intercepts the model (6.36) becomes,

$$W_{ij} = \alpha_i + \alpha_i' D + \beta_i \ln E_j + \gamma_i \ln N_j + \delta_i (\ln E_j)^2 + u_{ij} \qquad \ldots (6.37)$$

Where D is the dummy variable for social group,

D = 1 for a household belonging SC/ST group

= 0 for others

Model 6.37 implies different intercepts for the two social groups ($\hat{\alpha}_i + \hat{\alpha}_i$ for SC/ST group and $\hat{\alpha}_i$ for the others) but the same slope coefficients ($\hat{\beta}_i$, $\hat{\gamma}_i$ and $\hat{\delta}_i$).

Again, to investigate the possibility of group effects taking the form of differential slopes <u>and</u> intercepts the model becomes

$$W_{ij} = \alpha_i + \alpha_i' D + \beta_i \ln E_j + \beta_i' D \ln E_j$$

$$+ \gamma_i \ln N_j + \gamma_i' D \ln N_j$$

$$+ \delta_i (\ln E_j)^2 + \delta_i' D(\ln E_j)^2 + u_{ij}'' \qquad \ldots (6.38)$$

Equation 6.38 assumes that the error variance between the two groups is same i.e.

$$E(U_{ij}^2)_{\text{group 1}} = E(U_{ij}^2)_{\text{group 2}}$$

Should this assumption be not valid, separate regressions would be necessary for each group unlike the regression with pooled data and dummy variables as in equation 6.38. Hence, to check on the appropriateness of the equation 6.38 , testing the assumption of equal variances is necessary. This was done for 28th Round data. Regressions were run without group dummies but separately for the SC/ST group and then the non SC/ST group. The well known Bartlett's test for equality of variances could not reject the null hypothesis of homogeneous variances for most commodity groups. For further analysis model 6.38 was used on the strength of this finding.

For all the ten-commodity groups the parameters were estimated by the classical least squares (OLS) method.

The statistical test regarding the complete homogeneity of Engel curves for the two social groups for the ith item group can be formulated by testing the hypothesis

$$H_0(1) : \quad \alpha_i = \alpha_i + \alpha_i'$$

$$\beta_i = \beta_i + \beta_i'$$

$$\gamma_i = \gamma_i + \gamma_i'$$

$$\delta_i = \delta_i + \delta_i'$$

Which, in terms of the dummy variable model is equivalent to testing

$$H_0(1) : \alpha_i' = \beta_i' = \gamma_i' = \delta_i' = 0$$

If $H_0(1)$ is rejected, we can test whether the slopes of the Engel curves are identical (whatever the intercepts) by formulating the null hypothesis

$$H_0(2) : \beta_i' = \gamma_i' = \delta_i' = 0$$

If $H_0(2)$ <u>cannot be</u> rejected we can go on and test whether the intercepts are different across social groups i.e. test the hypothesis

$$H_0(3) : \alpha_i' = 0 \quad \text{when} \quad \beta_i' = \gamma_i' = \delta_i' = 0$$

Let S_1 be the residual sum of squares for model 6.36

i.e. $$S_1 = \sum_{j=1}^{T} \left[W_{ij} - \alpha_i - \beta_i \ln E_j - \gamma_i \ln N_j - \delta_i (\ln E_j)^2 \right]^2 \quad \ldots (6.39)$$

with degrees of freedom $r = T - 4$

Let S_2 be the residual sum of squares for model 6.37

i.e.
$$S_2 = \sum_{j=1}^{T} \left[W_{ij} - \alpha_i - \alpha_i' D - \beta_i \ln E_j - \gamma_i \ln N_j - \delta_i (\ln E_j)^2 \right]^2$$

$$\ldots (6.40)$$

with degree of freedom $r_1 = T - 2 - 4 + 1$

The decrease in residual sum of Squares when one moves from model 6.36 to 6.37 is

$S_1 - S_2$ with degrees of freedom $r_2 = r - r_1$ Thus, to test $H_0(3)$: $\alpha_i' = 0$, we can the test statistic

$$F_3(r - r_1, r_1) = \frac{S_1 - S_2}{r - r_1} \Big/ \frac{S_2}{r_1}$$

Let S_3 be the residual sum of squares for model 6.38 i.e.

$$S_3 = \sum_{j=1}^{T} \Big[W_{ij} - \alpha_i - \beta_i \ln E_j - \gamma_i \ln N_j - \delta_i (\ln E_j)^2$$

$$- \alpha_i' - \beta_i' D \ln E_j - \gamma_i' D \ln N_j - \delta_i' D (\ln E_j)^2 \Big]^2$$

... (6.41)

with $r_3 = T - 2 X 4$ degrees of freedom.

Moving from 6.37 to 6.38 decreases the residual sum of squares by $S_2 - S_3$ with the degrees of freedom $r_4 = r_1 - r_3$, therefore, to test $H_0(2) : \beta_i' = \gamma_i' = \delta_i' = 0$ we have the test statistic

$$F_2\ (r_1 - r_3, r_3) = \frac{\dfrac{S_2 - S_3}{r_1 - r_3}}{\dfrac{S_3}{r_3}}$$

Moving from 6.36 to 6.38 decreases the residual sum of squares by $S_1 - S_3$ with degrees of freedom $r_5 = r - r_3$. Thus to test $H_0(1)$: $\alpha_i' = \beta_i' = \gamma_i' = \delta_i' = 0$ i.e. the hypothesis of overall homogeneity we have the test statistic $F_1(r - r_3, r_3)$ =

$$= \frac{S_1 - S_3}{r - r_3} \bigg/ \frac{S_3}{r_3} .$$

F_1, F_2, F_3 are all three variance ratios and distributed as F-statistics with $(r - r_3, r_3)$, $(r_1 - r_3, r_3)$ and $(r - r_1, r_1)$degrees of reedom respectively and provide the test for the 3 hypothesis $H_0(1)$, $H_0(2)$, and $H_0(3)$ respectively.

If on testing the hypothesis both slopes and intercepts for the two groups turn out to be statistically homogeneous, then the social group factor can be neglected and efficient estimates of the parameters can be obtained by combining data on the two groups into a single homogeneous sample i.e. we fit model 6.36. However, if the differences between the regression equations corresponding to the two groups are found to be significant, the test for $H_0(2)$ is undertaken. If $H_0(2)$ cannot be rejected we go on to test $H_0(3)$.

6.4 Estimation problems:

The model 6.36 (and its modifications 6.37 and 6.38) were estimated by the OLS method. The general linear model specifies the relationship between a dependent variable, say y, and a set of independent variables $X_1 \ldots X_k$ (also called explanatory variables). Suppose we have n observations on y and X, the model can be written in matrix notation as.

$$\underset{\sim}{y} = \underset{\sim}{X} \underset{\sim}{\beta} + \underset{\sim}{u} \qquad \ldots (6.42)$$

Where

$$\underset{\sim}{y} = \begin{bmatrix} Y_1 \\ Y_2 \\ 1 \\ Y_n \end{bmatrix} \qquad \underset{\sim}{X} = \begin{bmatrix} 1 & X_{21} & \cdots\cdots & X_{k1} \\ 1 & & & \\ 1 & & & \\ 1 & X_{2n} & \cdots\cdots & X_{kn} \end{bmatrix}$$

$$\underset{\sim}{\beta} = \begin{bmatrix} \beta_1 \\ \beta_2 \\ \vdots \\ \beta_k \end{bmatrix} \qquad \underset{\sim}{u} = \begin{bmatrix} u_1 \\ \vdots \\ u_n \end{bmatrix}$$

X_{ki} denotes the ith observation on the variable k[12]

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12 This means that the subscripts in the X matrix follow the reverse of the normal pattern where the first subscript usually indicates the row and the second the column, of the matrix.

The assumptions which ensure a best linear unbiased estimate of the parameters β are

1) $E(\underset{\sim}{u}) = 0$ which means that the variables excluded from the regression give a positive or negative value to u, and, in repeated sampling these effects tend to cancel out and one can expect the value of u to be zero.

2) $E(uu') = \sigma^2 I_n$ which is a compact way of stating the double assumption that the variance of u is constant and independent of the set of explanatory variables X (homoscedastic variances) and the values of u are drawn independently of one another (non-autocorrelated).

3) $\underset{\sim}{X}$ is non stochastic i.e. $\underset{\sim}{X}$ is a set of fixed numbers which means that in repeated sampling the sole source of variation in the y vector is variation in the u vector and the properties of the estimators and tests are conditional upon $\underset{\sim}{X}$.

4) X has rank $k < n$ which means that the number of observations exceeds the number of parameters to be estimated and no exact linear relations exist between any of the explanatory variables (absence of multicollinearity).

The problems, of heteroscedasticity autocorrelation and multicollinearity in the case of our model and data set, are discussed one by one!

6.4.2 <u>Heteroscedasticity</u>:

In cross-section analysis one may expect the problem of heteroscedasticity to occur. And this is what happened to our model also. The presence of heteroscedasticity results in either the underestimation or overestimation of the sampling variances of the estimated regression coefficients depending on the type of heteroscedasticity, so that one have unduly large or short confidence intervals.[13]

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[13] If the heteroscedasticity is such that larger variances in the dependent variable are associated with values of the explanatory variables that depart significantly from the mean then the estimated sampling variancess will be too small and vice-versa.

Larger confidence intervals would mean greater difficulty in rejecting the null hypothesis and a shorter confidence interval implies a Type I error (probability of rejecting a true hypothesis) higher than the assumed value. The usual case with economic data is the case of variance of expenditure on particular item increasing with household per capita income[14], which would lead to shorter confidence intervals and higher probability of rejection of the null hypothesis.

However, since variance is unit dependent and since the expenditure shares (which is what we are dealing with) are much smaller in magnitude than the absolute expenditure levels, the problem of heteroscedasticity can be expected to be far less critical.

The next section describes the test used for the detection of heteroscedasticity.

6.4.3 Tests for heteroscedasticity:

As already noted above the presence of heteroscedasticity was detected in our case.

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14 Expenditure has been considered as a proxy for income throughout this study.

The null hypothesis of homoscedasticity was tested that is,

H_0: $\sigma_1^2 = \sigma_2^2 = . . . \sigma_T^2$ where T is the number of observations against the specific alternative that

$\sigma_j^2 \;\alpha\; (\ln \frac{E_j}{N_j})^b$ Where b is the (unknown) strength of heteroscedasticity assumed to be present. At this stage we assume b to be positive. However, this procedure imposes a structure on the heteroscedasticity. White (1980) and Breusch and Pagan (1979) have devised tests which impose no structure on the heteroscedasticity in the estimated model. These tests have not been run in this study mainly because we believe that $\frac{E}{N}$ (PCE) is the main variable that could cause heteroscedasticity in the model.

The Goldfeld-Quandt test is designed to detect exactly this type of multiplicative heteroscedasticity. The procedure involves the calculation of two least squares regression lines, one using the subset of the data thought to be associated with low variance errors and the other using the subset of the data thought to be associated with high variance errors. If the residual variances associated with each regression line are approximately equal, then the homoscedasticity assumption cannot be rejected. However, if the residual variance increases substantially, then it is possible to reject the null hypothesis. The test proceeds in the following way.

<u>Step 1</u> Data is ordered by the magnitude of the variable which is thought to be related to the error variance (in our case $\frac{E_j}{N_j} = Z_j$ (say) i.e. per capita expenditure of each household)

<u>Step 2</u> The middle C observations are omitted. The power of the test depends on c. For large values of c the power will be small. On the other hand, if c is reduced the residual variances will move closer, which will tend to offset the increase in power because of added observations. A value of C, though arbitrary is advocated,[15] to be one-fifth the total sample size.

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15 See Pindyck and Rubinfeld (1976), pg 104.

Step 3 Two separate regressions were fitted, the first (indicated by subscript 1) for the portion of the data associated with low values of Z and the other for the second (indicated by subscript 2) associated with high values of Z. Each regression has $\frac{T - c}{2}$ number of observations.[16]

Step 4 The residual sum of squares associated with each regression is computed. ESS_1 for the low Z's and ESS_2 for the high Z's.

Step 5 Assuming the error process to be normally distributed (and no serial correlation to be present), the statistic ESS_2/ESS_1 was compared with the F Statistic with $(T - 4)/2$ degrees of freedom.

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16 However, in our case we did not omit any observation i.e. $C = 0$, in view of the fact that information is lost due to omitted observations. In any case, evidence for the value of C is empirical and would depend on the data set and the fact that the middle observations have almost equal variances so that omitting them would improve the power of the test. (See Pindyck and Rubinfeld, op cit Pg 105).

6.4.4 Results of the Goldfeld-Quandt Test.

The Goldfeld-Quandt test detected heteroscedasticity for most of the commodity group regressions in all the regions. The results are laid out in Tables 6.1 and 6.2. However, in some cases ESS_2 was much less than ESS_1, which suggested that the strength of heteroscedasticity b which was assumed positive, could conceivably be negative also for certain commodity groups. i.e. the lower income groups could exhibit higher variability in expenditure on a certain item than the higher income groups.[17] Tables 6.3 and 6.4 Show the commodity groups for which this happened.

We were thus faced with the problem of determining b, the strength of heteroscedasticity, for each commodity group, for each region separately for each sector.

The maximum likelihood method became necessary at this stage because it gives a way in which the b's can be determined

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17 This would be particularly true of India where the community consists of people with differing socio-cultural backgrounds. As people move up economically these differences tend to disappear.

TABLE 6.1 : Results of the Goldfeld - Quandt Test, Rural Karnataka : 1977-78

Item Group \ Region	1	2	3	4
Cereals and Pulses	NS	NS	NS	NS
Milk and Milk Products	NS	S	S	S
Sugar	NS	NS	NS^b	NS
Pan, Tob and Intox.	NS	NS^b	NS	NS^b
Fuel and Light	NS	NS^b	S	S
Vegetables, Fruits and Nuts	NS	S	NS	NS
Other Food	S	S	S	S
Clothing	S	NS	NS	NS
Misc. Goods	S	NS	S	S

NS : F ratio not significant i.e. null hypothesis of homoscedasticity cannot be rejected.

NS^b : F ratio not significant but $ESS_1 >> ESS_2$.

S : F ratio significant i.e. null hypothesis of homoscedasticity rejected.

TABLE 6.2 : Results of the Goldfeld - Quandt Test, Urban Karnataka : 1977-78

Item Group \ Region	1	2	3	4
Cereals and Pulses	NS	NS	NS	S
Milk and Milk Products	S	NS	NS	NS
Sugar	NS	NS	NS	NS
Pan, Tob and Intox.	NS	NS	NS[b]	S
Fuel and Light	NS	NS	S	S
Vegetables, Fruits and Nuts	NS	NS	NS	NS
Other Food	S	NS	NS	NS
Clothing	NS	NS	NS	NS
Misc. Goods	NS	S	NS[b]	NS[b]

NS : F ratio not significant i.e. null hypothesis of homoscedasticity cannot be rejected.

NS[b] : F ratio not significant but $ESS_1 >> ESS_2$.

S : F ratio significant i.e. null hypothesis of homoscedasticity rejected.

TABLE 6.3 : Values of b for each commodity regression, Rural Karnataka : 1977-78.

Item Group \ Region	1	2	3	4
Cereals and Pulses	0.0	0.0	0.0	0.0
Milk and Milk Products	0.0	2.0	2.0	2.0
Sugar	0.0	0.0	-4.0	0.0
Pan, Tob and Intox.	0.0	-2.0	0.0	-1.5
Fuel and Light	0.0	-3.0	2.0	1.5
Vegetables, Fruits and Nuts	0.0	3.0	0.0	0.0
Other Food	5.0	4.0	4.0	2.0
Clothing	5.0	0.0	0.0	0.0
Misc. Goods	5.0	0.0	3.0	3.0

TABLE 6.4 : Value of b for each commodity regression, Urban Karnataka : 1977-78

Item Group \ Region	1	2	3	4
Cereals and Pulses	0.0	0.0	0.0	3.0
Milk and Milk Products	3.0	0.0	0.0	0.0
Sguar	0.0	0.0	0.0	0.0
Pan, Tob and Intox.	0.0	0.0	-3.0	3.0
Fuel and Light	0.0	0.0	3.0	1.5
Vegetables, Fruits and Nuts	0.0	0.0	0.0	0.0
Other Food	4.0	0.0	0.0	0.0
Clothing	0.0	0.0	0.0	0.0
Misc. Goods	0.0	3.0	-1.5	-2.0

exactly. The additional assumption required is the normality of the error term.

6.4.5 A maximum likelihood method for determination of b:[18]

We have assumed the error variance to be proportional to the per capita expenditure.

i.e. $\sigma_j^2 = \sigma^2 \; z_j^b$, which involves two parameters σ^2 and b. Of particular importance is the parameter b, which measures the strength of heteroscedasticity; the lower its magnitude, the smaller the differences between individual variances. When $b = 0$, the model is homoscedastic. The two parameters σ^2 and b may both be unknown in which case they have to be estimated along with the regression coefficients α and β, or the value of atleast one of them may be specified a prior. For example, the value of b is sometimes assumed to be 2 since this makes the standard deviation of the disturbance proportional to z_i. Let us now restate the regression problem with heteroscedasticity present. The model 6.36 for ith item and jth household is.

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[18] See Kmenta (1971)

$$W_{ij} = \alpha_i + \beta_i \ln E_j + \gamma_i \ln N_j + \delta_i (\ln E_j)^2 + u_{ij}$$

For simplicity of exposition we drop subscript i so that

$$W_j = \alpha + \beta \ln E_j + \gamma \ln N_j + \delta (\ln E_j)^2 + u_j \qquad \ldots (6.43)$$

where

$$u_j \sim N(0, \sigma_j^2)$$

$$\sigma_j^2 = \sigma^2 Z_j \quad \text{where} \quad Z_j = \ln \frac{E_j}{N_j}$$

u_j is assumed to be non antoregressive and the explanatory variables and Z_j are assumed to be non-stochastic.

Again, for ease of exposition denote W_j by Y_j, $\ln E_j$ by X_j, $(\ln E_j)^2$ by X_j^2 and $\ln N_j$ by N_j

So that the model with changed notation can be written as

$$y_j = \alpha + \beta X_j + \gamma N_j + \delta X_j^2 + u_j \qquad \dots (6.44)$$

The log likelihood function (LF) can be set up as

$$LF = -\frac{T}{2} \ln (2\pi) - \frac{1}{2} \sum_j \ln \sigma_j^2 - \frac{1}{2} \sum_j \left(\frac{y_j - \alpha - \beta X_j - \gamma N_j - \delta X_j^2}{\sigma_j}\right)^2 \qquad \dots (6.45)$$

Substituting $\sigma_j^2 = \sigma^2 Z_j^b$ we have

$$LF = -\frac{T}{2} \ln 2\pi - \frac{1}{2} \sum_j (\ln \sigma^2 + b \ln Z_j) - \frac{1}{2} \sum_j \left(\frac{y_j - \alpha - \beta X_j - \gamma N_j - \delta X_j^2}{\sigma Z_j^{b/2}}\right)^2$$

$$\dots (6.46)$$

The first derivatives of LF are

$$\frac{\partial LF}{\partial \alpha} = \frac{1}{\sigma^2} \sum_j \left(\frac{y_j - \alpha - \beta X_j - \gamma N_j - \delta X_j^2}{Z_j^b}\right) = 0 \qquad \dots (6.47)$$

$$\frac{\partial LF}{\partial \beta} = \frac{1}{\sigma^2} \sum_j \left(\frac{y_j - \alpha - \beta X_j - \gamma N_j - \delta X_j^2}{Z_j^b}\right) X_j = 0 \qquad \dots (6.48)$$

$$\frac{\partial\ LF}{\partial\ \delta} = \frac{1}{\sigma^2} \sum_j \left(\frac{y_j-\alpha-\beta X_j-\gamma N_j-\delta X_j^2}{Z_j^b}\right) X_j^2 = 0 \qquad \ldots (6.49)$$

$$\frac{\partial\ LF}{\partial\ \gamma} = \frac{1}{\sigma^2} \sum_j \left(\frac{y_j-\alpha-\beta X_j-\gamma N_j-\delta X_j^2}{Z_j^b}\right) N_j = 0 \qquad \ldots (6.50)$$

$$\frac{\partial\ LF}{\partial\ \sigma^2} = -\frac{T}{2\sigma^2} + \frac{1}{2\sigma^4} \sum_j \left(\frac{y_j-\alpha-\beta X_j-\gamma N_j-\delta X_j^2}{Z_j^{b/2}}\right)^2 = 0 \qquad \ldots (6.51)$$

$$\frac{\partial\ LF}{\partial\ b} = -\frac{1}{2} \sum_j \ln\ Z_j + \frac{1}{2\sigma^2} \sum_j \left(\frac{y_j-\alpha-\beta X_j-\gamma N_j-\delta X_j^2}{Z_j^{b/2}}\right)^2 \ln\ Z_j = 0$$

$$\ldots (6.52)$$

So that,

$$\sum \frac{y_i}{Z_j^b} = \hat{\alpha} \sum \frac{1}{Z_j^b} + \hat{\beta} \sum \frac{X_j}{Z_j^b} + \hat{\gamma} \sum \frac{N_j}{Z_j^b} + \hat{\delta} \sum \frac{X_j^2}{Z_j^b} \qquad \ldots (6.53)$$

$$\Sigma \frac{y_j X_j}{z_j^b} = \hat{\alpha}\ \Sigma \left(\frac{X_j}{z_j^b} \right) + \hat{\beta}\ \Sigma\ \frac{X_j^2}{z_j^b} + \hat{\gamma}\ \Sigma \frac{N_j X_j}{z_j^b} + \hat{\delta}\ \Sigma\ \frac{X_j^3}{z_j^b} \qquad \ldots (6.54)$$

$$\Sigma \frac{y_j X_j^2}{z_j^b} = \hat{\alpha}\ \Sigma\ \frac{X_j^2}{z_j^b} + \hat{\beta}\ \Sigma \frac{X_j^3}{z_j^b} + \hat{\gamma}\ \Sigma\ \frac{N_j X_j^2}{z_j^b} + \hat{\delta}\ \Sigma \frac{X_j^4}{z_j^b} \qquad \ldots (6.55)$$

$$\Sigma \frac{y_j N_j}{z_j^b} = \hat{\alpha}\ \Sigma\ \frac{N_j}{z_j^b} + \hat{\beta}\ \Sigma \frac{X_j N_j}{z_j^b} + \hat{\gamma}\ \Sigma \frac{N_j^2}{z_j^b} + \hat{\delta}\ \Sigma \frac{X_j^2 N_j}{z_j^b} \qquad \ldots (6.56)$$

and

$$\hat{\sigma}^2 = \frac{1}{T} \quad \Sigma\ \frac{y_j^2}{z_j^b} - \hat{\alpha}\ \Sigma\ \frac{Y_j}{z_j^b} - \hat{\beta}\ \Sigma\ \frac{Y_j X_j}{z_j^b}$$

$$- \hat{\gamma}\ \Sigma \frac{X_j^2 Y_j}{z_j^b} - \hat{\delta}\ \Sigma\ \frac{N_j Y_j}{z_j^b} \qquad \ldots (6.57)$$

and

$$\sum_j \ln Z_j = \frac{1}{\hat{\sigma}^2} \sum_j \left(\frac{Y_j - \hat{\alpha} - \hat{\beta} X_j - \hat{\gamma} N_j - \hat{\delta} X_j^2}{Z_j^b}\right)^2 \ln Z_j \qquad \ldots (6.58)$$

Equations 6.53 through 6.58 are a set of six equations in the six unknowns α, β, γ, δ, σ and b.

However, these equations are highly nonlinear and their solution may be quite difficult. A simpler way is to compute the log likelihood (LF) for a given range of values of b (the strength of heteroscedasticity) and pick up that value of b for which LF is maximum. So that we have to solve 6.53 to 6.57 (five equations) in the five unknowns and σ^2 for each value of b.

For our exercise we gave b the values in the range -6 to +6 and in the vicinity of the maximum we chosen finer intervals for successive values of b, to get nearer the solution.

The results are discussed in the next section.

6.4.6 The values of b, the strength of heteroscedasticity:

The values of b were determined by the method of maximum likelihood described above. The maximum likelihood function (LF max) and the likelihood function at $b = 0$ (LF_0) were computed, for the chosen commodity groups, separately for four regions in each sector.

The likelihood ratio $LF = \frac{2LF\ max}{LF_0}$ was then computed and compared with $\chi^2_{1,.05}$ and $\chi^2_{1,.01}$ because under the null hypothesis of $b = 0$ the ratio LR follows χ^2 distribution with 1 degree of freedom.

The likelihood ratios and the values of b are laid out in Tables 6.3 to 6.6. In Rural Karnataka heteroscedasticity is present in more cases than in the urban sector.

TABLE 6.5 : Likelihood Ratios*,
Rural Karnataka : 1977-78

Item Group \ Region	1	2	3	4
Cereals and Pulses	2.02	.76	5.62	.4
Milk and Milk Products	1.92	10.78	20.11	27.12
Sugar	.92	.66	54.68	1.00
Pan, Tob and Intox.	1.00	16.00	2.7	30.9
Fuel and Light	.14	23.90	101.21	21.3
Vegetables, Fruits and Nuts	.58	17.8	2.56	.38
Other Food	31.02	28.66	68.26	30.3
Clothing	37.54	.91	1.23	1.56
Misc. Goods	25.48	2.84	180.68	89.46

* Tabulated value of χ^2_1 at 5% level is 3.84 and at 1% level is 6.63. Any value of the Likelihood Ratio greater than these numbers should be considered significant.

TABLE 6.6 : Likelihood Ratios*,
Urban Karnataka : 1977-78.

Item Group \ Region	1	2	3	4
Cereals and Pulses	2.64	.32	1.21	22.5
Milk and Milk Products	10.76	1.00	2.10	.95
Sugar	1.96	3.52	3.01	1.00
Pan, Tob and Intox.	1.28	3.18	10.56	24.54
Fuel and Light	.76	2.80	12.21	9.00
Vegetables, Fruits and Nuts	1.00	.30	2.86	1.74
Other Food	3.10	2.91	.92	.46
Clothing	2.45	3.20	1.15	1.25
Misc. Goods	3.11	6.22	9.89	82.7

* Tabulated value of χ^2_1 at 5% level if 3.84 and at 1% level is 6.63. Any value of the likelihood ratio greater than these should be considered significant.

An interesting observation is that the commodity groups for which the Goldfeld Quandt test showed ESS_1 to be greater than ESS_2 are the very same commodity Groups for which b turns out to be negative.

In Rural Karnataka these commodity groups are Pan, tobacco and intoxicants, Sugar and Clothing. Fuel and light has negative b for Region 2. In Urban Karnataka there are fewer instances of heteroscedasticity and a negative b is encountered only for some regions for 'Pan, tobacco and intoxicants' and Miscellaneous goods.

The fact that the results of the Goldfeld Quandt test and the finer maximum likelihood method tally proves that the Goldfeld Quandt test is quite sensitive and successfully picks up heteroscedasticity and the error sum of squares of the two parts (ESS_1 and ESS_2) computed for the G-Q Test indicate even the direction of the heteroscedasticity when it is present (i.e. whether b is positive or negative)

It must be noted here that the variable causing heteroscedasticity was assumed to be per capita expenditure. Social group was not considered as a variable which could cause heteroscedasticity. There is a reason for this. For the 28th Round data set, we tested the homogeneity of variances across social groups for all commodities. The null hypothesis of homogeneous variances could not be rejected in the case of most commodity groups. This led us to consider the assumption of homogeneous variances across social groups as a plausible one.

6.4.7 Removal of heteroscedasticity:

After determining the value of b for each commodity group separately for regions and sectors, we transformed the variables by dividing 6.36 through by $(PCE)^{b/2}$ and then reestimated the coefficients so that the transformed errors are homoscedastic. i.e. the model now becomes.

$$\frac{W_j}{(Z_j)^{b/2}} = \frac{\alpha}{Z_j^{b/2}} + \frac{\beta \ln E_j}{Z_j^{b/2}} + \frac{\gamma \ln N_j}{Z_j^{b/2}} + \frac{\delta (\ln E_j)^2}{Z_j^{b/2}} + \frac{u_j}{Z_j^{b/2}} \qquad \ldots (6.59)$$

It was on this transformed model that the analysis of co·ariance was performed.

6.4.8 Multicollinearity:

The explanatory variables in our model are basically (ln E) (logarithm of total household expenditure) and ln N (Logarithm of total household size).

Simple correlation coefficients between ln N and ln E were computed for all regions in the 32nd Round and for the two sectors separately. These coefficients ranged from 0.3 to 0.5. These not so high correlation coefficients suggest that in the case of data set multicollinearity was not a serious problem.

6.4.9 Autocorrelation:

The problem of correlated errors has not been considered here because we are analysing cross--section data whereas this problem is more critical in time series data.

6.5 Data:

The detailed description of the NSS data used throughout this study has already been given in Chapter 4 and Appendix B.

The household data on consumer expenditure have been aggregated into 10 broad commodity groups. The broad groups are:

1. Cereals and pulses
2. Milk and milk products
3. Vegetables, fruits and nuts
4. Sugar
5. Pan, Tobacco, Intoxicants
6. Other food
7. Fuel and light
8. Clothing (including footwear and bedding)
9. Durables
10. Miscellaneous goods.

Item group 6 contains mainly Edible oil, Meat, Fish, Eggs, Gur, Salt, Spices and Beverages.

6.6 Choice of the functional form to estimate the Engel curve:

This section describes the procedure by which the Leser form function was chosen as the one to be used for estimation of engel function and for carrying out the analysis of covariance outlined in Section 6.2.

The Rural sample [19] of the 28th Round consisting of 619 households was first split into two groups, one group consisting of SC/ST households (119 households) and the second group containing the non SC/ST households (500 of them). Each group of households was separately ranked by per capita expenditure and then aggregated into decile groups. Each decile group contained 10 per cent of the total number of households, household being our unit of analysis. The decile groupwise terminal values of per capita expenditure and the per centage of persons in each decile group is given in Table 6.7.

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[19] This sort of curve fitting in an attempt to choose the best form was done only for the 28th Round Rural Sample.

TABLE 6.7 : The decile group wise terminal values (X) of per capita expenditure (in current Rs.) and the percentage of persons (P) in each decile, Rural Karnataka : 1973-74

Decile Group	SC/ST		Non SC/ST	
	X	P	X	P
1	21.80	.12	26.86	.09
2	25.73	.12	32.22	.11
3	28.61	.09	36.86	.11
4	31.13	.12	41.34	.11
5	33.66	.11	46.80	.11
6	38.35	.08	52.79	.10
7	43.55	.12	61.61	.09
8	50.58	.10	72.09	.09
9	63.46	.08	92.56	.10
10	238.75	.07	527.75	.07

The following engel curve forms were fitted.

1. Linear : $y = a_0 + a_1 E'$

2. Loglinear : $y = b_0 + b_1 \ln E'$

3. Loginverse: $\ln y = C_0 + C_1/C' E'$

4. Hyperbolic: $y = d_0 + d_1/E'$

5. Semi log: $y = e_0 + e_1 \ln E'$ and

6. Leser form: $W = f_0 + f_1 \ln E'$

Where y and E are expenditure on a particular item and total expenditure, in per capita terms respectively and W is the share of item in total expenditure per capita.

To choose the 'best' fitting functional form the distance function was defined as $D^2 = \sum_{i=1}^{10} K_i (y_i - \hat{y}_i)^2$ Where Y_i is the observed level of average per capita consumer expenditure on a given item in the ith decile group, $\hat{y}_i$ is the expenditure on.

that item in the ith decile group as estimated from the fitted Engel curve; and K_i is the proportion of population in the ith decile group.

It was attempted to choose the Engel curve form with minimum D^2 as the best one.

To this end, each of the six curve forms was fitted using weighted least square method with population proportions as weights and then the D^2 were computed for each form.

There are mainly two problems with this procedure. One is that the Distance function D^2 used here is not appropriate for all forms because all of them do not explain the same dependent variable. Also, the mean of each decile group is the arithmetic mean, but conceptually the geometric mean is relevant for the transformed logarithmic variable and harmonic mean for the transformed reciprocal. But in this study the particular procedure used was chosen in order to cut down on cost of computations. Also, the variable of interest is the consumer expenditure on a given item and not its transformed logarithamic form and hence, the distance function D^2 was adopted rather than the corrected squared correlation coefficient criterion.

The results of the above exercise are given in table 6.8 and 6.9 . It can be seen easily that the values of the distance function are sometimes very close to each other and thus, the choice among them is not very clear e.g. see sugar. For the three function forms loginverse, hyperbolic and semilog the calculated distances are 0514, .0513 and .0555 respectively (Table 6.8) and Milk and Milk Products the distances are .1157, .1618 and .1291 for linear, log linear and Leser respectively. Where the distances and different they are not wide apart e.g. Cereals and Pulses, Vegetables, Fruits and Nuts and Misc. Goods. Only in very few cases are the lowest and the next lowest distances wide apart eg. Clothing and Footwear.

The foregoing analysis leads us to conclude that the choice among functional forms for the Engel curve is not very clearcut atleast for this data set and so, it was decided to use the Leser form for further analysis on account of its desirable properties.

TABLE 6.8 : Values of D^2 for various forms of the Engel curve for different items of household consumption, Karnataka : Rural SC/ST, 1973-74.

Item Group	Linear	Log Linear	Log Inv.	Hyper-bolic	Semi-log	Leser
Cereals and Pulses	1.6814	1.3281	7.8052	14.0464	3.8429	1.3141
Milk and Milk Products	.1157	.1618	.5862	.6681	.3710	.1291
Sugar	.0773	.0793	.0514	.0513	.0555	.0912
Pan, Tob and Intox.	.1632	.3429	.0999	.2149	.1102	.2740
Fuel and Light	.0379	.6586	.3987	.5687	.2208	.0718
Vegetables, Fruits and Nuts	.0258	.0257	.0109	.0080	.0129	.0282
Other Food	1.7760	2.4279	2.3371	5.3381	1.9173	2.4219
Clothing	16.4334	10.0816	101.3413	132.6790	.7085	13.7422
Misc. Goods	4.2079	4.4083	17.4617	20.4140	12.2210	4.2181

TABLE 6.9 : Values of D^2 for various forms of the Engel curve for different items of household consumption, Karnataka : Rural Non SC/ST, 1973-74.

Item Group	Linear	Log Linear	Log Inv.	Hyper-bolic	Semi-log	Leser
Cereals and Pulses	9.7646	6.9133	3.2044	8.7455	2.2156	5.4433
Milk and Milk Products	.1578	.3115	.1972	.4959	.1792	.2633
Sugar	.0747	.0985	.0383	.1013	.0330	.1073
Pan, Tob and Intox.	.0663	.0604	.0586	.1186	.0436	.0735
Fuel and Light	.0800	.0652	.2326	.3695	.1215	.0694
Vegetables, Fruits and Nuts	.0120	.0190	.0817	.1085	.0464	.0265
Other Food	1.3167	2.6588	3.4530	11.0024	1.8295	2.6897
Clothing	16.4334	10.8816	101.3413	132.6790	.7085	13.7422
Misc. Goods	4.2079	4.4083	17.4617	20.4140	12.2210	4.2181

The choice among different algebraic forms can be made in a far more detailed manner, and could itself be a subject of considerable interest. In cases i(as above) where discriminiation is not possible on the basic of the Distance function D^2 or the $\bar{R}^2$ (coefficient of determination adjusted for degrees of freedom) one can examine the signs/patterns of residuals to decide upon the engel function to be used(vide Bhattacharya and Maitra 1970).

However, this study does not attempt any detailed analysis of the type outlined above mainly in view of the fact that the Leser form has the one supreme advantage, that of additivity. Also, it must be remembered that this study is mainly interested in describing the lot of the Harijans and not in any refined econometric exercise for choosing of Engel form. For the purpose of this study, it is enough therefore, that the chosen Leser form has desirable properties. The analysis presented in this section is thus more in the nature of supplementary evidence.

6.7.1 Description of Fitted engel functions:

On the whole, the chosen model fits well for almost all commodity groups. The coefficient of determination is above .30 for most cases. For some cases it is as high as .7 and .8 (Tables 6.10 and 6.11). The regression is highly significant in most cases. Only in 5 cases the R^2 - are very low and the regression is not significant.

We now proceed to discuss the estimated engel functions for each commodity group one by one. The discussions will be general in nature and will include all the regions for both the sectors and time periods. Tables 6.12 to 6.21 present the results.

1) Cereals and pulses:

The model 6.36 fits very well for this commodity group. The coefficient of determination (R^2) ranges form .21 to .77. The regressions are all highly significant. Of the three explanatory variables, ln N, ln E and $(\ln E)^2$, ln N turns out to be most significant variable. ln E and $(\ln E)^2$ are also significant but to a lesser extent. In N has a positive coefficient in all the regressions, which means as household size (N) increases the proportion of

TABLE 6.10 : Coefficient of determination (R^2) for commodity regressions, Rural Karnataka : 1977-78

Item Group \ Region	1	2	3	4
Cereals and Pulses	.42**	.34**	.64[a a]	.20**
Milk and Milk Products	.80*	.43**	.48**	.46**
Sugar	.04*	.12*	.65**	.04*
Pan, Tob and Intox.	.07[a]	.64**	.26**	.51**
Fuel and Light	.10*	.67**	.73[a a]	.66[a a]
Vegetables, Fruits and Nuts	.05[a]	.64**	.03*	.05*
Other Food	.66**	.75**	.80**	.77[a a]
Clothing	.28*	.26*	.19**	.20*
Misc. Goods	.65*	.06*	.71**	.66**

a Regression not significant

* Regression significant

** Regression highly significant

a a Regression very highly significant

TABLE 6.11 : Coefficient of determination (R^2) for commodity regressions, Urban Karnataka :1977-78

Item Group \ Region	1	2	3	4
Cereals and Pulses	.60**	.77**	.42**	.64[a a]
Milk and Milk Products	.68**	.17*	.12*	.15**
Sugar	.13*	.40*	.12*	.15**
Pan, Tob and Intox.	.01[a]	.13*	.05*	.43**
Fuel and Light	.13*	.61**	.71[a a]	.76[a a]
Vegetables, Fruits and Nuts	.22*	.07[a]	.05*	.10*
Other Food	.64**	.51**	.27*	.28**
Clothing	.18*	.20*	.04*	.09*
Misc. Goods	.20*	.70**	.74**	.67[a a]

a Regression not significant

* Regression Significant

** Regression highly significant

a a Regression very highly significant.

TABLE 6.12 : Estimated engel parameters, Rural Karnataka : 1973-74

Item Gp. / Variable name	CEP	MP	SUG	PAN	FL	VEG	OTH	CL	MISC
Constt.	.4868	-.3590	.01295	-.0316	.3555	.0016	.1968	.0585	-.9000
ln N	.1562	-.0131	.0052	-.0027	.0099	-.0075	-.0533	-.0322	-.0431
	(13.13)	(-3.46)	(3.35)	(-.93)	(3.02)	(-2.56)	(-5.95)	(-3.97)	(-7.74)
ln E	.0707	.1345	.0050	.0271	-.0815	.0155	-.0001	.0632	.0304
	(.89)	(4.45)	(.48)	(1.16)	(-3.73)	(.80)	(-.002)	(-.98)	(.82)
$(\ln E)^2$	-.0191	-.0104	-.0009	-.0027	.0049	-.0008	.0006	.0124	.0020
	(-2.69)	(-3.97)	(-.94)	(.1.32)	(2.51)	(-.48)	(.12)	(2.21)	(.60)
D	-	.4254	-.0044	-.0171	-	-.0118	-	.1298	-
	-	(3.02)	(-2.41)	(-2.37)	-	(-3.49)	-	(.43)	-
D x ln N	-	.0153	-	-	-	-	-	-.0461	-
	-	(1.64)	-	-	-	-	-	(-2.32)	-
D x ln E	-	-.1665	-	.0536	-	-	-	-.0026	-
	-	(-3.05)	-	(1.27)	-	-	-	(-.02)	-
D x $(\ln E)^2$	-	.0148	-	-.0036	-	-	-	-.0008	-
	-	(2.81)	-	(.88)	-	-	-	(-.07)	-
R^2	.27	.09	.03	.06	.15	.04	.08	.19	.15
SEE	.0174	.0014	.0003	.0008	.0000	.001	.0099	.0064	.0038
F Ratio	74.25	9.11	4.42	5.68	37.15	6.22	17.72	21.13	37.21
DF	615	611	614	611	615	615	615	615	615
Result of ancova	H*	NH**	NH	NH	H	H	H	H	H

* Homogeneous engel curves across Social groups

** Non homogeneous engel curves across Social groups

Figures in bracket are t-values

TABLE 6.13 : Estimated engel parameters, Urban Karnataka : 1973-74

Item Gp. / Variable name	CEP	MP	SUG	PAN	FL	VEG	OTH	CL	MISC
Constt.	-.5998	-.0006	.0095	-.1336	.0697	-.1107	.0472	-.0803	.5468
ln N	.0710 (5.12)	-.0023 (-.51)	.0101 (8.01)	-.0015 (-.53)	.0202 (4.20)	.0016 (.57)	-.1749 (-10.61)	-.0267 (-3.26)	-.0706 (-8.90)
ln E	.2680 (2.10)	-.0123 (-.29)	.0052 (.45)	.0574 (2.71)	-.0019 (-.04)	.0489 (1.89)	-.1347 (-.8864)	.0015 (.02)	.0266 (.37)
$(\ln E)^2$	-.0248 (-.2.22)	.0041 (1.13)	-.0013 (-1.27)	-.0051 (-2.16)	-.0006 (-.15)	-.0037 (-1.64)	.0125 (.9419)	.0046 (.70)	.0060 (.95)
D	-	-	-	.0248 (4.67)	-	-	-	-	-.0377 (-2.68)
D x ln N	-	-	-	-	-	-	-	-	-
D x ln E	-	-	-	-	-	-	-	-	-
D x $(\ln E)^2$	-	-	-	-	-	-	-	-	-
R^2	.14	.20	.17	.01	.06	.05	.39	.10	.30
SEE	.0196	.0021	.0002	.0009	.0024	.0008	.0277	.0069	.0063
FR	19.09	30.89	25.50	1.65	7.55	6.93	77.69	13.83	38.50
DF	365	365	365	365	365	365	365	365	365
Result of ancova	H*	H	H	NH**	H	H	H	H	NH

* Homegeneous, engel curves across Social groups
** Non homogeneous engel curves across Social groups
Figures in brackets are t--values

TABLE 6.14 : Estimated engel parameters, Rural Karnataka : Region 1, 1977-78

Item Gp. / Variable name	CEP	MP	SUG	PAN	FL	VEG	OTH	CL	MISC
Constt.	1.3171	-.2325	.0313	-.0203	.1494	-.0664	.3873 (1.44)	-.0063 (-.04)	.1114 (.40)
Ln N	.1455 (8.49)	-.0091 (-1.42)	.0004 (.13)	-.0050 (.59)	.0061 (1.16)	-.0084 (-1.14)	-.0005 (-.24)	-.001[illegible] (-.89)	0080 (-3.81)
ln E	-.2587 (-4.25)	.0802 (3.57)	.0030 (.25)	.0285 (.92)	-.0156 (-.83)	.0524 (2.01)	-.0567 (-.61)	-.0184 (-.30)	-.061 (-.63)
$(\ln E)^2$	.0102 (2.47)	-.0052 (-3.43)	-.0005 (-.62)	-.0024 (-1.16)	.0001 (.1)	.0041 (-2.32)	+.0032 (.41)	.0044 (.81)	.0117 (1.42)
D	-	-	-.0109 (-1.97)	.0433 (2.95)	-	-	-	-	-
D x ln N	-	-	-	-	-	-	-	-	-
D x ln E	-	-	-	-	-	-	-	-	-
D x $(\ln E)^2$	-	-	-	-	-	-	-	-	-
R^2	.41	.08	.048	.07	.10	.05	.66	.28	.65
SEE	.0098	.0014	.0035	.0025	.0009	.0018	.0000	.0000	.0000
FR	42.4	4.87	2.02	3.36	6.41	2.83	196.15	17.28	82.67
DF	180	180	179	179	180	180	180	180	180
Result of ancova	H*	H	NH**	NH	H	H	H	H	H

* Homogeneous engel curves across Social groups

** Non homogeneous engel curves across Social groups

Figures in brackets are t-values. only transformed regressions have t-values for the intercept. Otherwise th e regression package used did not provide t-values for the intercept term. The same convention is used in the tables which follow (upto Table 6.22)

TABLE 6.15 : Estimated engel parameters, Rural Karnataka : Region 2, 1977-78.

Item GP / Variable name	CEP	MP	SUG	PAN	FL	VEG	OTH	CL	MISC
Constt.	.9647 -	-.1840 (-2.38)	.0313	.0326 (.64)	.4359 (9.31)	-.0348 (-.64)	-.0388 (-.32)	-.7583	-.1538
ln N	.1692 (8.98)	-.0029 (-2.25)	.0004 (.13)	-.0021 (-1.77)	.0019 (1.65)	-.0017 (-1.5)	-.0075 (-3.11)	-.0353 (-2.28)	-.0393 (-3.56)
ln E	-.1701 (-3.5)	.0665 (2.43)	.0030 (.25)	.0126 (.85)	-.0881 (-6.51)	.0244 (1.23)	.0676 (1.46)	.2434 (5.91)	.0924 (3.25)
$(\ln E)^2$	.0048 (1.40)	-.0042 (-1.75)	-.0005 (-.62)	-.0014 (-1.45)	.0043 (5.17)	-.0013 (-.72)	-.0050 (-1.13)	-.0153 (-5.45)	-.0064 (-3.2)
D	-	-.0151 (-2.23)	-.0109 (-1.97)	.3742 (-1.7)	-	-	-	2.0048 (3.77)	-
D x ln N	-	-	-	.0055 (1.44)	-	-	-	.0408 (1.04)	-
D x ln E	-	-	-	.1561 (1.95)	-	-	-	-.7899 (-3.94)	-
D x $(\ln E)^2$	-	-	-	-.0159 (-2.22)	-	-	-	.0745 (4.11)	-
R^2	.34	.44	.04	.66	.67	.64	.75	.22	.06
SEE	.0167	.0001	.0004	.0248	.1141	.0000	.0000	.0093	.0057
FR	48.21	44.04	2.02	66.86	317.18	122.26	213.68	10.99	5.45
DF	278	277	179	274	278	278	278	274	278
Result of ancova	H	NH	NH	NH	H	H	H	NH	H

TABLE 6.16 : Estimated engel parameters, Rural Karnataka : Region 3, 1977-78

Item Gp / Variable name	CEP	MP	SUG	PAN	FL	VEG	OTH	CL	MISC
Constt.	.4858 (4.03)	-.1791 (-3.51)	-.0074 (-.48)	-.0611	.2796 (4.16)	-.0107	.2011 (1.71)	-.8149	-.1060 (-1.32)
ln N	.0140 (7.69)	-.0014 (-1.86)	.0004 (1.44)	.0046 (1.21)	.0014 (1.48)	-.0036 (-1.24)	-.0019 (-1.43)	-.0546 (-6.31)	-.0034 (-3.38)
ln E	.0291 (.74)	.0641 (3.77)	.0112 (2.65)	.0005 (.04)	-.0402 (-1.78)	.0248 (2.56)	-.0077 (-.18)	.2545 (8.86)	.0553 (1.97)
$(\ln E)^2$	-.0092 (-2.90)	-.0041 (-2.87)	-.0010 (-3.81)	-.0008 (-.83)	.0010 (.55)	-.0021 (-3.10)	.0001 (.02)	-.0151 (-7.41)	-.0027 (-1.12)
D	-	-.0119 (-2.66)	-.0045 (-2.44)	.0160 (3.75)	-	-	.0239 (3.14)	-	-
D x ln N	-	-	-	-	-	-	-	-	-
D x ln E	-	-	-	-	-	-	-	-	-
D x $(\ln E)^2$	-	-	-	-	-	-	-	-	-
R^2	.64	.48	.65	.06	.73	.03	.80	.17	.71
SEE	.0015	.0001	.1056	.0016	.0002	.0010	.0000	.0084	.00006
FR	227.8	108.47	217.35	8.8	408.62	6.05	484.78	41.45	370.03
DF	591	590	590	590	591	591	590	591	591
Result of ancova	H	NH	NY	NH	H	H	NH	H	H

TABLE 6.17 : Estimated engel parameters, Rural Karnataka : Region 4, 1977-78

Item Gp. / Variable name	CEP	MP	SUG	PAN	FL	VEG	OTH	CL	MISC
Constt.	.7699	-.0692 (-1.13)	-.0092	.0429 (1.37)	.2362 (4.92)	.0521	.6054 (6.25)	-.8348	.0751 (.79)
ln N	.1018 (10.34)	-.0018 (-2.41)	-.0037 (-1.92)	-.0006 (-1.01)	.0021 (3.25)	-.0056 (-2.61)	.0007 (.55)	-.0496 (-5.95)	-.0030 (-.29)
ln E	-.0745 (-1.83)	.0230 (-1.04)	.0177 (2.25)	.0029 (.30)	-.0294 (-1.73)	.0063 (.71)	-.1395 (-4.02)	.2618 (7.57)	-.0183 (-.52)
$(\ln E)^2$	-.0026 (-.79)	.0001 (.05)	-.0014 (-2.27)	-.0006 (-.87)	-.0001 (-.06)	-.0010 (-1.39)	.0096 (3.08)	-.0151 (-5.47)	.0046 (1.42)
D	.0242 (2.04)	-.0222 (-4.87)	-.1197 (-5.21)	.0140 (3.64)	-.0018 (-2.02)	-	1.5595 (3.40)	-	-
D x ln N	-	-	-	-	-	-	-.0022 (-.77)	-	-
D x ln E	-	-	-	-	-	-	-.1589 (-3.38)	-	-
D x $(\ln E)^2$	-	-	-	-	-	-	-	-	-
R^2	.21	.47	.04	.52	.66	.05	.76	.17	.66
SEE	.0152	.0002	.0006	.0117	.0002	.0007	.0004	.0111	.0000
FR	54.76	148.9	9.41	176.87	708.29	14.40	358.46	57.40	397.7
DF	831	831	831	831	831	832	828	832	832
Result of ancova	NH	NH	NH	NH	NH	H	NH	H	H

TABLE 6.18: Estimated engel parameters, Urban Karnataka : Region 1, 1977-78

Item Gp. / Variable name	CEP	MP	SUG	PAN	FL	VEG	OTH	CL	MISC
Constt.	-1.2985	.3016 (1.08)	-.1678	.1091	.2102	-.3866	3.6484 (4.88)	-.4944	.0461
ln N	.1728 (9.18)	-.0061 (-2.97)	.0076 (1.98)	.0005 (.10)	.0170 (2.05)	.0298 (3.36)	-.0112 (-1.87)	-.0565 (-3.41)	-.0586 (-3.69)
ln E	.5562 (3.10)	-.1146 (-1.16)	.0668 (1.84)	-.0281 (-.54)	.0878 (1.11)	.1584 (1.88)	-1.0936 (-4.14)	.1357 (.86)	-.0097 (-.08)
$(\ln E)^2$	-.0557 (-3.69)	.0138 (1.61)	-.0058 (-1.91)	.0024 (.56)	-.0073 (-1.09)	-.0143 (-2.01)	.0880 (3.78)	-.0051 (-.39)	.0059 (.56)
D	-	-	-	-	-	-	-	-	-
D x ln N	-	-	-	-	-	-	-	-	-
D x ln E	-	-	-	-	-	-	-	-	-
D x $(\ln E)^2$	-	-	-	-	-	-	-	-	-
R^2	.60	.68	.13	.004	.13	.22	.80	.18	.20
SEE	.0081	.0000	.0003	.0007	.0016	.0018	.0001	.0063	.0040
FR	46.61	49.39	4.62	.11	4.45	8.86	91.26	6.87	7.58
DF	92	92	92	92	92	92	92	92	92
Result of ancova	-	-	-	-	-	-	-	-	-

TABLE 6.19 : Estimated engel parameters, Urban Karnataka: Region 2, 1977-78

Item Gp. / Variable name	CEP	MP	SUG	PAN	FL	VEG	OTH	CL	MISC
Constt.	1.7606	-.1905	.0812	.0791	.5928	.4603	-.5931	-.9516	-.3673 (-1.61)
ln N	.2436 (16.21)	.0181 (2.04)	.0145 (7.2)	-.0012 (-.27)	.0593 (10.56)	.0050 (.93)	-.2097 (-8.77)	-.0701 (.3.65)	-.0128 (.3.93)
ln E	-.4829 (-7.53)	.0681 (1.95)	-.0208 (-2.6)	-.0111 (-.56)	-.1571 (-7.08)	-.1505 (,2.86)	.34[illegible]3 (3.68)	.3219 (4.24)	.1455 (1.81)
$(\ln E)^2$	.0299 (6.61)	-.0046 (-1.87)	.0012 (2.21)	.0002 (.73)	.0095 (6.12)	.0135 (2.94)	-.0273 (-4.14)	-.0214 (-4.05)	-.0083 (-1.2)
D	-.0739 (-2.19)	-	-	.0210 (2.02)	-	-.6326 (-2.57)	-	-	-
D x ln N	-	-	-	-	-	.0037 (.18)	-	-	-
D x ln E	-	-	-	-	-	.2154 (2.61)	-	-	-
D x $(\ln E)^2$	-	-	-	-	-	-.0180 (-2.88)	-	-	-
R^2	.77	.17	.40	.13	.61	.19	.51	.20	.70
SEE	.0086	.0031	.0002	.0008	.0012	.0010	.0226	.0145	.0001
FR	71.60	5.79	18.99	3.21	45.65	2.74	30.76	7.08	50.14
DF	86	87	87	86	87	83	87	87	87
Result of ancova	NH	H	H	NH	H	NH	H	H	H

TABLE 6.20 : Estimated engel parameters, Urban Karnataka: Region33, 1977-78

Item Gp. / Variable name	CEP	MP	SUG	PAN	FL	VEG	OTH	CL	MISC
Constt.	.0617	-.0626	-.0056	.0029	-.0747 (-6.35)	-.0227	-.1018	.0272	-.1109 (-1.4)
ln N	.1523 (17.21)	.0063 (1.40)	.0076 (6.38)	-.0006 (-.85)	.0010 (.93)	.0030 (.99)	-.1192 (-12.58)	-.0264 (-3.7)	-.0035 (-5.3)
ln E	.1023 (5.2)	.0305 (3.04)	.0091 (3.42)	.0085 (.83)	.0695 (9.52)	.0225 (3.38)	.1532 *7.27)	-.0095 (-.60)	.0836 (3.56)
$(\ln E)^2$	-.0158 (-9.03)	-.0013 (-1.33)	-.0010 (-4.05)	-.0008 (-1.20)	-.0070 (-7.27)	-.0014 (-2.41)	-.0121 (-6.45)	.0029 (2.06)	-.0054 (-3.2)
D	-	-.0266 (3.08)	-	.0243 (3.87)	-.0234 (-2.99)	-	-	-	1.7364 (5.06)
D x ln N	-	-	-	-	-	-	-	-	.0110 (1.85)
D x ln E	-	-	-	-	-	-	-	-	-.6385 (-5.06)
D x $(\ln E)^2$	-	-	-	-	-	-	-	-	.0057 (4.77)
R^2	.42	.11	.16	.28	.71	.05	.27	.04	.75
SEE	.0137	.0035	.0003	.1498	.0000	.0016	.0157	.0089	.072
FR	135.35	17.75	18.15	41.82	270.03	10.08	68.12	7.92	205.97
DF	554	553	553	551	551	554	554	554	548
Result of ancova	H	NH	H	NH	NH	H	H	H	NH

TABLE 6.21 : Estimated engel parameters, Urban Karnataka : Region 4, 1977-78

Item Gp. / Variable name	CEP	MP	SUG	PAN	FL	VEG	OTH	CL	MISC
Constt.	-.4724 (-9.8)	-.2350	-.6183	-.0307 (-2.29)	-.0826 (-2.98)	-.0402	.3577	.4394	-.1780 (-2.22)
ln N	.0225 (9.4)	-.0050 (-1.22)	.0088 (5.61)	-.0003 (- .49)	.0016 (1.97)	.0027 (1.15)	-.1214 (-9.87)	-.0366 (-4.02)	-.0039 (-2.66)
ln E	.3352 (15.04)	.0836 (6.41)	.0145 (2.93)	.0232 (3.69)	.0617 (6.13)	.0292 (4.00)	.0299 (.77)	.1436 (4.97)	.1007 (4.31)
$(\ln E)^2$	-.0360 (-13.44)	-.0053 (-5.43)	-.0013 (-3.58)	-.0022 (-2.84)	-.0059 (-6.12)	-.0024 (-4.40)	-0044 (-1.51)	-.0082 (-3.78)	-.0075 (-4.94)
D	-	-.0230 (-3.74)	-.0086 (-3.54)	.0258 (5.68)	-	.1668 (.87)	-	-	-
D x ln N	-	-	-	-	-	.0275 (3.94)	-	-	-
D x ln E	-	-	-	-	-	-.0452 (-.65)	-	-	-
D x $(\ln E)^2$	-	-	-	-	-	.0013 (.20)	-	-	-
R^2	.64	.15	.15	.46	.76	.10	.28	.09	.67
SEE	.0003	.0025	.0004	.0000	.0003	.0072	.0220	.0120	.1480
FR	1073.0	22.77	22.02	86.14	406.12	8.09	65.23	15.53	249.65
DF	500	449	499	499	500	496	500	500	500
Result of ancova	H	NH	NH	NH	H	NH	H	H	H

expenditure on cereals and pulses increases. Generally, the coefficients of ln E and $(\ln E)^2$ are of opposite signs. The dummy variable is significant in two cases, which means social group differences are significant.

As shown earlier in section 6.2 share of expenditure drops as expenditure increases (holding household size constant) from (say) E_1 to E_2 only if

$$\beta + \delta(\ln E_1 + \ln E_2) < 0$$

and the commodity is a necessity if

$$\beta + 2\delta \ln E < 0$$

for some expenditure level E.

The conditions are satisifed for this commodity. Thus it follows Engel law and is a necessity.1

2) Milk and Milk products:

The model gives a good fit except in one case where the R^2 is .08 and the F ratio is significant but low (4.87). The other regressions are all significant and the R^2 range from .09 to .68. Here again, the coefficient of ln N (i.e. ln household size) turns out to be significant but negative in most cases i.e. if there is an increase in household size without an increase in total expenditure (income), the share of expenditure on milk drops, which is what is expected. On the other hand, if household size is held constant and total expenditure increased the share of expenditure on milk also increased. The dummy variable for social group is significant in 4 cases. This turns out to be a luxury item.

3) Sugar:

For this item group the regressions are significant except in one case where the regression is not significant and R^2 is very low. For the other cases R^2 ranges from .03 to .65. In general the coefficients of ln N, ln E and $(\ln E)^2$ are all significant. (ln N) and ln E generally have a positive coefficient. ln E and $(\ln E)^2$ has negative coefficient which means if household size remains constant and E increases then share of expenditure on sugar also increases but this effect is dampened by the negative coefficient for $(\ln E)^2$. After a certain level of E, the share starts dropping ie. when the effect of the negative coefficient on $(\ln E)^2$ becomes larger than the effect of the positive coefficient of ln E. The dummy variable is significant in 6 cases. The elasticity of this good computed at the mean of the explanatory variable turns out to be close to one, sometimes a little less than one sometimes a little greater than one.

4) Pan, Tobacco, and Intoxicants:

The model 6.36 gives a moderate fit for this item group. Except in one case, the regressions are significant. The R^2 are not very high. They range from .0035 to .66. The coefficients of the dummy for social group is significant in most cases. $(\ln E)^2$ is generally not significant and is even irrelevant in some cases, in the sense that the corresponding t - values are less than one. Even ln E turns out to be irrelevant in most cases. $(\ln E)$ and $(\ln E)^2$

have opposite signs in all the regressions. ln N also is not very significant and is sometimes even irrelevant. Thus, the consumption of Pan, tobacco and intoxicants is not very much dependent or household size or income (expenditure). Rather, it depends on social group. The dummy for social group turns out to be positive thus showing that given a household size and expenditure level an SC/ST household at that expenditure level spends a larger share of its income on Pan, tobacco and intoxicants than a non SC/ST household. The elasticity of this commodity computed at mean of explanatory variables turns out to be close to one except for two cases.

5) Fuel and Light:

The model fits very well in this case. The R^2 ranges from .06 to 0.6. The F ratios are highly significant in most cases. The coefficients of ln N, ln E and $(\ln E)^2$ are all significant. (ln N) has a positive coefficient and (ln E) and $(\ln E)^2$ have coefficients of opposite signs except in one case. The share of expenditure on Fuel and Light drops as mean varies and in one case it even becomes a little above one. The dummy is significant in two cases, and it is negative in both the cases, showing that, an SC/ST household of the same size and expenditure class as a non SC/ST household spends a lower proportion of its budget on Fuel and Light.

6) Vegetables, fruits and nuts:

The model does not fit very well for this commodity group as is evidenced by the generally low R^2 and F ratios. The explanatory variables are all just relevant (i.e. t - value is greater than one) and in some cases significant. For the rural sector ln N has a negative coefficient whereas in urban areas the coefficient is positive always. This reflects the better state of Urbanites. An increase in household size would decrease share of expenditure on Vegetables, fruits and nuts for rural people whereas in the urban sector this would cause them to spend a greater proportion of expenditure on this item group.

It is a luxury item group for both rural and urban people, but with elasticity close to one. In two cases it is little lower than one making it a marginal necessity. (ln E) and (ln E)^2 generally have opposite signs. The dummy is significant in the two cases in the urban sector.

7) Other food:

The model fits very well for this commodity group which consists of edible oil, beverages, meat, fish and eggs etc., The R^2 range from .07 to .8 . The F ratios are significantly high. The coefficient of ln N is generally significant and negative. The coefficient of ln E and (ln E)^2 are also generally very significant and of opposite signs. In two cases the dummy variable for social group is significant.

In some cases $\beta + \delta\ (\ln E_1 + \ln E_2) < 0$ and in others $\beta + \delta\ (\ln E_1 + \ln E_2) > 0$ for given E_1, E_2 which means as Expenditure increases the share drops or increases.

Similarly, in some cases $\beta + 2\gamma \ln E < 0$ and in others $\beta + 2\gamma \ln E > 0$ where E is mean total expenditure. Thus, this item group is a necessity in some regions and a luxury in other regions.

8) <u>Clothing and Footwear</u>:

For this item group the model fits reasonably well. The R^2 range from .09 to .28 and the F ratios are all significant. The coefficient of ln N is highly significant and negative in most cases. The coefficients of (ln E) and $(\ln E)^2$ are significant most of the time and are generally of opposite signs. However, in all cases the share of expenditure on clothing and footwear increases as total expenditure increases. This item group is a luxury in all cases.

9) <u>Miscellaneous goods</u>:

This group consists of Expenditure on Education, Medicine, Amusement, Consumer services etc.,. The model fits well for this commodity group, the R^2 ranging from .06 to .75, the F ratios being highly significant. The coefficient of ln N is highly significant and negative in most cases. The coefficients of (ln E) and $(\ln E)^2$ are also significant in most cases and of opposite signs in all except two cases.

However, as expenditure increases for a fixed size of household the proportion of expenditure on miscellaneous goods also increases. This is to be expected as this item group is a luxury in all cases.

10) Durables:

For this commodity group consisting of such items like furniture ornaments Radio etc. there are a large number of reported zero expenditures. There are two ways in which zeroes could have come about. In one case those who do not purchase have no use for the item i.e. the marginal utility is less than the price for any positive amount. In the second case, the reported zero expenditure may be because of infrequency of purchase due to seasonality.

The Tobit model for estimating regression equations in which dependent variables are either zero or positive is given by replacing Y_i in the standard regression model $Y_i = X_i \beta + U_i$ bv $Y_i = \max \left[X_i . \beta + U, 0\right]$. The model is then estimated by maxi.mum likelihood. It is argued (See Deaton et al 1984) that in a demand system with many commodities some of which may be optimally zero (i.e. represent genuine corner solutions where marginal utility is less then the price for a positive amount), the demands cannot be described by Tobit equations. This is because the Tobit procedure is a single equation technique and, if, changes in income or demo= graphics cause a previously positive demand to become zero, then, in general, the functional forms of other demands will change, which the Tobit model cannot allow for. Empirical models which allow for this can be constructed but are complex (See Wales and Woodland 1981 Lee and Pitt(1986). These models, however, do not allow for zeroes that arise through infrequency of purchase.

We used the OLS procedure to estimate the engel curve for this commodity group also. If the zeroes are observed as a result of infrequency of purchase which cannot be caught in an expenditure survey asking questions pertaining to purchases in the last month (or year) like the NSS survey, then the OLS is still correct. This is because, though some households would buy nothing, others may happen to stock up during the survey period so that the expected values is what it would be if all households purchase continuously. This observation would be more likely to be correct in the semi-durables case eg. for the item group clothing and footwear which includes all kinds of garments, towels, hosiery, bedsheets, blankets, wool, footwear etc.

But in the case of durables which includes item groups such as Furniture, musical instruments, ornaments, utensils, Radio, Televison, Camera, Refrigerator etc., one would expect the zeroes in our data set to be genuine corner solutions. Our people are just too poor to buy these items. There is no question of the survey not being able to catch these expenditures because of their infrequency. Hence, the OLS model would not be entirely correct for this item group.

Empirical evidence from the Western Countries (See Deaton et al 1984) suggests that even in this case the OLS estimates are alright upto a factor. But this happens only if certain strong restrictions (like multivariate normality of explanatory variables) are satisfied.

With this background, our estimated OLS paramenters for this item group cannot be defended. Hence, this item group is dropped out of our subsequent discussion and the results for this item group are not presented.

6.7.2 Half-Sample analysis:

Most of sampling theory builds up the errors of the estimate under the assumption that these errors arise solely from the random sampling variation that is present when only a fraction of the total population is measured. In simple surveys where measurements are simple ones, the measuring devices used are accurate and the quality of work is high, the above assumption is true. But in complex surveys, particularly when measurement is complicated, the above assumption would be far away from the truth. Three additional sources of error that may be present are,

1. Non response

2. Errors of measurement on a unit

3. Errors in processing the data[20]

If errors of measurement on the different units in the sample are correlated, the usual formulas for the standard errors are biased. If correlations are positive (as is usually the case), the standard errors are likely to be too small and this type of disturbance may not be detected at all.

To study correlated errors Mahalanobis (1946) proposed the technique of 'Interpenetrating Subsamples' The method is to divide the random sample of n units (say) at random into k subsamples, each subsample containing $m = n/k$ units. The field work and processing of the sample are planned so that there is no correlation between the errors of measurement of any two units in different subsamples. For instance in the NSS sample design it is supposed that the correlation between errors arises solely from biases of the

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[20] For a detailed discussion of these types of errors see for example Cochran (1977).

interviewers. So that interviewers are assigned to 2 separate subsamples (half samples) (k = 2 here) and the field work and processing assure that there is no correlation between errors of measurement for different interviewers.

The interpenetrating subsamples technique provides an estimate of the variance of the estimate taking care of both the simple response variance and the correlated component.[21]

The NSS sample design being a complicated stratified multistage design, the formulae for computing the standard errors of various estimates turn out to extremely complicated. Because of the intricate nature of the design it cannot be assumed to be a simple random sample so that the estimated standard errors from the above regressions are not entirely correct. In view of these limitations separate regressions for the two subsamples, in order to get on idea of the errors in estimation were run.

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[21] For details see Cochran (1977), pg 389

Tables 6.22 to 6.29 present the results of this half-sample analysis.

6.8 Conclusion:

On the whole the chosen model fits well to the data set and errors in estimation of elasticity and share are not very large.

We have not included prices in our analysis. Implicit prices i.e. $\frac{\text{value spent}}{\text{Quantum consumed}}$ could have been used, but this would differ from household to household due to quality elasticity Iyengar (1963). Moreover, we believe that quantity data would be less reliable than value data. Also the aggregation into commodity groups would create problems for the use of implicit prices.

If external information on prices is used to convert quantities into values we still have the problem of aggregation over commodiaties. This could not be done also because in the case of some commodities only values were available in our data set, no quantities (eg. the commodity group, Vegetables, Fruits and Nuts).

TABLE 6.22 : Estimated budget share (ω) and elasticity (η) at mean by half samples, Rural Karnataka : Region 1, 1977-78

Item Group	HS1		HS2		Combined	
	ω	η	ω	η	ω	η
Cereals and Pulses	.37	.62	.38	.66	.38	.64
Milk and Milk Products	.04	1.27	.04	1.55	.07	1.23
Sugar	.03	.86	.03	1.00	.03	.93
Pan, Tob and Intox.	.06	.77	.06	1.03	.06	.98
Fuel and Light	.07	.73	.07	..88	.07	.80
Vegetable, Fruits and Nuts	.08	1.22	.08	.86	.08	1.03
Other Food	.16	.87	.17	.90	.16	.89
Clothing	.06	1.95	.03	1.64	.04	1.8
Misc. Goods	.16	1.49	.18	1.49	.17	1.49

TABLE 6.23 : Estimated budget share (ω) and elasticity (η) at mean by half samples, Rural Karnataka : Region 2, 1977-78

Item Group	HS1		HS2		Combined	
	ω	η	ω	η	ω	η
Cereals and Pulses	.41	.67	.43	.75	.42	.72
Milk and Milk Products	.07	1.52	.04	1.33	.04	1.53
Sugar	.03	1.42	.02	1.19	.02	1.32
Pan, Tob and Intox.	.05	.92	.06	.85	.06	.95
Fuel and Light	.07	.52	.09	.53	.08	.53
Vegetable, Fruits and Nuts	.06	1.24	.05	1.14	.06	1.17
Other Food	.17	1.07	.17	1.03	.17	1.07
Clothing	.06	2.00	.07	2.07	.06	2.11
Misc. Goods	.10	1.19	.05	1.52	.10	1.20

TABLE 6.24 : Estimated budget share (ω) and elasticity (η) at mean by half samples, Rural Karnataka : Region 3, 1977-78

Item Group	HS1		HS2		Combined	
	ω	η	ω	η	ω	η
Cereals and Pulses	.43	.79	.41	.73	.37	.79
Milk and Milk Products	.04	1.41	.05	1.03	.05	1.35
Sugar	.02	.98	.03	1.03	.02	.99
Pan, Tob and Intox.	.05	.85	.05	.71	.05	.82
Fuel and Light	.09	.74	.08	.59	.09	.67
Vegetable, Fruits and Nuts	.05	.95	.06	1.06	.05	1.01
Other Food	.17	.93	.15	.95	.16	.96
Clothing	.05	2.43	.06	2.83	.07	2.43
Misc. Goods	.12	1.22	.11	1.20	.11	1.21

TABLE 6.25 : Estimated budget share (ω) and elasticity (η) at mean by half samples, Rural Karnataka : Region 4, 1977-78

Item Group	HS1		HS2		Combined	
	ω	η	ω	η	ω	η
Cereals and Pulses	.45	.78	.43	.73	.44	.76
Milk and Milk Products	.06	1.57	.05	1.42	.06	1.42
Sugar	.04	1.13	.04	1.07	.04	1.05
Pan, Tob and Intox.	.02	.85	.04	.76	.04	.90
Fuel and Light	.08	.69	.07	.52	.07	.59
Vegetable, Fruits and Nuts	.05	.96	.05	.85	.05	.91
Other Food	.14	.61	.13	.88	.13	.74
Clothing	.05	2.58	.08	2.30	.07	2.43
Misc. Goods	.11	1.34	.11	1.25	.11	1.29

TABLE 6.26 : Estimated budget share (ω) and elasticity (η) at mean by half samples, Urban Karnataka : Region 1, 1977-78

Item Group	HS1		HS2		Combined	
	ω	η	ω	η	ω	η
Cereals and Pulses	.29	.68	.30	.78	.30	.68
Milk and Milk Products	.08	1.36	.06	1.90	.10	1.48
Sugar	.03	.72	.03	1.21	.03	.95
Pan, Tob and Intox.	.03	.95	.03	1.19	.03	1.01
Fuel and Light	.07	.83	.09	1.31	.08	1.03
Vegetable, Fruits and Nuts	.09	.87	.10	.91	.09	.90
Other Food	.24	.89	.23	0.76	.28	.79
Clothing	.05	3.96	.03	1.48	.04	3.02
Misc. Goods	.11	1.36	.13	1.70	.12	1.50

TABLE 6.27: Estimated budget share (ω) and elasticity (η) at mean by half samples, Urban Karnataka : Region 2, 1977-78

Item Group	HS1		HS2		Combined	
	ω	η	ω	η	ω	η
Cereals and Pulses	.26	.69	.32	.50	.30	.56
Milk and Milk Products	.06	1.32	.68	1.32	.07	1.21
Sugar	.02	.69	.02	.70	.02	.71
Pan, Tob and Intox.	.02	.40	.02	.54	.02	.53
Fuel and Light	.07	.52	.09	.46	.08	.44
Vegetable, Fruits and Nuts	.06	1.20	.05	.96	.06	1.13
Other Food	.23	.96	.20	1.14	.21	1.13
Clothing	.08	1.47	.09	2.15	.09	1.79
Misc. Goods	.14	1.32	.12	1.49	.18	1.27

TABLE 6.28 : Estimated budget share (ω) and elasticity (η) at mean by half samples, Urban Karnataka : Region 3, 1977-78

Item Group	HS1		HS2		Combined	
	ω	η	ω	η	ω	η
Cereals and Pulses	.34	.80	.31	.57	.33	.74
Milk and Milk Products	.08	1.10	.08	1.42	.08	1.20
Sugar	.03	.95	.03	.90	.03	.91
Pan, Tob and Intox.	.02	.82	.03	.96	.02	.96
Fuel and Light	.09	.91	.08	.77	.09	.85
Vegetable, Fruits and Nuts	.06	1.12	.07	1.11	.06	1.09
Other Food	.19	1.10	.21	1.02	.20	1.06
Clothing	.04	1.83	.04	2.08	.04	1.69
Misc. Goods	.14	.68	.16	1.44	.18	1.11

TABLE 6.29 : Estimated budget share (ω) and elasticity (η) at mean by half samples, Urban Karnataka : Region 4, 1977-78

Item Group	HS1		HS2		Combined	
	ω	η	ω	η	ω	η
Cereals and Pulses	.34	.69	.37	.80	.27	.73
Milk and Milk Products	.06	1.57	.05	1.51	.06	1.40
Sugar	.03	1.00	.03	.97	.03	.98
Pan, Tob and Intox.	.03	.93	.03	.95	.03	.96
Fuel and Light	.08	.75	.08	.96	.08	.94
Vegetable, Fruits and Nuts	.05	1.03	.05	.96	.05	1.04
Other Food	.21	.90	.19	.91	.20	.90
Clothing	.06	2.39	.05	1.91	.05	1.94
Misc. Goods	.12	1.13	.13	.86	.14	1.11

Another question is whether and how the sample design should be taken into account in the estimation. The first issue is that the multistage stratified design of the National Sample Survey implies that error terms across household may not be independent. So that, although the estimates are consistent,the usual formulae for standard errors will not be correct, and efficiency will be lost. However, empirical results suggest that, though the standard errors from the usual formulae are not precisely correct, the broad patterns of inference are unlikely to be affected significantly. (See Deaton et al (1984)).

The second issue is whether or not the sampling design should be reflected in a weighting of the data in the regressions. An inverse of their prior probability of being selected could be taken as the weight.

But in our case these probabilities are equal within a region, (in the 32nd Round data, where the probabilities vary across regions) and we have run separate regressions for the different regions thus eliminating the need for weighting.

Subtantive results follow in the next Chapter.

CHAPTER 7

ANALYSIS OF CONSUMPTION PATTERNS : EMPIRICAL RESULTS

7.1 Introduction:

The preceding chapter described the methodology used to answer specific questions on the consumer behaviour of SC/ST *vis-a-vis* the non SC/ST. This chapter seeks to provide the answers.

Section 7.2 describes the results of the analysis of covariance for the 28th Round for both the sectors. Section 7.3 looks at the expenditure elasticities computed from the 28th Round data. Two kinds of expenditure elasticities were computed. One set was the elasticity computed at the overall regional mean of the explanatory variables and another set computed at the social group wise means of the explanatory variables. The first set can be interpreted as the residual effect on elasticity given that the social group wise means have been equalised to overall means, so that these elasticities in a sense capture the differences in preferences between the two social groups after eliminating the effect of differences in mean of the explanatory variables. These elasticities are different for SC/ST and Non SC/ST only if the engel curves are different for the two groups, otherwise they are the same. We denote them by $\bar{\eta}_j$ for the j^{th} item

The second set of elasticities ($\bar{\eta}_{ji}$) are calculated at social group wise means of explanatory variables and partly reflect the difference in mean levels of the explanatory variables between the SC/ST and the Non SC/ST. They are tabulated separately in Tables 7.13 to 7.17 given at the end of the chapter. The following sections contain a discussion of $\bar{\eta}_j$. The observed differences in $\bar{\eta}_{ji}$ follow a predictable course reflecting the fact that the SC/ST are at a lower level of living in general than the Non SC/ST so that necessities are more of a necessity for the SC/ST and the luxuries are more of a luxury for the SC/ST than for the Non SC/ST.

Section 7.4 looks at the quality of items consumed as found from the 28th Round data. From Section 7.5 onwards begins the description of the 32nd Round results. The analysis for the 32nd Round data was kept at the regional level for two reasons. The data from the four regions could not be pooled in a straight forward manner because as we saw in Chapter 4, the sample design for the 32nd Round enquiry was not self weighting upto the State level and further, the error variances in the model used were far from homogeneous across regions. Section 7.6 takes up sectoral i.e. rural-urban comparisons, Section 7.7 the inter-regional dimensions for both the sectors and Section 7.8 the variation across social group. Section 7.9 makes the intertemporal comparisons.

7.2 Karnataka : 1973- 74 (28th Round):

7.2.1 Mean levels of explanatory variables ln N, ln E and $(\ln E)^2$:

The mean levels of these variables are not very different across social groups in the rural sector. In the urban sector, the differences between the SC/ST and the Non SC/ST are more perceptible. The SC/ST have higher geometric mean of N(hh size) and lower geometric mean of E(total expenditure). (Table 7.1).

TABLE 7.1 : Mean of explanatory variables across Social groups, Karnataka : 1973-74.

Variable / Sector	ln (hh size N)	ln (Total Exp E)	(ln Total exp)^2
Rural			
SC/ST	1.54	5.18	27.26
Non SC/ST	1.57	5.52	30.85
Overall	1.56	5.45	30.16
Urban			
SC/ST	1.65	5.58	31.64
Non SC/ST	1.41	5.63	32.18
Overall	1.43	5.62	32.13

7.2.2 Results of ancova : Rural :

Here we compare the consumption pattern of the SC/ST households with others.

For the rural sector, in five out of ten cases the hypothesis $H_0(1)$ of overall homogeneity is rejected. These commodity groups are (1) Milk and Milk Products, (2) Vegetables, Fruits and Nuts (3) Pan, Tobacco and Intoxicants (4) Sugar and (5) Clothing. (Table 7.2).

In case of (1) Milk and Milk Products, (2) Pan, Tobacco and Intoxicants, and (3) Clothing, the hypothesis H_0 (2) was tested and rejected. Rejection of H_0 (2) means that the estimated slope parameters differ significantly between the two groups whatever the values assumed by the intercepts. This implies that for these items even if total expenditure were to remain the sam.; for the two groups, the expenditure elasticities would differ across social groups due to group-specific behavioural differences as reflected in the estimates of the slope parameter.

TABLE 7.2 : Results of the analysis of covariance, Rural Karnataka : 1973-74 and 1977-78

Item Gp \ Year	1973-74	1977-78			
	State	Region 1	Region 2	Region 3	Region 4
Cereals and Pulses	H*	H	H	H	NH
Milk and Milk Products	NH**	H	NH	NH	NH
Sugar	NH	NH	NH	NH	NH
Pan,,Tob. and Intox.	NH	NH	NH	NH	NH
Fuel and Light	H	H	H	H	NH
Vegatable, Fruits and Nuts	NH	H	H	H	H
Other Food	H	H	H	NH	NH
Clothing	NH	H	NH	H	H
Misc. Goods	H	H	H	H	H

* Homogeneous engel curves across social groups

** Non Homogeneous engel engel curves across social groups.

For (1) Vegetables, fruits and nuts, and (2) Sugar, the hypothesis H_0 (2) of homogeneous slopes cannot be rejected but the hypothesis H_0(3) is rejected and in both the cases the SC/ST have lower intercept. This means that even if total expenditure remains the same for both the groups the SC/ST will have a lower budget share for these commodities due to the group specific differences in the intercept.

But these five item groups account for only 15% of the budget in case of SC/ST and 20% in case of Non SC/ST. Thus, for the more important items eg. cereals and pulses in the consumer's budget the pattern of consumption of the SC/ST and Non SC/ST are not significantly different.

Consumption patterns : Urban :

For the urban sector, only for two item groups viz. (Pan, Tobacco and Intoxicants and (2) Miscellaneous Goods the hypothesis H_0(1) is rejected. (Table 7.3) In each case the hypothesis of

TABLE 7.3 : Results of the analysis of covariance, Urban Karnataka : 1973-74 and 1977-78.

Item Gp. \ Year	1973-74	1977-78			
	State	Region 1[a]	Region 2	Region 3	Region 4
Cereals and Pulses	H*	-	NH	H	H
Milk and Milk Products	H	-	H	NH	NH
Sugar	H	-	H	H	NH
Pan, Tob. and Intox.	NH**	-	NH	NH	NH
Fuel and Light	H	-	H	NH	H
Vegetable, Fruits and Nuts	H	-	NH	H	NH
Other Food	H	-	H	H	H
Clothing	NH	-	H	H	H
Misc. Goods	NH	-	H	NH	H

* Homogeneous engel curves across social groups

** Non Homogeneous engel curves across social groups.

a No ancova done in this case because only four SC/ST hhs. in this region.

homogeneous slopes $H_0(2)$ cannot be rejected and the hypothesis of homogeneous intercepts $H_0(3)$ is rejected. This means the slopes may be equal but the intercepts vary. These item groups make up only 14 per cent of the SC/ST budget and 20% of the Non SC/ST budget. Thus in the urban sector also, the consumption patterns of the two groups are not significantly different for most item groups.

7.3 Expenditure elasticities :

Having established the statistical similarities and differences in Engel curve parameters between the two social groups one may now proceed to calculate the expenditure elasticities. These elasticities are presented in table 7.4 alongwith the budget share of each item. Two separate elasticities for the two groups have been computed in case of non-homogeneity of engel relations but at observed overall regional mean.[1]

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[1] The geometric mean, because ln E is the explanatory variable used in this study.

TABLE 7.4 : Estimates of elasticities (budget shares)*
Karnataka : 1973-74

Item Gp.	RURAL			URBAN		
	Social Gp.	η	ω	Social Gp.	η	ω
1 Cereals and Pulses	Pooled**	.75	.54	Pooled	.95	.21
2 Milk and Milk Products	SC/ST	1.59	.03	Pooled	1.57	.06
	Non SC/ST	1.53	.04			
3 Sugar	SC/ST	.75	.02	Pooled	.20	.01
	Non SC/ST	.80	.02			
4 Pan, Tob, and Intox.	SC/ST	1.06	.20	SC/ST	.99	.05
	Non SC/ST	.93	.03	Non SC/ST	.99	.02
5 Fuel and Light	Pooled	.62	.07	Pooled	.88	.07
6 Vegatable, Fruits and Nuts	SC/ST	1.17	.04	Pooled	1.15	.05
	Non SC/ST	1.13	.05			
7 Other Food	Pooled	1.05	.13	Pooled	1.02	.24
8 Clothing	SC/ST	1.21	.04	Pooled	2.43	.04
	Non SC/ST	1.23	.05			
9 Misc. Goods	Pooled	1.76	.07	SC/ST	1.92	.10
				Non SC/ST	1.67	.14

* Both estimated at average values of explanatory variables for all social groups taken together

** Pooled when consumption patterns are homogeneous across social groups.

The classification of commodities into luxuries and necessities is the same for SC/ST and Non SC/ST except for the case of Pan, Tobacco and Intoxicants in the rural sector where this item group is a luxury for SC/ST and a necessity for Non SC/ST.

Even in the case of items where the analysis of covariance shows significant differences in consumption patterns between SC/ST and others the elasticities computed do not show any marked difference except in the case mentioned above. It is thus clear that the SC/ST and the Non SC/ST behave very similarly as far as their consumer expenditure on various item groups is concerned.

It must be mentioned here that the standard errors of the estimates was not computed for the 28th Round analysis and hence the comparisons may not be very rigorous.

For the 32nd Round analysis, however, the elasticities and budget shares were computed separately for each half sample of the NSS sample and also for the combined sample. This approach yields a rough but fully valid estimate of the sampling error of the combined sample estimates. It is encouraging to note that the divergence between half sample results and hence the sampling errors of the combined sample estimates are, in general, quite small. (Tables 6.22 to 6.29 of Chapter 6).

7.4 Quality of items consumed :

Table 7.5 and 7.6 give the expenditure on superior commodities as percentage of total expenditure on that commodity (Superior cereal, superior sugar and superior Fuel) for the SC/ST and Non SC/ST over decile groups of the population[2] separately for the two sectors in 1973-74. Superior cereals include rice and wheat, while others like jowar, bajra etc. are defined as inferior. In the case of sugar, crystal sugar is defined as superior and khandsari, gur and other sweeteners as inferior. In the case of Fuel and Light only gas and electricity are superior. All other

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[2] Decile groups were formed by arranging the sample households in ascending order of PCE and then grouping then in such a way that each decile group contained 10% of the population (of households).

TABLE 7.5 : Expenditure on superior commodities* as a percentage of total expenditure on that commodity by decile groups, Rural Karnataka: 1973-74.

Item Gp. / Decile Gp.	Superior Cereals		Superior Sugar		Superior Fuel and Light	
	SC/ST	Non SC/ST	SC/ST	Non SC/ST	SC/ST	Non SC/ST
1	6.55	60.30	18.33	19.46	0.00	2.26
2	17.90	27.54	11.86	18.93	0.00	0.80
3	13.11	27.16	38.98	18.97	0.12	1.33
4	12.55	35.36	0.00	27.76	0.00	2.00
5	17.69	47.16	8.19	34.86	0.00	2.53
6	23.05	66.13	6.56	34.08	0.00	1.65
7	34.94	54.63	8.26	27.35	1.23	3.64
8	13.27	60.20	23.30	29.07	0.00	4.56
9	37.07	58.86	25.50	40.06	0.00	4.01
10	45.65	51.72	14.08	50.62	0.92	5.47

* Superior Cereals : Rice and Wheat

Superior Sugar : Sugar Crystals

Superior Fuel and Light : Electricity and Gas.

TABLE 7.6 : Expenditure on Superior commodities* as a percentage of total expenditure on that commodity by decile groups, Urban Karnataka : 1973-74.

Item Gp. / Decile Gp.	Superior Cereals		Superior Sugar		Superior Fuel and Light	
	SC/ST	Non SC/ST	SC/ST	Non SC/ST	SC/ST	Non SC/ST
1	27.96	43.67	18.08	42.04	17.05	0.00
2	15.18	56.11	0.00	55.30	0.00	4.00
3	44.36	51.10	37.65	48.43	12.08	4.20
4	47.47	69.82	17.64	66.01	0.00	7.03
5	84.90	81.76	52.46	68.85	11.76	16.10
6	68.43	77.88	43.88	77.19	0.00	10.62
7	26.39	82.28	0.00	77.19	0.00	13.94
8	43.53	89.06	43.87	75.43	0.00	12.22
9	83.27	85.64	53.58	73.81	25.46	27.44
10	83.29	89.72	61.50	80.83	13.60	45.18

* Superior Cereals : Rice and Wheat

Superior Sugar : Sugar Crystals

Superior Fuel and Light : Electricity and Gas.

forms of fuel like coal, firewood and kerosene are inferior.[3]

The Non SC/ST tend to spend a higher percentage of their budget on cereals (or sugar or fuel and light) on the superior variety than the SC/ST for all decile groups and for both the sectors. Both the SC/ST and Non SC/ST spend a higher and higher proportion of their expenditure on cereals of the superior variety as their PCE increases i.e. as they move to the upper decile groups. However, for the Non SC/ST in the rural sector this trend over decile groups is not so clear. In case of superior sugar (or superior fuel and light) the Non SC/ST households spend a higher proportion of their expenditure on superior sugar (or superior fuel and light) as they move up towards the top deciles, the SC/ST households on the other hand, show no such clear pattern. Further, one can note that as far as the quality of items consumed is concerned, the Non SC/ST consume better quality goods than the SC/ST even in the bottom decile groups except in some cases.

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3 This definition of inferior/superior does not bear any relation with the income elasticities and for this reason our classification might appear superficial, though socially more acceptable.

The above findings are only to be expected because the mean expenditure of the Non SC/ST in each decile group is more than the corresponding mean expenditure of the SC/ST in all cases or in other words the Non SC/ST are, on the average richer and hence it is not surprising that they spend a higher fraction of their budget on the superior varieties of the three item groups mentioned above.

7.5 Results based on the 32nd Round analysis :

The data set for the 32nd Round as mentioned in Chapter 4 is larger[4] and was split up for separate study of the regions of Karnataka.[5] The regionwise analysis was carried out separately for each sector. Finally, the consumption patterns of the SC/ST group and the others (Non SC/ST) were analysed within each of the eight data sets (4 regions x 2 sectors). The item group classification is the same as in the 28th Round analysis and has already been described in Section 6.5 of Chapter 6.

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4 Containing 1897 rural households and 1249 urban households. The break up of sample size by region and social group is given in Table 4.2 of Chapter 4.

5 A regional disaggregation of the 28th Round data was not considered because it would reduce the sample size further.

Three types of comparisons were made in the analysis of the 32nd Round household budget data for Karnataka.

1) Rural sector versus urban sector.
2) Within each sector, comparisons across regions.
3) Comparison of the SC/ST group with the Non SC/ST group within each sector x region.

The relevant results are shown in Tables 7.7 to 7.12. Some typical graphs are presented in Appendix G. The following sections describe the broad conclusions that emerge from the comparisons.

7.6 Rural-Urban comparisons :

1) The urban sector is, as expected, better off than the rural sector in both the time periods under study. This follows from the observation that on the whole in urban areas the estimated shares for necessities are lower than those for the rural sector and the corresponding estimated shares for luxury item groups are higher for the urban sector.

TABLE 7.7 : Mean of explanatory variables across regions and social groups Rural Karnataka : 1977-78

Region \ Variable		ln (hhs size N)	ln (total Exp. E)	$(\ln \text{Total exp})^2$
1	SC/ST	1.32	5.50	30.91
	Non SC/ST	1.72	6.10	37.87
	Overall	1.69	6.06	37.38
2	SC/ST	1.51	5.24	27.98
	Non SC/ST	1.58	5.78	34.34
	Overall	1.57	5.69	33.30
3	SC/ST	1.54	5.52	31.22
	Non SC/ST	1.58	5.78	34.01
	Overall	1.57	5.73	33.47
4	SC/ST	1.56	5.30	28.16
	Non SC/ST	1.55	5.56	31.46
	Overall	1.55	5.52	30.93

TABLE 7.8 : Mean of explanatory variables across regions and social groups, Urban Karnataka : 1977-78

Region \ Variable		ln (hhs size N)	ln (Total Exp. E)	$(\ln \text{Total Exp.})^2$
1	SC/ST	1.51	5.32	29.26
	Non SC/ST	1.56	5.92	36.10
	Overall	1.55	5.88	35.01
2	SC/ST	1.22	6.35	45.23
	Non SC/ST	1.28	5.82	34.38
	Overall	1.27	5.88	35.69
3	SC/ST	1.49	5.70	33.17
	Non SC/ST	1.46	5.89	35.61
	Overall	1.48	5.89	35.44
4	SC/ST	1.53	5.63	31.14
	Non SC/ST	1.48	5.71	33.52
	Overall	1.48	5.70	33.20

TABLE 7.9 : Estimates of Elasticities (budget shares)*, Rural Karnataka : 1977-78.

Region / Item Gp.	1		2		3		4	
	η	ω	η	ω	η	ω	η	ω
Cereals and Pulses	.64	(.38)	.72	(.42)	.79	(.37)	.76	(.44)
Milk and Milk Products	1.23	(.07)	1.37	(.05)[a]	1.35	(.05)[a]	1.42	(.06)[a]
Sugar	.91	(.03)[a]	1.25	(.02)[a]	.99	(.02)[a]	1.05	(.04)[a]
Pan, Tob.and Intox.	.98	(.05)[a]	.95	(.06)[a]	.82	(.05)[a]	.90	(.04)[a]
Fuel and Light	.80	(.07)	.53	(.08)	.67	(.09)	.59	(.07)[a]
Vegetable, Fruits and Nuts	1.03	(.08)	1.17	(.06)	1.01	(.05)	.91	(.05)
Other Food	.89	(.16)	1.07	(.17)	.96	(.16)	.74	(.13)
Clothing	1.80	(.04)	2.11	(.06)[a]	2.64	(.05)	2.43	(.07)
Misc. Goods	1.49	(.16)	1.20	(.10)	1.21	(.11)	1.29	(.11)

* Elasticities and shares calculated at overall regional mean of explanatory variables. $(\bar{n}_j)$

a These items show heterogeneous consumption pattern across social groups. The values here pertain to the Non SC/ST. The corresponding values for the SC/ST group are given in Table 7.10.

TABLE 7.10 : Estimates of elasticities (budget shares)*, Rural Karnataka : SC/ST, 1977-78.

Region / Item Gp.	1		2		3		4	
	η	ω	η	ω	η	ω	η	ω
Cereals and Pulses	-	-	-	-	-	-	.77	(.46)
Milk and Milk Products	-	-	1.53	(.04)	1.46	(.04)	1.68	(.04)
Sugar	.86	(.02)	1.32	(.02)	.99	(.02)	1.08	(.03)
Pan, Tob. and Intox.	.99	(.10)	.42	(.05)	.87	(.06)	.93	(.05)
Fuel and Light	-	-	-	-	-	-	.55	(.07)
Vegetable, Fruits and Nuts	-	-	-	-	-	-	-	-
Other Food	-	-	-	-	.96	(.19)	.93	(.15)
Clothing	-	-	2.09	(.12)	-	-	-	-
Misc. Goods	-	-	-	-	-	-	-	-

* Only for those cases where the analysis of covariance shows heterogeneity. Elasticities and shares computed at overall regional mean of explanatory variables ($\bar{n}_j$)

TABLE 7.11 : Estimates of elasticities (budget shares)*
Urban Karnataka : 1977-78.

Region / Item Gp.	1[+] η	1[+] ω	2 η	2 ω	3 η	3 ω	4 η	4 ω
Cereals and Pulses	.68	(.30)	.56	(.30)[a]	.74	(.33)	.73	(.27)
Milk and Milk Products	1.48	(.10)	1.21	(.07)	1.20	(.08)[a]	1.40	(.06)[a]
Sugar	.95	(.03)	.71	(.02)	.91	(.03)	.98	(.03)[a]
Pan, Tob. and Intox.	1.01	(.03)	.53	(.02)[a]	.96	(.02)[a]	.96	(.02)[a]
Fuel and Light	1.03	(.08)	.44	(.08)	.85	(.09)[a]	.94	(.08)
Vegetable, Fruits and Nuts	.90	(.09)	1.13	(.06)	1.09	(.06)	1.04	(.05)[a]
Other Food	.79	(.28)	1.13	(.21)	1.06	(.20)	.90	(.20)
Clothing	3.02	(.04)	1.79	(.09)	1.69	(.04)	1.94	(.05)
Misc. Goods	1.50	(.12)	1.27	(.18)	1.11	(.18)	1.11	(.14)

* Elasticities and shares calculated at overall regional mean of explanatory variables. ($\bar{\eta}_j$)

+ No ancova done because of only 4 SC/ST hhs. in this region

a These items show heterogeneous consumption pattern across social groups. The values here pertain to the Non SC/ST. The corresponding values for the SC/ST group are given in Table 7.12.

TABLE 7.12 : Estimates of elasticities (budget shares)* Urban Karnataka : SC/ST, 1977-78.

Region / Item Gp.	1		2		3		4	
	η	ω	η	ω	η	ω	η	ω
Cereals and Pulses	-	-	.42	(.23)	-	-	-	-
Milk and Milka Products	-	-	-	-	1.29	(.06)	1.68	(.03)
Sugar	-	-	-	-	-	-	.97	(.02)
Pan, Tob. and Intox.	-	-	.78	(.04)	.98	(.05)	.98	(.06)
Fuel and Light	-	-	-	-	.79	(.06)	-	-
Vegetable, Fruits and Nuts	-	-	1.20	(.06)	-	-	1.05	(.04)
Other Food	-	-	-	-	-	-	-	-
Clothing	-	-	-	-	-	-	-	-
Misc. Goods.	-	-	-	-	-	1.25	(.14)	-

* Only for those cases where the analysis of covariance shows heterogeneity. Elasticities and shares computed at overall regional mean of explanatory variables for both social groups taken together ($\bar{\eta}_j$)

2) The SC/ST of the urban sector are generally better off than those in the rural sector and the same is true of the Non SC/ST.

3) In general, the SC/ST and the Non SC/ST show homogeneity of consumption patterns in more cases in the urban sector than in the rural sector. This may be a reflection of the phenomena called urbanisation by sociologists ie. the SC/ST adopt the consumer behavior of the others around them in urban areas.

7.7 Inter-regional comparisons :

1) For the rural sector, Region 1 shows homogeneous consumption patterns across social groups for most commodity groups and Region 4 shows heterogeneity in consumption patterns for most commodity groups. It is important to note here that in Region 4 of this sector the SC/ST and Non SC/ST differ in consumer behavior even in the case of basic necessities like cereals and pulses and fuel and light.

The urban sector, in general, shows non-homogeneity in a fewer number of cases on the whole than the rural sector, but in the case of Region 2 even a basic necessity like cereals and pulses reveals non-homogeneity. Region 3 and 4 also show non-homogeneity in case of 4 commodity groups.

2) On looking at the inter-regional results we see that Region 4 on the whole shows non-homogeneity and Region 1 shows homogeneity for the rural sector for most item groups.[6] This fact coupled with the finding that, on the average Region 1 is better off compared to Region 4 (Tables 7.7 and 7.8 and Table 5.64 of Chapter 5) leads us to believe that on improvement of the general level of living the SC/ST and Non SC/ST move towards homogeneity in consumer behavior.

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[6] The ancova for Region 1 of the urban sector was not possible because there were only 4 SC/ST households in this region thus providing insufficient degree of freedom to run the regressions.

7.8 Social group comparisons :

1) Within a region one finds that the SC/ST spend a higher proportion of their budget on necessary items like cereals and pulses than the Non SC/ST and a lower proportion of their budget on luxury items like milk and milk products and sugar and vegetables, fruits and nuts than the Non SC/ST. Since the shares and elasticities have been estimated at the common regional mean of the explanatory variables for both the social groups, this difference can be attributed to differences in tastes and needs (ie. preferences) of the two groups.

2) The SC/ST generally have a larger expenditure elasticity than the Non SC/ST for all commodity groups. Thus, a 1% rise in the income of the SC/ST affects their expenditure on various items more in a proportionate sense than a 1% rise in the income of the Non SC/ST.

3) The consumer behaviour of the SC/ST and the Non SC/ST in the rural sector is markedly different for many commodity groups

and sometimes even for necessities like cereals and pulses and fuel and light.

4) The item groups milk and milk products, sugar and Pan, tobacco and intoxicants have shown non-homogeneous consumption patterns across social groups in almost all the regions in both the sectors and for both the periods of time i.e. 1973-74 and 1977-78.

5) The SC/ST in general spend a lower share of their budget on an item on the superior variety than the Non SC/ST. which brings out the disparities between the two groups more vividly.

7.9 <u>Inter-temporal comparisons</u> :

1) The general homogeneity of consumption patterns which the State wide analysis of 28th round data show is contradicted by the regional analyses of covariance of 32nd Round data. [illegible]

Three possible explanations are:

1) Because of more comparisons involved in 32nd Round (2 Sectors x 4 Regions as against 2 Sectors in 28th Round) one would expect to get more cases of significant differences.

2) The smaller sample sizes in 28th Round may lead to less conclusive tests whereas the larger sample size brings out the differences.

3) Pooling the regions for 28th Round may have inflated the error variances and reduced chances of detecting differences.

4) The regional dimension is an important factor in the analysis of consumer behavior, and perhaps, the regionwise analysis captures those variations in engel curve parameters across Social groups which the state level analysis could not.

TABLE 7.13 : Estimated elasticities ($\bar{\eta}_{ji}$) and budget shares*
Karnataka : 1973-74.

Sector / Item Gp.	RURAL				URBAN			
	SC/ST		Non SC/ST		SC/ST		Non SC/ST	
	η	ω	η	ω	η	ω	η	ω
Cereals and Pulses	.78	.57	.74	.53	.96	.23	.95	.21
Milk and Milk Products	1.59	.02	1.48	.04	1.59	.06	1.57	.06
Sugar	.79	.02	.79	.02	.35	.01	.17	.01
Pan, Tob. and Intox.	1.08	.20	.96	.06	1.06	.05	.99	.02
Fuel and Light	.62	.08	.62	.07	.89	.07	.74	.03
Vegatable, Fruits and Nuts	1.19	.04	1.13	.05	1.05	.14	1.15	.05
Other Food	1.05	.13	1.05	.13	1.02	.20	1.02	.25
Clothing	1.22	.83	1.21	.93	2.81	.03	2.39	.04
Misc. Goods	1.92	.06	1.74	.07	2.13	.08	1.66	.14

* Estimated at social group specific means of explanatory variables.

TABLE 7.14 : Estimates of elasticities ($\bar{\eta}_{ji}$) (budget shares)*
Karnataka : Region 1, 1977-78.

Sector / Item Gp.	RURAL				URBAN			
	SC/ST		Non SC/ST		SC/ST		Non SC/ST	
	η	ω	η	ω	η	ω	η	ω
Cereals and Pulses	.63	.40	.64	.38	.57	.28	.67	.29
Milk and Milk Products	1.58	.04	1.38	.04	1.49	.11	1.47	.10
Sugar	.89	.02	.91	.03	.87	.03	.95	.03
Pan, Tob. and Intox.	1.02	.10	.98	.05	1.04	.03	1.00	.03
Fuel and Light	.81	.08	.80	.07	1.00	.50	1.00	.50
Vegetable, Fruits and Nuts.	1.09	.08	1.03	.08	.83	.09	.90	.09
Other Food	.88	.17	.90	.16	.92	.25	.78	.28
Clothing	2.16	.03	1.79	.04	2.38	.05	3.07	.04
Misc. Goods.	1.53	.13	1.48	.17	1.48	.13	1.50	.12

* Estimated at social group specific means of explanatory variables.

TABLE 7.15 : Estimates of elasticities ($\bar{\eta}_{ji}$) and budget shares*, Karnataka : Region 2, 1977-78.

Sector / Item Gp.	RURAL				URBAN			
	SC/ST		Non SC/ST		SC/ST		Non SC/ST	
	η	ω	η	ω	η	ω	η	ω
Cereals and Pulses	.74	.46	.72	.42	.60	.32	.54	.29
Milk and Milk Products	1.82	.03	1.34	.05	1.18	.06	1.21	.07
Sugar	1.48	.02	1.24	.03	.77	.02	.70	.02
Pan, Tob, and Intox.	.81	.06	.95	.06	.44	.02	.54	.02
Fuel and Light	.55	.10	.52	.08	.62	.10	.41	.08
Vegetable, Fruits and Nuts.	1.20	.05	1.16	.06	1.25	.86	1.11	.05
Other Food	1.09	.16	1.06	.17	1.01	.13	1.13	.23
Clothing	1.72	.10	1.55	.12	2.32	.04	1.76	.10
Misc. Goods.	1.28	.09	1.19	.10	1.24	.16	1.28	.18

* Estimated at social group specific means of explanatory variables.

TABLE 7.16 : Estimated elasticities ($\bar{\eta}_{ji}$) and budget shares*,

Karnataka : Region 3, 1977-78.

Sector / Item Gp.	RURAL				URBAN			
	SC/ST		Non SC/ST		SC/ST		Non SC/ST	
	η	ω	η	ω	η	ω	η	ω
Cereals and Pulses	.81	.38	.79	.36	.78	.35	.74	.32
Milk and Milk Products	1.56	.03	1.34	.05	1.31	.05	1.20	.08
Sugar	1.01	.02	.99	.02	.93	.03	.91	.02
Pan, Tob, and Intox.	.88	.06	.82	.05	.99	.05	.96	.02
Fuel and Light	.68	.09	.66	.08	.84	.07	.84	.09
Vegetable, Fruits and Nuts.	1.02	.05	1.00	.05	1.34	.06	1.09	.06
Other Food	.96	.16	.96	.16	1.08	.19	1.63	.20
Clothing	3.58	.03	2.47	.05	.72	.03	.77	.04
Misc. Goods	1.23	.11	1.21	.11	1.13	.14	1.11	.18

* Estimated at group specific means of explanatory variables.

TABLE 7.17 : Estimated elasticities ($\tilde{\eta}_{ji}$) and budget shares*, Karnataka : Region 4, 1977-78.

Sector / Item Gp.	RURAL				URBAN			
	SC/ST		Non SC/ST		SC/ST		Non SC/ST	
	η	ω	η	ω	η	ω	η	ω
Cereals and Pulses	.79	.49	.76	.43	.78	.33	.71	.27
Milk and Milk Products	1.79	.03	1.41	.06	1.60	.04	1.40	.06
Sugar	.01	1.03	.03	.99	.98	.03	.98	.03
Pan, Tob. and Intox.	.94	.05	.90	.04	.98	.06	.95	.03
Fuel and Light	.59	.07	.59	.07	.95	.09	.93	.08
Vegetable, Fruits and Nuts.	.92	.05	.90	.05	1.06	.31	1.04	.05
Other Food	.16	.98	.17	1.06	1.10	.20	1.10	.20
Clothing	3.01	.05	2.35	.07	1.86	.06	1.94	.05
Misc. Goods	1.30	.10	1.30	.11	1.11	.15	1.10	.14

* Estimated at group specific means of explanatory variables.

CHAPTER 8

CONCLUDING REMARKS

8.1 Introduction:

This study set out to determine the levels of living of the SC/ST vis-a-vis the Non SC/ST in the state of Karnataka and examine the changes in it over the five years between 1973-74 and 1977-78. Also an attempt was made to try and identify the major contributors to inequality in Karnataka - whether it is social group, occupation group or spatial variation (or some combination of these). The SC/ST and Non SC/ST below the poverty line were broken down into occupation/regional/household size subgroups in an attempt to draw a profile of rural and urban poverty.

The discovery of differences in consumer behaviour between one subgroup of the population and another gives important insights into the preferences as also the levels of living of each subgroup.

An attempt was made to quantify these differences in consumption patterns by applying statistical methods to the estimated engel functions.

The spatial dimension was brought into the analysis by considering the four regions of Karnataka separately for 1977-78 where the data set was large enough to permit such a division.

8.2 <u>Levels of Living and decomposition of inequality:</u>

1) The SC/ST have a lower standard of living in real terms compared to the Non SC/ST and though, in general, the standard of living has improved from 1973-74 to 1977-78, the Non SC/ST have improved much more than the SC/ST.

2) The inequality in the consumption expenditure distribution for both the SC/ST and the Non SC/ST groups has increased over the period of study but it has increased more for the SC/ST. This shows that the relatively rich among the SC/ST are getting richer and therefore the inequality among the SC/ST has increased.

This is indeed disturbing . The government's efforts for uplifting this group of people has succeeded in helping only the top section of the SC/ST and has yet to reach the lower levels.

A study of the determinants of levels of living showed large differentials across social groups.

Looking at the literacy rates we find that the SC/ST had much lower literacy levels compared to the rest of the population.[1]

The occupation structure shows that the SC/ST were concentrated in low paying occupations most of them being agricultural labourers or production and related workers and there are not many in the blue-collared and white collared jobs. However, there was a slight improvement of their position in this regard in the urban sector over the period of time under study.

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1 These rates could be computed only for the 32nd Round data where the education of each member of the household is recorded. This information is not available in the 28th Round data.

Average household size and composition did not show any marked difference across social groups. Land owned by the SC/ST tended to be less than their Non SC/ST counterparts.

The level of living as measured by real average monthly per capita expenditure varies across regions with Coastal Karnataka (Region 1) being the richest and Northern Karnataka (Region 4) the poorest. Thus, households in Region 1 have the lowest chance of being poor and those in Region 4 the greatest.

4) Comparison of poverty profiles show that there is higher incidence of poverty among the SC/ST and the poor are concentrated in Agricultural labour households, as expected. Also smaller households form a smaller proportion of the poverty households than larger ones.

8.3 <u>Inequality decomposition</u> :

The analysis shows that

1) Social-Occupational-Regional components account for not more than one-third of the total inequality. This means much of the inequality exists within these groups and intra-group differentials are stronger than inter-group differentials.

Among other things, it appears that getting rid of disparities between the SC/ST and the Non SC/ST would remove only a small fraction of overall inequality in the state. Nevertheless, such disparities cannot be overlooked as they are by no means negligible and are potentially dangerous.

2) Looking at the disparities we find that the inter-regional disparties among the SC/ST are stronger than the inter-regional disparities among the Non SC/ST in both the sectors. This may perhaps be associated with the fact that different subcastes are concentrated in the four different regions and they are all at different levels of progress and have been moving upwards or forwards at different speeds.

8.4 Consumption Patterns :

1) The SC/ST and the Non SC/ST do differ in their consumption patterns sometimes even for necessities like cereals and pulses. These differences become apparent only when the data are analysed region-wise showing that inter-regional variations in consumer behavior are significant and cannot be neglected.

2) The SC/ST consume more of inferior varieties of cereals, sugar and fuel and light compared to the Non SC/ST, which further emphasises their lower level of living.

8.5 The Regional dimension :

1) Region 1 comprising Coastal Karnataka and Ghats (districts Dakshina Kannada and Uttara Kannada) has the highest level of per capita expenditure for each decile group whereas Region 4 comprising Northern Karnataka (districts Belgaum, Bellary, Bidar, Bijapur, Chitradurga, Dharwad, Gulbarga and Raichur) has the lowest per capita expenditure for each decile group in the rural sector. In the urban sector, however, this is not generally true.

2) Among the four regions of Rural Karnataka, Region 1 shows the least incidence of poverty and Region 4 shows the highest incidence of poverty.

In the urban sector also Region 4 shows the highest incidence of poverty.

3) In the rural sector, Region 1 shows homogeneous consumption patterns across social groups for most commodity groups and Region 4 shows heterogeneity in consumption patterns for most commodity groups and even for a basic necessity like cereals and pulses and fuel and light. Region 2 and 3 show heterogene ty for 4 out of 9 commodities.

In the urban sector, both the regions 3 and 4 show non-homogeneous consumption patterns for 4 out of 9 commodities; And in Region 2 of this sector even a basic need like cereals and pulses shows non-homogeneity.

4) The fact that Region 1 is better off than Region 4 and it is in Region 1 that the consumer behavior is homogeneous (and

in Region 4 heterogeneous) leads us to conjecture that on improvement of the general level of living the SC/ST and the Non SC/ST move towards homogeneity of consumer behavior.

This belief is further strengthened by the fact that the relatively better off urban sector throws up homogeneity of consumer behavior across social groups compared to the rural sector which has more cases of heterogeneity.

5) The engel curves for the different commodity groups are sometimes quite different across regions, so that the estimated expenditure shares and elasticities are also appreciably different.

There is thus a definite effect of regional factors on consumer behavior.

8.6 <u>Some observations on policy</u> :

The study finds that a very small proportion of the poor are SC/ST and inter-social group inequalities are only a small fraction of total inequality. Thus, if the government were to be concerned only with poverty and income redistribution one would expect the government's policies to be targetted at the 'poor'. But the existence of welfare policies that are meant only for the SC/ST points to the government's concern with the notions of justice, equality of opportunity and anti-discrimination rather than simply income redistribution. It is thus clear that the preferential policies of the government reveal its dedication to these broader concepts of social and economic justice.

The government therefore has twin objectives, one related to the other. The first is the alleviation of poverty per se and the second the upliftment of the SC/ST and other bakcward groups.

To attain the first objective schemes of income support, land redistribution, food for work, employment guarantees etc., have been launched, To attain the second objective a plethora of preferential schemes have been adopted.[2]

2 e.g. Special component plans, tribal subplans, representation in services, educational facilities like ashram schools etc.,

These attempts to build up Physical (through land distribution - and housing schemes) financial (through various welfare schemes like development of sericulture, Animal husbandry etc) and human (through education) Capital for the SC/ST have had only a symbolic effect, and that too for the better off among the SC/ST. This is clearly borne out by the - increasing inequality among the SC/ST, over time which is a steeper increase than for the Non SC/ST, It is thus clear that even more rigorous policies must be designed to uplift the bottom most among these people and check the growing inequality within that group.

It appears that disparities between the SC/ST and Non-SC/ST is not the major source of inequality in PCE, the differences within a group are stronger. The relatively low contributions of inter-social group-inequality to total inequality indicates that policy decisions that attempt a closing up of the gaps between the Non SC/ST and the SC/ST would result only in a moderate reduction in overall inequality. Intra-group variations play a more important role in magnitude of inequality than do the inter group variation. The same observation is true when one divides the population into occupational/regional groups. Even within an occupation group or region there are large disparities in levels of living that need the attention of planners and policy makers.

But disparities do exist between the SC/ST and the rest and a close look at their consumption patterns brings these out more vividly. The SC/ST budget on cereals is mostly spent on inferior cereals like ragi and similarly with sugar and fuel and light. Inferior varieties like Gur and Wood and cow dung are used more often by the SC/ST than by the remaining segment of the population. This consumption ot inferior varieties emphasizes further the low level of living of the SC/ST.

In general, the SC/ST and Non SC/ST behave differently as far as their allocation of expenditure to various commodity groups is concerned. This is more apparent in the regional analysis of NSS 1977-78 data than in the analysis of NSS 1973-74 data which has not been analysed regionwise. This suggests that regional variation in consumer behavior may get confounded with social group .. f effects in state level analysis leading to less conclusive results. Indeed geographical region within a state appears to be an important determinant of consumer behavior. We find that in the more developed regions with higher PCE, the SC/ST and Non SC/ST tend to behave similarly and greater heterogeneity is apparent in the less prosperous regions. This suggests that at a higher level of development the differences in consumer behavior between social groups, narrow down-a hypothesis often mentioned by sociologists.

The present study points to the variation across regions within Karnataka in respect of average and relative dispersion of PCE and also in consumer behavior so that the government's efforts for combating poverty should be more clearly aimed at the SC/ST of the backward region (Northern Karnataka), where poverty is concentrated especially among the agricultural labour households as shown by the poverty profiles drawn in this study.

8.7 Some Limitations of the present study and suggestions for further research :

The study is confined to the State of Karnataka only. Its conclusions may not, therefore be strictly applicable to other States. But similar studies carried out for other states could be expected to throw up similar results.

One could have looked at the determinants of level of living more closely if the occupation group of each member of the household were available for this study. Unfortunately data gave only the occupation of the main earner without specifying which member was the main earner. If one wanted to fit a human capital type of model one would have to draw from the sample those households which had only one earner. This can be a subject for further investigation and could throw interesting light on the possible presence or absence of discrimination inside or outside the labour market.[3]

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3 Many studies in the USA and UK have used models to answer these questions. (OaxaCa (1973), Malkiel and Malkiel (1975), Greenhalgh (1980), Darity (1982), Stewart (1983) Datcher (1982) Brown et al (198) with respect to racial or sex discrimination.) For a review see Aigner and Cain (1977). On the subject of the SC's in Delhi see Banerjee and Knight (1985) who have tried out a model to quantify discrimination.

The analysis of consumption patterns in terms of engel curve models has left out the factor of household composition which if incorporated could yield interesting and useful results.

In spite of these limitations, it is believed that the study will serve a useful purpose as an important source of information particularly to policy makers at state level and research workers engaged in the analysis of consumer expenditures.

APPENDICES

APPENDIX A

DECOMPOSITION FORMULAE FOR THE INEQUALITY MEASURE

In this appendix the decomposition of three inequality measures is considered. These are the Theil entropy index T, the Theil second measure L, and the variance of log-income V.

Empirical decompositions have been performed for these measures in Chapter 5.

Suppose there are k Sub-groups (Social/Occupational/Regional) each of size n_j, $j = 1, \ldots k$. Let T_j, L_j, V_j be the Theil measures T and L and the Variance of logarithms of the jth Sub-group respectively.

Let Y_{ij} be the total income of ith household in jth subgroup

The total income (Y) of all households is

$$Y = \sum_i \sum_j Y_{ij} = \sum_j Y_j = n\mu$$

where μ is the mean income in the population of households.

and $Y_j = \sum_{i=1}^{n_j} Y_{ij}$ is the total income of jth group

$$= n_j \mu_j$$

Where μ_j is the mean income in the jth group

The total number of households n is given by $n = \sum_j n_j$

The Theil index T for this distribution is given by

$$T = \sum_j \sum_i \frac{Y_{ij}}{Y} \ln \frac{Y_{ij}/Y}{1/n} \qquad \text{... (A-1)}$$

$$= \sum_j \sum_i \frac{Y_{ij}}{Y} \cdot \frac{Y_j}{Y_j} \ln \frac{Y_{ij}/Y}{1/n}$$

$$= \sum_j \frac{Y_j}{Y} \sum_i \frac{Y_{ij}}{Y_j} \ln \frac{(Y_{ij}/Y_j) \cdot Y_j \cdot n_j}{1/n \quad n_j\, Y}$$

$$= \sum_j \frac{Y_j}{Y} \sum_i \frac{Y_{ij}}{Y_j} \quad \ln \frac{Y_{ij}/Y_j}{1/n_j} + \ln \frac{Y_j/n_j}{Y/n}$$

$$= \sum_j \frac{Y_j}{Y} \sum_i \frac{Y_{ij}}{Y_j} \ln \frac{Y_{ij}/Y_j}{1/n_j} \quad + \sum_j \frac{Y_j}{Y} \ln \frac{Y_j/Y}{n_j/n}$$

Since $\sum_i \frac{Y_{ij}}{Y_j} = 1$ for all j

So that, $$T = \sum_j \frac{Y_j}{Y} T_j + \sum_j \frac{Y_j}{Y} \ln \frac{Y_j/Y}{n_j/n}$$

Where $$T_j = \sum_i \frac{Y_{ij}}{Y_j} \ln \frac{Y_{ij}/Y_j}{1/n_j} \qquad \ldots \text{(A-2)}$$

Equation A-2 says that the Theil entropy index T can be decomposed into two terms.

$$T = T_W + T_B$$

where $$T_W = \sum_j \frac{Y_j}{Y} \; T_j = \sum_j \frac{n_j \, \mu_j}{n \, \mu} \; T_j \qquad \text{... (A-3)}$$

is a weighted average of within group Theil indices T_j , the weight being equal to the income shares Y_j/Y of the groups, and

$$T_B = \sum_j \frac{Y_j}{Y} \ln \frac{Y_j/Y}{n_j/n} = \sum \frac{n_j/\mu_j}{n \, \mu} \ln \left(\frac{\mu_j}{\mu}\right) \qquad \text{... (A-4)}$$

is the between group j Theil index of group income and population Shares Y_j/Y and n_j/n, respectively. T_W is called the within group component, and T_B is called the between group component.

The between group contribution is then defined as the ratio of the between group component T_B to the overall Theil index T. The within group contribution is defined as (T_W/T).

The Theil Second measure L:

Theil Second measure L simply reverses the roles of population share and income share in the formula for the entropy index T. Using the same notation as for T, The formula for L can be written as

$$L = \sum_{j} \sum_{i} \frac{1}{n} \ln \frac{1/n}{Y_{ij}/Y} \qquad \ldots \text{(A-5)}$$

which reduces to

$$L = \ln \frac{Y}{n} - \sum_{i} \sum_{j} \frac{1}{n} \ln Y_{ij} \qquad \ldots \text{(A-6)}$$

which is the logarithm of the arithmetic mean income minus the logarithm of the geometric mean income.

Now consider the decomposition of the Theil measure L into between group and within group components.

$$L = \sum_j \frac{n_j}{n} \sum_i \frac{1}{n_j} \ln \frac{1/n_j}{Y_{ij}/Y_j} + \ln \frac{n_j/n}{Y_j/Y} \qquad \ldots \text{(A-7)}$$

$$= \sum_j \frac{n_j}{n} \sum_i \frac{1}{n_j} \ln \frac{1/n_j}{Y_{ij}/Y_j}$$

$$+ \sum_j \frac{n_j}{n} \ln \frac{n_j/n}{Y_j/Y}$$

Since $\sum_i \frac{1}{n_j} = 1$ for all j

Hence $$L = \sum_j \frac{n_j}{n} L_j + \sum_j \frac{n_j}{n} \ln \frac{n_j/n}{Y_j/Y} \qquad \ldots \text{(A-8)}$$

Where $$L_j = \sum_i \frac{1}{n_j} \ln \frac{1/n_j}{Y_{ij}/Y_j} \qquad \ldots \text{(A-9)}$$

Equation (A-9) says that the Theil Second measure L can be decomposed into two terms.

$$L = L_W + L_B$$

Where $$L_W = \sum_j \frac{n_j}{n} L_j \qquad \text{... (A-10)}$$

is a weighted average of within group j Theil measures L_j, the weights being equal to the population shares n_j/n of the groups, and

$$L_B = \sum_j \frac{n_j}{n} \ln \frac{n_j/n}{Y_j/Y} = \sum_j \frac{n_j}{n} \ln \frac{\mu}{\mu_j} \qquad \text{... (A-11)}$$

is the between group j Theil measure of group population and income shares $\frac{n_j}{n}$ and $\frac{Y_j}{Y}$ respectively. L_W is called the within group component, and L_B is called the between group component.

The between group contribution is then defined as the ratio of the between group component L_B to the overall Theil measure L. The within group contribution is defined as (L_W/L).

The Variance of log-income (expenditure) V:

The variance of the logarithm of income just like the variance of any variable can be decomposed into the sum of a between group and a within group component.

If $\ln Y_{ij} = X_{ij}$ we have

$$V = \frac{1}{n} \sum_j \sum_i (X_{ij} - \ln \tilde{\mu})^2 \qquad \ldots \text{(A-12)}$$

Where $\ln \tilde{\mu} = \frac{1}{n} \sum_j \sum_i X_{ij} = X_{..}$ is the mean of X_{ij} over j and i.

Let $X_{\cdot j} = \dfrac{\sum_i X_{ij}}{n_j}$ be the mean of X_{ij} over i

So that,

$$V = \frac{1}{n} \sum_j \sum_i \left[(X_{ij} - X_{\cdot j}) + (X_{\cdot j} - X_{\cdot\cdot}) \right]^2 \qquad \ldots \text{(A-13)}$$

$$= \frac{1}{n} \sum_j \sum_i (X_{ij} - X_{\cdot j})^2 + (X_{\cdot j} - X_{\cdot\cdot})^2 + 2\, X_{ij} - X_{\cdot j})(X_{\cdot j} - X_{\cdot\cdot}) \qquad \ldots \text{(A-14)}$$

$$= \sum_j \frac{n_j}{n} \sum_j \frac{1}{n_j} (X_{ij} - X_{\cdot j})^2 + \sum_j \frac{n_j}{n} (X_{\cdot j} - X_{\cdot\cdot})^2$$

$$= \sum_j \frac{n_j}{n} V_j + \sum_j \frac{n_j}{n} (X_{\cdot j} - X_{\cdot\cdot})^2$$

Where

$$V_j = \sum_j \frac{1}{n_j} (X_{ij} - X_{\cdot j})^2 \qquad \ldots \text{(A-15)}$$

The corss-product term in the expression A-14 vanishes because $(X_{\cdot j} - X_{\cdot\cdot})$ is constant in the i summation, and $\sum_j (X_{\cdot j} - X_{\cdot}) = 0$ for each j by definition of the mean $X_{\cdot j}$.

Equation (A-15) says that the variance V can be decomposed into two terms:

$$V = V_W + V_B$$

Where $V_W = \frac{n_j}{n} V_j$ is a weighted average of within group variance V_j, the weights being equal to the population shares $\frac{n_j}{n}$ of the groups, and $V_B = \sum_j \frac{n_j}{n} (X_{\cdot j} - X_{\cdot\cdot})^2$ is the between group j variance of group means $X_{\cdot j}$.

V_W is called the within group component, and V_B is called the between group component.

The between group contribution is then defined as the ratio of the between group component V_B to the total variance V. The within group contribution is defined as V_W/V.

Properties of the Theil measures T and L and the variance of Logarithims V:

Theil *T* measure:

1) T lies between 0 and log n where n is the no. of obs. A value of log n is reached when all individuals earn equal income, T is zero, when one individual receives all the income.
2) It is mean-independent and population size independent.
3) It satisfies the Pigon-Dalton Principle of transfers.
4) It is defined for distributions with zero income recepients.

5) It is additively decomposable in the weak sense, with income-share weights for the within group component - which sum to unity.

6) Its limitation is that it is not intuitive. If individual welfare functions are proportional to $\frac{Y_{ij}}{Y} \ln \frac{Y}{Y_{ij}}$ then Theil measure would be particularly attractive within the utilitarian framework.

Theil L measure:

1) It is mean-independent and population size independent.

2) Satisfies Pigon Dalton Condition.

3) Additively decomposable in the strict sense, with population-share weights for the within group component - which sum to unity.

4) One disadvantage is that it is not defined for distributions with zero incomes, since log log $x \to -\infty$ as $X \to 0$.

5) L is also a simple monotonic increasing trans- from of Atkinson's (1970) index I when the inequality aversion parameter ϵ is equal to unity. In this case the Atkinson equally distributed equivalent income is just the geometric mean income $\tilde{\mu}$ of the distribution, and $I = 1 - \tilde{\mu}/\mu$.

Hence $L = -\ln(1 - I)$

<u>Variance of logarithms V:</u>

1) Highlights differences at the lower end of the scale.

2) Eliminates the arbitrariness of units.

3) As the income levels get higher and higher they suffer increasingly severe contraction which makes V not concave at all at high income levels so that if one wants Social Welfare to be a concave function of individual incomes, V can cause problems.

4) Its limitation is that it takes differences only from the mean.

5) Is decomposable in the strict sense.

Comparison of the decompositions:

The two Theil measures and the variance of log-income are nicely decomposable into between and within group components (as seen above). But the between-group contributions are generally different according to the three measures because the measures emphasize different aspects of the distribution. The Theil L measure, for instance, is very sensitive to changes at low income levels, whereas the Theil T index is not.

APPENDIX B

DESCRIPTION OF NSS SAMPLING DESIGN, CONCEPTS AND DEFINITIONS

This appendix describes the NSS sampling design, concepts and definitions drawing heavily from the NSSO Report No: 240 - Tables on consumer expenditure, 28th Round and *Sarvekshana* (1985).

The NSS sampling desing, concepts and definitions:

The NSS is a multipurpose socio-economic enquiry of all India coverage, carried out year after year. Each year is termed as a 'round'. The enquiry on consumer expenditure has been a regular feature of all NSS rounds up till the 28th Round (Oct 1973 - June 1974) after which it was decided to convass the consumer expenditure scheduled once every five years. It was convassed after five years in 1977-78 (July 1977 - June 1978) for the NSS 32nd Round.

The 28th Round and the 32nd Round data pertaining to the consumer expenditure schedule for Karnataka (Central sample) have been used in this study.

These two rounds have several common features and a few differences. One major difference in sampling design is that the 28th Round sample is self-weighting[1] upto the state level whereas the 32nd Round sample is self-weighting only upto the regional level.

The definitions and concepts making up the consumer expenditure schedule have remained largely the same except for a few differences which will be clear upon reading the following sections.

Sampling design - 28th Round (1973-74):

A stratified two-stage sampling design was adopted. The first stage units were villages in the rural sector and blocks in the urban sector. The second stage units were households from which the information was collected.

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1 Each individual sample observation obtained in a sample survey has to be multiplied by certain weight, called multiplier or inflation factor, to obtain the estimate of the total of a characteristic. To simplify the estimation a self-weighting sampling design is used which gives rise to a single common weight for all the sample observations. For the 28th Round this weight is same for all observations in the State where as for the 32nd Round this weight is same for observations only within a region of a State.

The whole of India was divided into 524 basic strata so that the basic strata did not cut across district boundaries. A district with more than 1.5 million rural population according to the 1971 census formed 2 or more basic strata (by grouping contiguous tehsils) depending on the rural population. Within each state and Union Territory the allotted number of villages and blocks were distributed over the constituent basic strata in proportion to the rural and urban population respectively.

The Sampling frame was the 1971 census list of villages, for village selection. Sample villages within each basic stratum were selected with probability proportional to population and with replacement in the form of two independent sub-samples.

For Urban areas all cities and towns within each basic stratum were grouped into a number of urban sub-strata. All towns with 1971 census population less than 20,000 formed substratum 1, towns with 1971 population 20,000 to 49,999 formed substratum 2, and those with 1971 population 50,000 to 99,999 formed sub-stratum 3. Each city with 1971 population 1,00,000 or more constituted a separate urban substratum. Within each urban substratum, the allocated number of blocks was further allocated among the constituent substrata circular systematically with probability proportional to urban populations of the respective substrata. Within each urban substratum, the allocated number of blocks were selected with probability proportional to size and with replacement.

Villages (in rural areas) and blocks (in urban areas) with large population content were divided into two or more compact areal sub-divisions of nearly equal population content. One of these subdivisions (called hamlet in case of village and sub-block in case of a block) was selected at random and the survey was confined to the selected sub-division only.

All households in a sample village hamlet group in rural areas were arranged into six classes on the basis of their means of livelihood and whether they visited the health centre or not. From the arranged frame in a village, a sample of households was selected linear systematically[2] using the

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2 That is, if N is the sample size to be selected and k is the interval e.g., if K is 5, every 5th unit is selected starting from a random beginning point till the sample size becomes N. For details see, for example, Cochran (1971).

interval and random start specified for the purpose.

For urban areas the households in a sample block were arranged into six classes by occupations and then a linear systematic sample was selected with specified interval and random start.

The sample was self-weighting at the State level separately for the rural and the urban sectors.

The survey started in October 1973 and continued upto June 1974 and the survey period of nine months was split up into three subrounds of 3 months duration each, Independent and equally valid sub-samples of the entire sample were covered in each subround. Note that in this particular round information was collected only for 3/4th of the year and thus seasonal effects may be present in the data.

The Sampling Design : (32nd Round):

A stratified two stage sampling design was adopted in the survey with Census villages and urban blocks (Urban frame survey blocks formed by NSS) as the first stage units respectively for the rural and urban areas and households as the second stage units. Altogether 9920 villages and 4940 urban blocks were selected as the first stage units (for the whole of India); and in each of the selected first stage units, 12 households were selected as second stage units. The sample villages were selected with probability proportional to population and with replacement and the urban blocks with probability proportional to size (a measure of population) and with replacement. The households were selected circular systematically with equal probability after arranging all the households of a sample first stage unit according to their means of livelihood in the following order: self-employed in non-agricultural occupations, rural labour and others in the rural sector and according to their employment status in the order: Self-employed and others in the urban sector.

Regions:

Each State/Union Territory was divided into a number of regions by grouping contiguous districts of similar agricultural profile. The total number of regions formed all over India covered by the NSS was 73. Karnataka State has 4 regions out of these 73. The strata for sampling were formed within the regions.

In Karnataka the 4 regions were -

1) Coastal and Ghats comprising districts Dakshin Kannad and Uttar Kannad.

2) Inland Eastern comprising districts Chikamagaloor, Kodagu, Hassan and Shimoga.

3) Inland Southern comprising Bangalore, Mysore, Kolar, Tumkur and Mandya districts.

4) Inland Northern comprising Belgaum, Bellary, Bidar, Bijapur, Chitradurga, Dharwad, Gulburga and Raichur districts.

Stratification and allocation of sample:

The whole of India was divided into a number of basic strata so that the basic strata did not cut across district boundaries.

Each district with less than 1.5 million rural population according to census 1971, formed one basic stratum by itself. A district with more than 1.5 million rural population was divided into a number of basic strata, depending on its rural population density and crop pattern. Within each state and Union Territory total of sample villages and blocks were allocated to the different rural and urban strata in proportion to the 1971 rural and urban population respectively. The final stratum allocations were made in multiples of 4.

Survey period and subround formation:

The survey was started in July 1977 and was completed in June 1978. The entire survey period of one year was divided into four sub-rounds of three months each coinciding approximately with the four agricultural seasons. Independent sub-samples of villages and blocks were surveyed during the four subrounds so as to provide equally valid estimates for each of the subrounds.

Estimation procedure:

Since the 32nd Round sample is self-weighting only upto regional level, to get state estimates of various characteristics one has to use four multipliers one for each of the four regions of Karnataka.

Thus

$$\hat{Y}_R = \frac{P_R}{S_R} \times \Sigma Y_{iR}$$

P_R : Projected population of rth region

S_R : Sample population of rth region

$\hat{Y}_R$: Estimated characteristic for rth region

Y_{iR} : Observed characteristic of ith household in rth region

for rural/urban; subround/all subrounds and $Y_S = \sum_{R=1}^{4} Y_R$ where Y_S is the corresponding state estimates. The population multipliers ($M_R = P_R/S_R$) are given in the table below separately for the two sectors:

Table B.1 : Regional multipliers by sector:

Region	Rural	Urban
1	1850.65	1121.59
2	2111.25	1633.26
3	2023.97	1161.76
4	2345.08	1179.05

The consumption expenditure schedule:[3] (28th Round):

Data was collected from the sample household by interview method.

The background information for the consumption expenditure schedule contains information on household size and composition;

3 For a detailed summary of the information gathered by the NSS see Glossary of Technical terms - used in National Sample Survey - Sarvekshana Jan 1980.

household land possessed, household occupation/industry, household per capita expenditure, household group (whether SC/ST or not) and household religion.

The consumption expenditure schedule was meant for recording quantity and value of various items consumed in three categories (i) Cash purchase (ii) consumption out of home grown stock and (iii) total consumption.

For miscellaneous goods information was collected on cash purchase and purchases in kind. For durables there were three categories of expenditure viz (i) First hand purchase (ii) Cost of Raw Materials (iii) Second Hand Purchase. Details of the data collected together with the format in which it is stored is given in Nayak and Prasad (1983) in the form of a document.

Household consumption consists of consumption of goods and services out of (a) Monetary purchases (b) Receipt in exchange of goods and services, (c) Home grown stock, and (d) transfer receipts like gifts, loan free collections etc. But second hand purchases is excluded from total expenditure, according to natural income conventions, to avoid double counting.

<u>The consumption expenditure sehedule: (32nd Round)</u>:

As mentioned before, the 32nd Round Sample for Karnataka has been divided into four regions, viz. Region 1-Coastal and Ghats, Region 2-Inland Eastern, Region 3-Inland Southern, Region 4-Inland Northern. Out of this sample, data on every <u>Second</u> household was transferred into magnetic tape for our use because of time and budgetory constraints. Therefore, we have data on only half of the NSSO central sample for Karnataka. Only a part of the information collected has been transferred on to magnetic tape.

Information on household characteristics (i.e., household size and composition, number of consumer units, land possessed by the household, household industry/occupation, household group and religion and ownership of household were collected. Particulars of the homestead e.g. whether it is a kucha structure or a pucca one were also collected. Within each household, particulars of the members of the household was also collected. Each member's age, sex, marital status, relationship to head of the household and educational qualifications was collected. Consumption expenditure of the household on various food items, pan, tabacco, intoxicants fuel and light, clothes and footwear, miscellaneous goods and services and durables were collected. As in the 28th Round here also information was collected (both quantity and value) under two categories 1) Cash Purchase 2) Consumption out of homegrown stock for food items, fuel and light and clothes. For clothing items, material of the cloth was also noted. For miscellaneous goods and services both cash and kind purchase was taken down. Durables has information of cash and kind purchases for firsthand and secondhand goods. Cost of repair and maintenance of durables was also collected.

Another important difference between the 28th and 32nd Round is that the 32nd Round enquiry recorded consumption expenditure information on durables and semi-durables (clothing items and footwear) for the year preceding the date of interview also, which the 28th Round enquiry did not.

This was done because these items are infrequently purchased and purchases are seasonal therefore year as reference period is better. To see the effect of change over of reference period from month to year, month is also reported.

The 32nd Round also has information on imputed rent of owner occupied house.

For other details about the information stored on magnetic tape see Nayak and Prasad (1983).

APPENDIX C

FOUR KINDS OF DISTRIBUTIONS

The 4 kinds of distributions that can be considered (as described in Chapter 5, Section 4) are

1) Individuals by household expenditure per capita
2) Individuals by household expenditure per equivalent adult
3) Households by household expenditure per capita
4) Households by household expenditure per equivalent adult.

(3) was chosen for decomposition analysis and this appendix presents selected tables to show that this does not make much difference to the between group/within group contributions.

The Rural Karnataka, 1977-78 data on Region 4 (having the largest sample size) is used to show this. (Table C.1). It is found that the between social group contribution to inequality is not very widely different across these different distributions. This is interesting suggesting that the use of 'needs' corrected equivalence scales (1 adult male = 1.0; 1 adult female = .80; 1 child = .67 - the numbers used by the NSS) do not change the picture very much.

Table C.2 uses the data set of 1973-74 to illustrate that there is no difference between (1) and (3).

Table C.3 and C.4 show the same result for occupation group contributions.

It must be mentioned here that the distribution (1) has been derived from distribution (3) by assuming that inside a household there is equal distribution of total income.

TABLE C.1 : Decomposition by social group for different distributions (1), (2), (3) and (4) : Rural Karnataka, 1977-78, Region 4.

Index \ Distribution	1		2		3		4	
	SC/ST	Non SC/ST	SC/ST	Non SC/ST	SC/ST	Non SC/ST	SC/ST	Non SC/ST
Theil T	.1036	1.3432	.0913	1.3385	.1244	1.5408	.1104	1.5414
Theil L	.0994	.4781	.0878	.4725	.1181	.5524	.1042	.5451
Varlog V	.1900	.3100	.1700	.2900	.2200	.3400	.2000	.3200
Mean	34.95	84.54	49.54	105.11	46.10	96.80	55.84	118.64
Sample Size	741	3825	741	3825	134	702	134	702
Bet. Social Gp Cont. (%)								
Theil T	2.1		2.2		1.8		1.8	
Theil L	7.2		7.5		6.1		6.3	
Varlog V	6.1		6.6		3.2		4.2	

TABLE C.2 : Decomposition by social group for different distributions (1) and (3) : Rural and Urban Karnataka, 1973-74.

Distribution / Index	RURAL (1) SC/ST	RURAL (1) Non SC/ST	RURAL (3) SC/ST	RURAL (3) Non SC/ST	URBAN (1) SC/ST	URBAN (1) Non SC/ST	URBAN (3) SC/ST	URBAN (3) Non SC/ST
Theil T	.1199	.1477	.1502	.1704	.0933	.1580	.0841	.1773
Theil L	.1099	.1307	.1351	.1477	.0942	.1458	.0862	.1721
Varlog V	.2100	.2300	.2600	.2600	.1900	.2700	.1800	.3300
Mean	40.20	54.94	43.66	59.88	54.54	67.92	55.95	80.93
Sample Size	627	2857	119	501	214	1745	36	333
Bet. Social Gp. Cont. (%)								
Theil L	4.4		3.9		1.3		2.8	
Theil T	5.0		4.8		1.6		3.2	
Varlog V	5.7		3.7		1.0		2.2	

TABLE C.3 : Decomposition by occupation group for two different distributions (1) and (3), Rural Karnataka : 1973-74 and 1977-78.

Occ. Gp.	Occ. Gp. 1				Occ. Gp. 2				Occ. Gp. 3				All Occ. up.			
	(1)		(3)		(1)		(3)		(1)		(3)		(1)		(3)	
Index	SC	Non SC	SC	Non SC	SC	Non SC	SC	Non SC	SC	Non SC	SC	Non SC	SC	Non SC	SC	Non SC
Theil T	.1319	.1506	.1337	.1830	.0808	.1092	.0911	.1149	.1897	.1086	.3535	.1309	.1199	.1477	.1502	.1704
Theil L	.1203	.1319	.1258	.1537	.0824	.0975	.0966	.1055	.1384	.1009	.2841	.1264	.1099	.1307	.1351	.1477
Varlog V	.2200	.2300	.2400	.2600	.1700	.1700	.2100	.1900	.2000	.1900	.4200	.2400	.2100	.2300	.2600	.2600
Mean	48.30	59.15	51.63	64.78	35.23	41.68	37.78	46.29	44.12	59.99	61.67	68.95	40.20	54.94	43.66	59.88
S Size	215	1843	35	280	378	694	75	149	34	320	9	72	627	2857	119	501

Between Social Gp. Cont. to inequality (%)	Occ. Gp. 1 (1)	Occ. Gp. 1 (3)	Occ. Gp. 2 (1)	Occ. Gp. 2 (3)	Occ. Gp. 3 (1)	Occ. Gp. 3 (3)	All Occ. up. (1)	All Occ. up. (3)
Theil T	1.1	1.3	3.0	3.9	2.9	.38	4.4	3.9
Theil L	1.4	1.6	3.3	4.2	3.5	.41	5.0	4.8
Varlog V	1.4	1.7	2.0	4.1	5.1	2.7	5.7	3.7

Bet. Occ. Gp. Cont. to Ineq. (%)	(1)	(3)
SC/ST		
T	9.7	10.9
L	10.4	11.6
V	10.1	9.7
Non SC/ST		
T	6.7	6.9
L	8.1	8.3
V	8.3	8.1
All		
T	9.5	9.5
L	11.3	11.3
V	11.1	11.2

Bet. Occ. up. and Soc. Gp. Cont. to inequality (%)	(1)	(3)
T	11.1	11.1
L	13.1	13.2
V	13.8	12.6

TABLE C.4 : Decomposition by occupation group for two distributions (1) and (3), Urban Karnataka : 1973-74 and 1977-78 :**

Occ. Gp.	Occ. Gp. 1				Occ. Gp. 2				Occ. Gp. 3				Occ. Gp. 4				All Occ. Gp.			
	(1)		(3)		(1)		(3)		(1)		(3)		(1)		(3)		(1)		(3)	
Index	SC	Non SC	SC	Non SC	SC	Non SC	SC	Non SC	SC	Non SC	SC	Non SC	SC	Non SC	SC	Non SC	SC	Non SC	SC	Non SC
T	.1072	.1199	.0839	.1559	.0668	.1926	.0782	.2421	.0707	.1002	.0651	.1177	.0355	.1076	.0422	.0964	.0933	.1580	.2841	.1773
L	.1104	.1138	.0882	.1497	.0682	.1469	.0805	.2077	.0700	.0885	.0652	.1063	.0354	.1108	.0409	.1025	.0942	.1458	.0862	.1721
V	.2200	.2200	.1900	.2800	.1400	.2300	.1600	.3400	.1400	.1600	.1300	.1900	.0700	.2200	.0800	.2200	.1900	.2700	.1800	.3300
Mean	55.57	69.4	59.58	83.64	51.13	56.07	50.72	68.32	46.18	53.16	51.92	56.09	89.65	87.91	83.58	104.91	54.94	67.92	55.95	80.99
S Size	66	614	9	110	87	642	15	107	44	180	9	35	17	309	3	81	214	1745	36	333

Bet. Soc. Gp. Cont. to ineq. (%)	Occ. Gp. 1 (1)	Occ. Gp. 1 (3)	Occ. Gp. 2 (1)	Occ. Gp. 2 (3)	Occ. Gp. 3 (1)	Occ. Gp. 3 (3)	Occ. Gp. 4 (1)	Occ. Gp. 4 (3)	All Occ. Gp. (1)	All Occ. Gp. (3)
T	1.6	2.2	.25	1.8	1.5	0.5	0.2	0.8	1.3	2.8
L	1.8	2.4	.18	2.2	1.8	0.3	0.2	0.8	1.6	3.2
V	1.9	1.9	0.0	1.0	1.5	0.1	0.0	0.4	1.0	2.2

Bet.Occ.Gp. Cont. to ineq. (%)	(1)	(3)
SC/ST		
T	18.4	14.2
L	16.2	9.7
V	16.3	12.7
Non SC/ST		
T	15.3	11.1
L	15.8	11.5
V	17.8	15.5
All		
T	15.9	12.2
L	16.4	12.7
V	17.9	16.3
Bet.Soc.Gp. Occ.GP.Contd to ineq.(%)	(1)	(3)
T	16.6	13.6
L	17.1	14.4
V	18.8	17.8

APPENDIX D

LIST OF THE SC/ST OF KARNATAKA

Below is given the list of SC/ST in Karnataka.

SCHEDULED CASTES

1 Adi-Andhra

2 Adi Dravida

3 Adi Karnataka

4 Adiya (in Kodagu district)

5 Ager

6. Ajila

7 Anamukh

8 Aray Mala

9 Arunthathiyar

10 Arwa Mala

11 Baira

12 Bakad

13 Bant (in Belgaum, Bijapur, Dharwad and UttaraKannada districts)

14 Bakuda

15 Balagai

16 Bandi

17 Banjara, Lambani

18 Bathada

19 Beda Jangam, Budga Jangam

20 Bellara

21 Bhangi, Mehtar, Olgana, Rukhi, Malkana, Halakhor, Lalbegi, Balmiki, Korar, Zadmalli

22 Bhambi, Bhambhi Asadaru, Asodi, Chamadia, Chamar, Chambhar, Changar, Haralayya, Harali, Khalpa, Machigon, Mochigar, Madar, Madig, Mochi, Muchi, Telegu Mochi, Kamati Mochi, Ranigar, Rohidas, Rohit, Samgar.

23 Bhovi

24 Bindla

25 Byagara

26 Chakkiliyan

27 Chalavadi, Chalvadi, Channayya

28 Chandala

29 Chenna Dasar, Holaya Dasar

30 Dakkal, Dokkalwar

31 Dakkaliga

32 Dhor, Kakkayya, Kankayya

33 Dom, Dombara, Paidi, Pano

34 Ellamalwar, Yellammalawandlu

35 Ganti Chores

36 Garoda, Garo

37 Godda

38 Gosangi

39 Halleer

40 Halsar, Haslar, Hulasvar, Halasvar

41 Handi Jogis

42 Hasla

43 Holar, Valhar

44 Holaya, Holer, Holeya

45 Holeya Dasari

46 Jaggali

47 Jambuvulu

48 Kadaiyan

49 Kalladi

50 Kepoaris

51 Kolupulvandlu

52 Koosa

53 Koracha

54 Korama

55 Kotegar, Metri

56 Kudumban

57 Kuravan

58 Lingader

59 Machala

60 Madari

61 Madiga

62 Mahar, Taral, Dhogu Megu

63 Mahyavanshi, Ched, Vankar Maru Vankar

64	Maila	65	Mala
66	Mala Asari	67	Mala Hannai
68	Mala Jangam	69	Mala Masti
70	Mala Sale, Netkani	71	Mala Sanyasi
72	Mang, Matang, Minimadig	73	Mang Garudi, Mang Garodi
74	Manne	75	Masthi
76	Mavilan	77	Maghval, Menghvar
78	Moger	79	Mukri
80	Mundala	81	Nadia, Hadi
82	Nalkadaya	83	Nalakeyava
84	Nayadi	85	Pale
86	Pallan	87	Pambada
88	Panchama	89	Panniandi
90	Paraiyan, Paraya	91	Parvan
92	Raneyar	93	Samagara
94	Samban	95	Sapari
96	Silekyathas	97	Sindhollu, Chindollu
98	Sudugadu Siddha	99	Thoti
100	Tirgar, Tirbanda	101	Valluvan

SCHEDULED TRIBES

1 Adiyan

2 Barada

3 Bavacha, Bamcha

4 Bhil, Bhil Garasia, Dholi Bhil, Dungri Bhil, Dungri Garasia, Mewasi Bhil, Rawal Bhil, Tadvi Bhil, Bhagalia, Bhilala, Pawara, Vasava, Vasave.

5 Chenchu, Chenchuwar

6 Chodhara

7 Dubla, Talavia, Halpati

8 Gamit, Gamta, Gavit, Mavchi, Padvi, Valvi.

9 Gond, Naikpod, Rajgond

10 Gowdalu

11 Hakkipikki

112 Hasalaru

13 Irular

14 Iruliga

15 Jenu Kuruba

16 Kadu Kuruba

17 Kammara (in Dakshin Kannada district and Kollegal taluk of Mysore district)

18 Kaniyan, Kanyan (in Kollegal taluk of Myosre district)

19 Kathodi, Katkari, Dhor Kathodi, Dhor Katkari, Son Kathodi, Son Katakari

20 Kattunayakan

21 Kokna, Kokni, Kukna

22 Koli Dhor, Tokre Koli, Kolcha, Kolgha

23 Konda Kapus

24 Koraga

25 Kota

26 Koya, Bhine Koya, Rajkoya

27 Kudiya, Melakudi

28 Kuraba (in Kodagu district)

29 Kurumans

30 Maha Malasar

31 Malaikudi

32 Malasar

33 Malayekandi

34 Maleru

35 Maratha (in Kodagu district)

36 Marati (in Dakshina Kannada district)

37 Meda

38 Naikda, Nayaka, Cholivala Nayaka, Kapadia Nayaka, Mota Nayaka, Nana Nayaka.

39 Palliyan

40 Paniyan

41 Pardhi, Advichincher, Phanse Pardhi

42 Patelia

43 Rathawa

44 Sholaga

45 Soligaru

46 Toda

47 Varli

48 Vitolia, Kotwalia, Barodia

49 Yerava.

APPENDIX E

AVERAGE PCE OF TWO TYPES

This appendix presents regional average monthly per capita values of commodity expenditures for 1977-78.

As explained in Chapter 4, the 1977-78 data contains information on yearly expenditure of semidurables (like Clothing and Footwear) and durables. This was collected in an effort to smoothen the seasonal fluctuations to which these commodities are subject.

Tables E.1 and E.2 present the mean values for Rural and Urban sectors respectively for 1977-78.

We find that the expenditure on clothing in the preceding month (Clothing 1) and the expenditure on clothing in the preceding year averaged over 12 months (Clothing 2) does not make very much difference to the total expenditure. On the other hand Durables 1 and Durables 2 are very different showing that in the case of this commodity group it is possible to miss it altogether because of infrequency of purchase. However, it must be noted that in the Poor man's budget Durables forms a very unimportant item. So that for most of the sample both the questions (how much spent monthly/yearly, on durables) produce the same answer 'zero' or 'near zero'.

The average PCE_1 or PCE_2 is greatly affected by the magnitude of durables 1 or 2 respectively but here again, it can be said that though this is true on the average, for most households PCE_1 or PCE_2 are not very different.

The analysis uses PCE_1 throughout it is believed that the use of PCE_2 would not (in the light of tables E.1 and E.2) have made any substantial difference to the results.

TABLE E.1 : Average monthly per capita consumption of certain commodities and average expenditure per capita (in Rs.) of SC and ST separately vis-a-vis Non SC/ST, Rural Karnataka : 1977-78.

(current prices)

Item Gp. \ Region	1				2			
	SC	ST	Other	All	SC	ST	Other	All
Cereals and Pulses	28.78	42.43	27.78	27.92	19.81	24.00	26.94	25.97
Milk and Milk Products	1.55	0.66	3.88	3.75	1.14	0.60	3.74	3.32
Sugar	1.52	0.65	2.55	2.49	0.80	1.26	1.89	1.74
Pan, Tob, and Intox.	6.31	19.29	4.02	4.22	3.28	2.92	3.04	3.07
Fuel and Light	4.46	5.36	5.40	5.36	4.24	2.92	4.92	3.19
Vegetable, Fruits and Nuts	6.23	0.51	6.75	6.69	1.77	1.87	4.14	3.78
Other Food	12.87	4.20	12.27	12.25	6.20	7.67	9.46	9.00
Clothing 1	1.66	0.00	4.72	4.55	5.89	7.73	6.72	6.64
Clothing 2	3.59	2.02	4.33	4.28	3.12	5.38	4.98	4.76
Misc. Goods	4.24	5.50	12.05	11.65	5.10	4.38	7.48	7.09
Durables 1	0.08	0.00	90.77	86.03	0.35	0.00	154.86	131.09
Durables 2	154.76	0.0	178.47	176.30	22.12	0.02	25.93	24.68
PCE_1	67.71	78.59	170.19	164.89	48.57	53.35	223.20	196.48
PCE_2	224.32	80.62	257.49	254.89	67.58	51.02	92.53	88.19
No of hhs	12	1	171	184	38	8	236	282
No of persons	54	7	1104	1165	189	46	1293	1528

TABLE E.1 : (Contd.)

Item Gp. \ Region	3				4			
	SC	ST	Other	All	SC	ST	Other	All
Cereals and Pulses	22.41	19.35	27.28	26.34	19.03	19.11	23.65	22.91
Milk and Milk Products	1.57	1.90	3.57	3.22	0.90	1.76	3.51	3.14
Sugar	0.90	1.86	1.82	1.67	1.03	0.82	2.32	2.10
Pan, Tob, and Intox.	3.48	2.70	2.91	2.99	2.04	2.16	1.99	2.02
Fuel and Light	4.49	4.46	5.45	5.28	3.00	2.54	4.11	3.93
Vegetable, Fruits and Nuts	2.57	3.91	3.73	3.55	1.75	1.77	2.61	2.47
Other Food	8.69	8.77	9.94	9.71	5.26	5.24	7.23	6.92
Clothing 1	2.62	2.88	6.11	5.49	2.45	6.16	6.03	5.54
Clothing 2	3.18	4.54	4.71	4.47	3.94	4.32	5.28	5.07
Misc. Goods	5.55	7.34	7.44	7.14	3.87	4.17	6.86	6.38
Durables 1	131.62	0.02	61.78	71.49	0.01	0.00	26.22	21.91
Durables 2	11.00	0.02	7.69	8.04	6.45	0.00	29.03	25.16
PCE_1	183.89	53.19	130.04	136.90	39.35	44.03	84.53	72.67
PCE_2	63.83	54.85	74.55	72.43	47.29	42.21	86.58	78.99
No of hhs.	102	14	479	595	115	19	702	836
No of persons	532	73	2757	3362	647	94	3837	4578

Clothing 1 is the expenditure on clothing in the month preceding the date of interview

Clothing 2 is the expenditure on clothing in the year preceding the date of interview

Similarly for Durables 1 and Durables 2.

PCE_1 has Clothing 1 and Durables 1 included in it.

PCE_2 has Clothing 2 and Durables 2 included in it.

TABLE E.2 : Average monthly per capita consumption of certain commodities and average expenditure per capita (in Rs.) of SC and ST separately vis-a-vis Non SC/ST, Urban Karnataka : 1977-78

(current prices)

Region / Item Gp.	1				2			
	SC	ST	Other	All	SC	ST	Other	All
Cereals and Pulses	27.41	23.68	21.81	21.98	15.05	25.10	26.33	25.08
Milk and Milk Products	4.17	6.00	6.59	6.74	2.79	7.00	8.32	7.70
Sugar	2.40	3.20	2.56	2.65	1.06	3.15	2.05	1.95
Pan, Tob.and Intox.	2.15	6.13	2.29	2.40	1.43	1.75	1.54	1.53
Fuel and Light	7.66	6.32	6.16	6.42	4.51	7.65	6.99	6.72
Vegetable, Fruits and Nuts	5.86	9.99	7.22	7.46	2.65	11.39	5.50	5.24
Other Food	11.62	18.93	15.50	15.95	9.30	18.76	16.44	15.68
Clothing 1	0.97	66.10	3.48	4.13	6.49	15.50	10.39	10.01
Clothing 2	2.96	6.18	5.01	5.13	3.69	13.46	6.85	6.57
Misc. Goods	13.04	28.85	9.89	10.50	4.85	16.34	15.29	14.15
Durables 1	0.0	0.56	0.36	0.36	2174.06	1.13	0.56	239.18
Durables 2	333.64	0.30	105.86	115.01	0.20	0.23	45.87	40.42
PCE_1	75.29	169.76	75.83	79.32	2222.20	107.76	93.42	327.27
PCE_2	410.93	109.59	182.87	194.98	45.53	104.82	135.20	125.07
No of hhs	3	1	92	96	10	1	80	91
No of persons	15	5	522	542	46	4	369	419

TABLE E.2 : (Contd.)

Item Gp. \ Region	3				4			
	SC	ST	Other	All	SC	ST	Other	All
Cereals and Pulses	25.61	26.83	26.62	26.54	20.77	20.76	23.34	23.70
Milk and Milk Products	2.95	8.02	8.58	8.12	1.92	1.59	5.02	4.54
Sugar	1.31	4.23	2.22	2.18	1.41	1.23	2.36	2.20
Pan, Tob. and Intox.	3.66	2.34	1.78	1.94	3.12	2.17	1.87	1.98
Fuel and Light	4.84	6.44	7.56	7.33	4.18	5.28	5.49	5.29
Vegetable, Fruits and Nuts	4.10	7.55	6.11	5.97	2.[illegible]2	2.78	3.64	3.46
Other Food	11.01	20.82	15.81	15.50	10.98	9.23	11.76	11.44
Clothing 1	5.33	3.63	4.41	4.47	2.07	10.26	5.27	5.11
Clothing 2	4.77	9.45	7.21	7.05	4.62	5.27	6.30	6.02
Misc. Goods	9.13	14.83	1[illegible].90	13.53	5.93	5.60	9.21	14.04
Durables 1	0.44	0.52	38.52	34.91	.12	.07	84.98	72.67
Durables 2	18.10	0.32	3.96	5.03	16.92	.10	17.98	16.80
PCE_1	68.37	95.21	125.51	120.50	53.01	58.96	152.96	137.98
PCE_2	85.48	100.83	75.00	76.22	72.36	54.00	87.01	83.16
No of hhs	42	11	505	558	51	18	435	504
No of persons	233	44	2645	2922	248	103	2343	2694

APPENDIX F

DECILE WISE PRICE INDICES

TABLE F.1 : Differential Price Indices (1970-71 = 100), Rural Karnataka : 1973-74 and 1977-78

Decile Gp.	1973-74 SC/ST	1973-74 Non SC/ST	1977-78 SC/ST	1977-78 Non SC/ST
1	134.76	135.24	174.97	175.91
2	133.55	134.82	176.70	176.32
3	133.13	135.04	176.85	176.59
4	134.17	136.15	176.12	176.34
5	134.83	135.33	175.91	177.38
6	134.77	135.13	175.55	177.25
7	134.03	135.15	178.18	176.68
8	132.54	134.96	177.63	175.88
9	132.48	134.85	178.34	176.03
10	132.74	132.81	176.70	177.40
Overall	133.51	134.73	176.61	176.68

TABLE F.2 : Differential Price Indices (1970-71 = 100), Urban Karnataka : 1973-74 and 1977-78.

Decile Gp.	1973-74		1977-78	
	SC/ST	Non SC/ST	SC/ST	Non SC/ST
1	135.14	134.60	179.73	177.73
2	133.74	134.68	179.57	178.38
3	134.18	135.04	180.57	178.93
4	134.39	134.84	180.49	179.15
5	134.94	134.47	178.09	178.68
6	134.99	133.81	181.23	179.68
7	132.97	134.07	179.80	179.32
8	134.35	130.89	178.47	182.20
9	135.26	128.10	180.45	183.02
10	132.78	128.28	179.94	183.08
Overall	133.37	131.[illegible]8	179.82	180.99

APPENDIX G

SOME GRAPHS

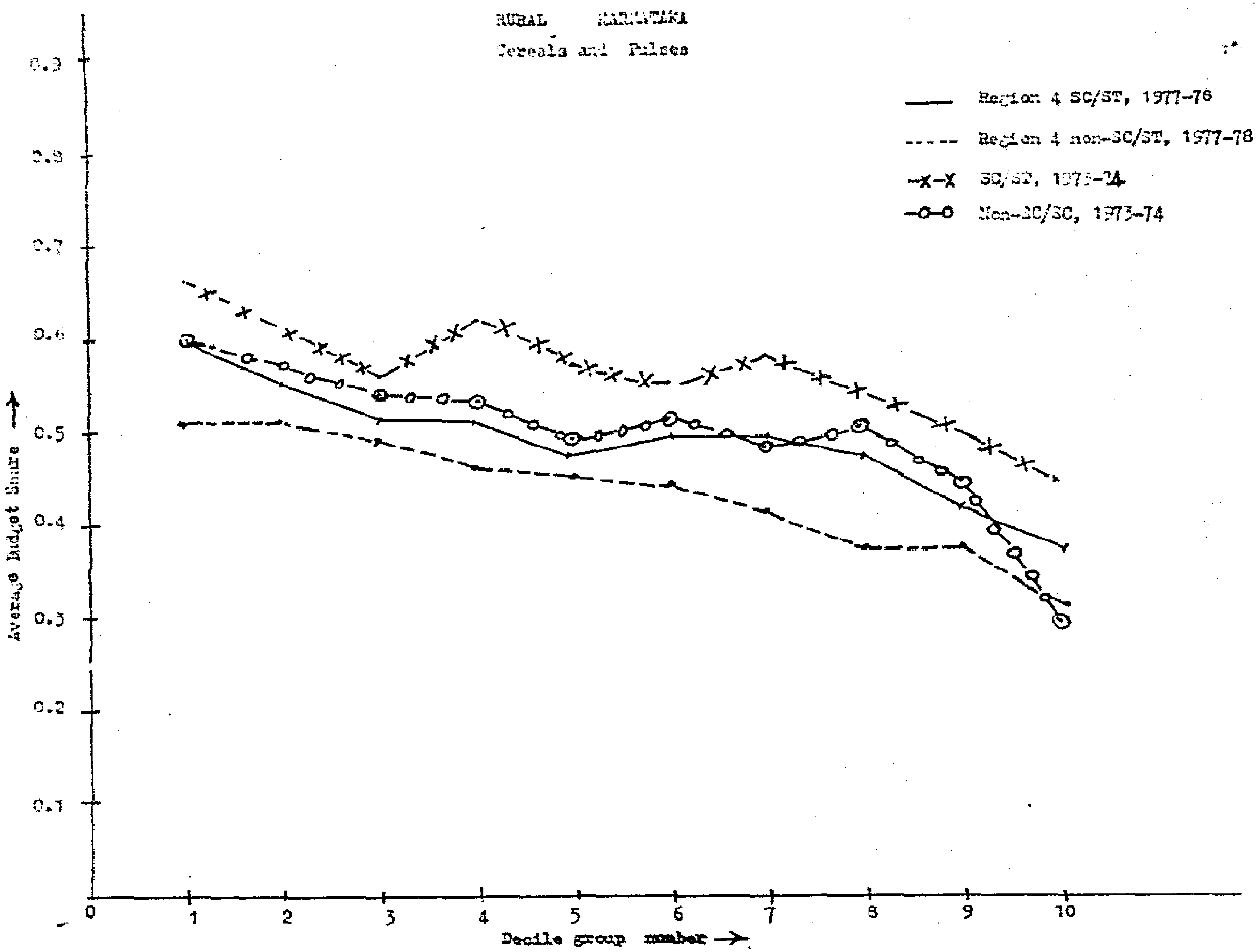


Fig G.1 : Fractile graphs showing variations in the share of 'cereals and pulses' in total outlay, Rural Karnataka : 1973-74 and 1977-78

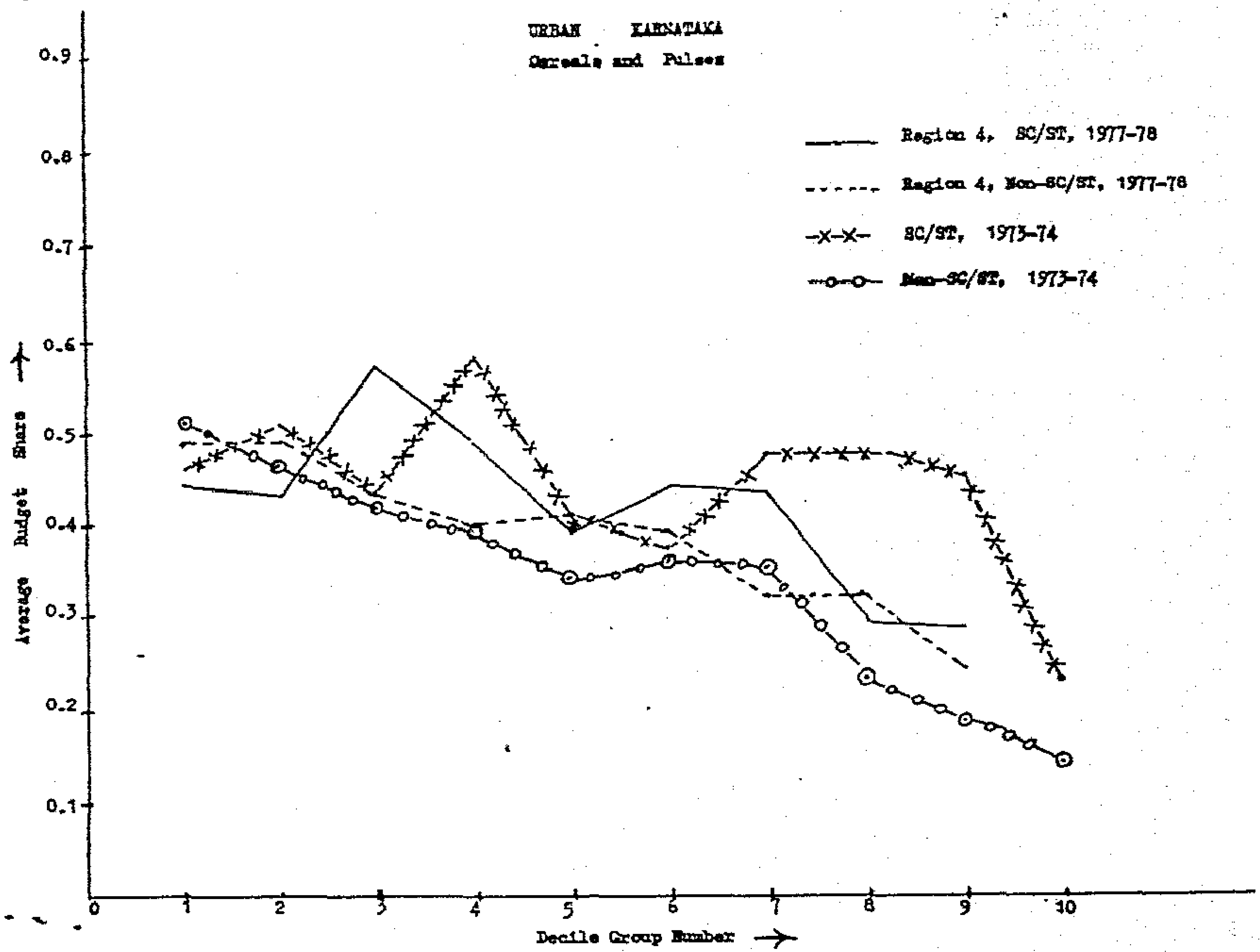


Fig G.2 : Fractile graphs showing variations in the share of 'cereals and pulses' in total outlay, Urban Karnataka : 1973-74 and 1977-78

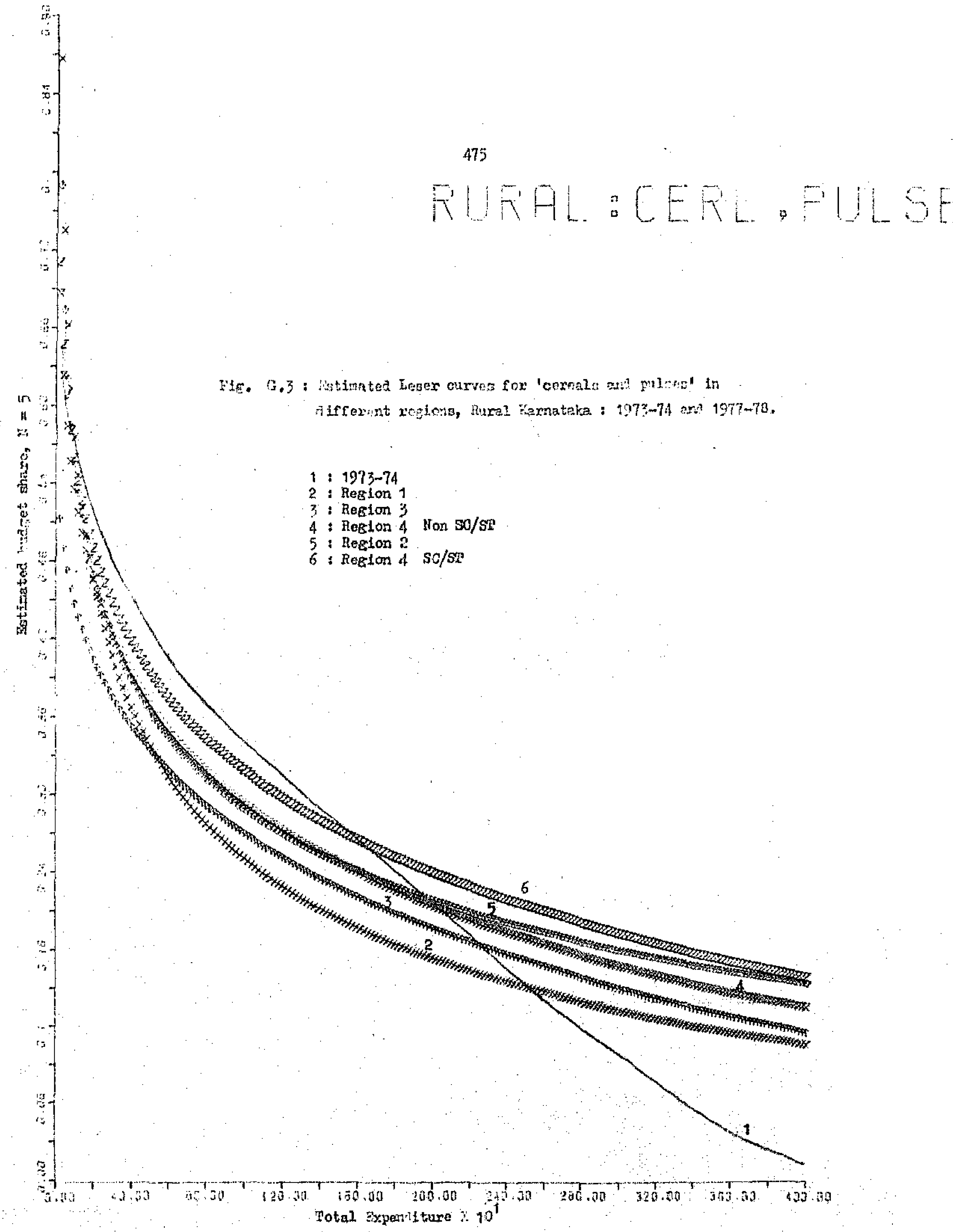


Fig. G.3 : Estimated Leser curves for 'cereals and pulses' in different regions, Rural Karnataka : 1973-74 and 1977-78.

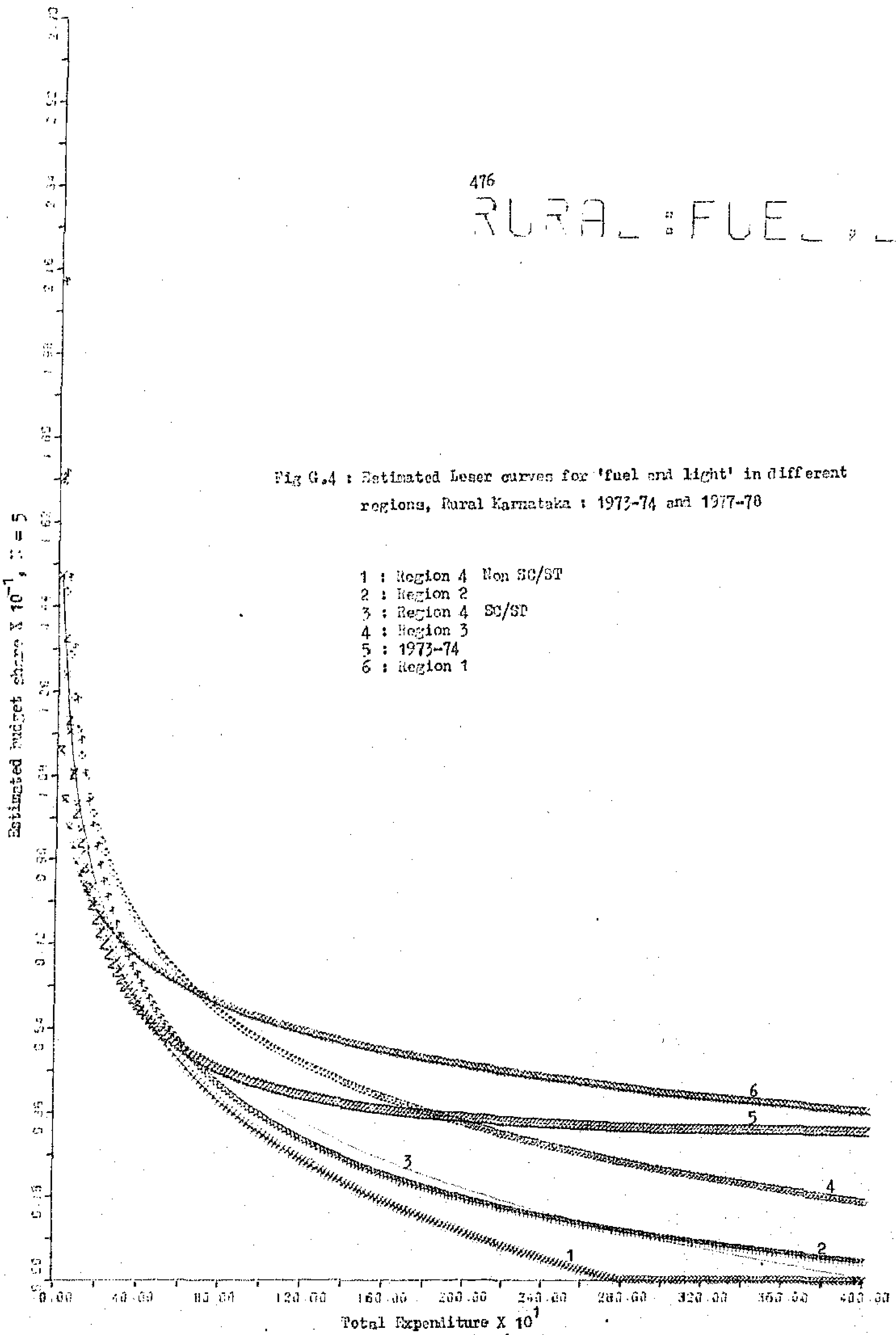


Fig G.4 : Estimated Leser curves for 'fuel and light' in different regions, Rural Karnataka : 1973-74 and 1977-78

RURAL : OTHR. FOODS

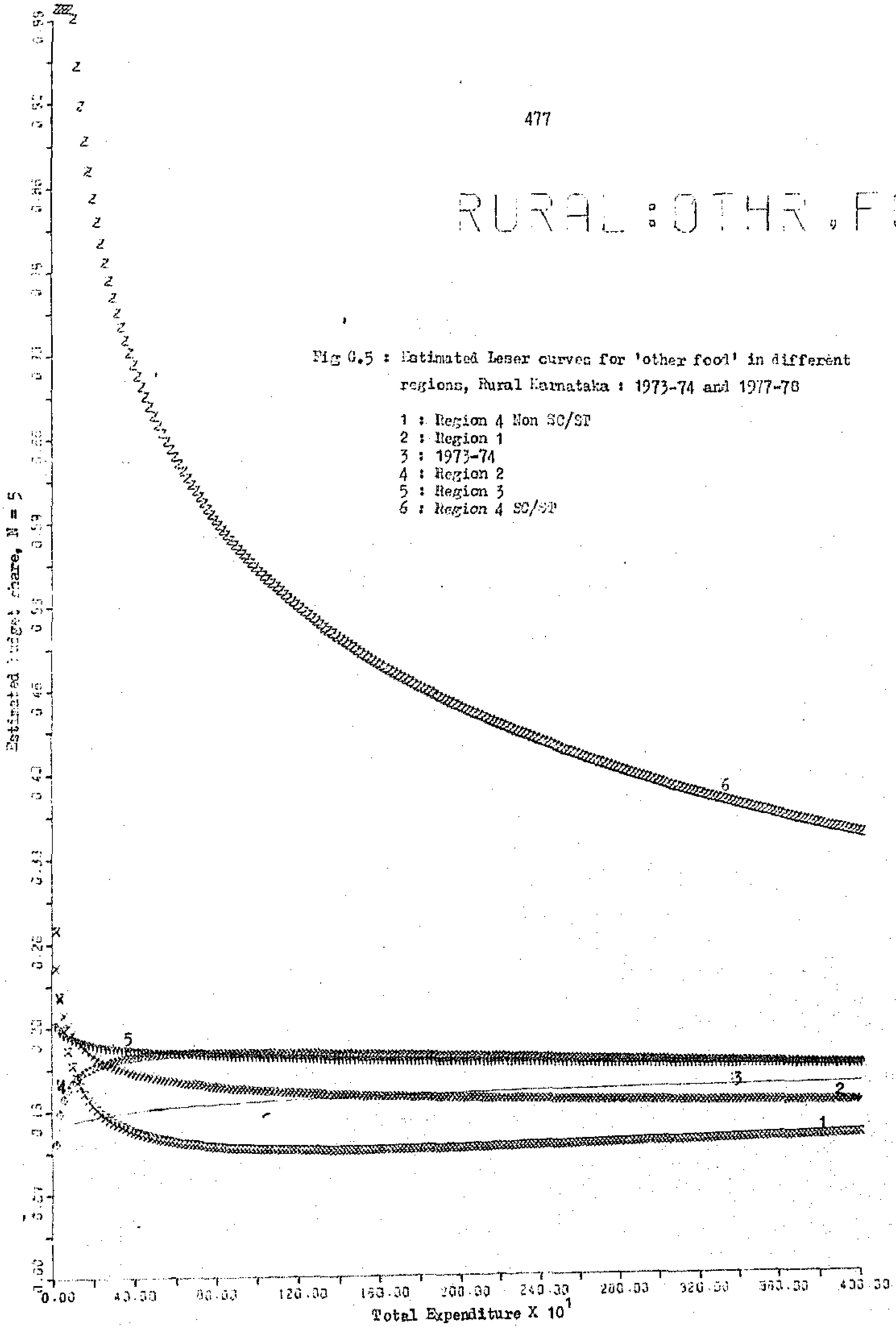
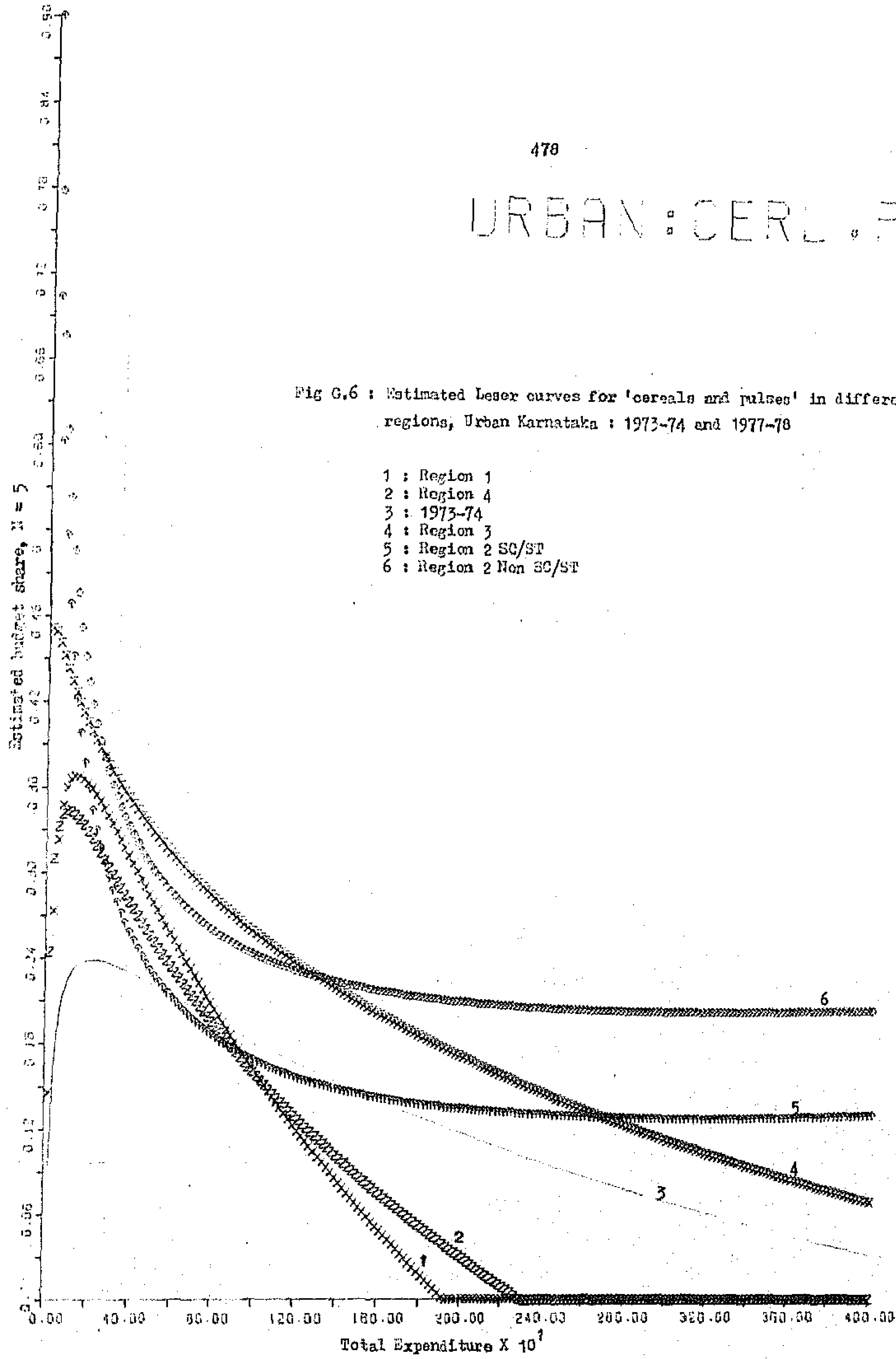


Fig G.5 : Estimated Leser curves for 'other food' in different regions, Rural Karnataka : 1973-74 and 1977-78

URBAN:CERL.PLUSE

Fig G.6 : Estimated Leser curves for 'cereals and pulses' in different regions, Urban Karnataka : 1973-74 and 1977-78

1 : Region 1
2 : Region 4
3 : 1973-74
4 : Region 3
5 : Region 2 SC/ST
6 : Region 2 Non SC/ST



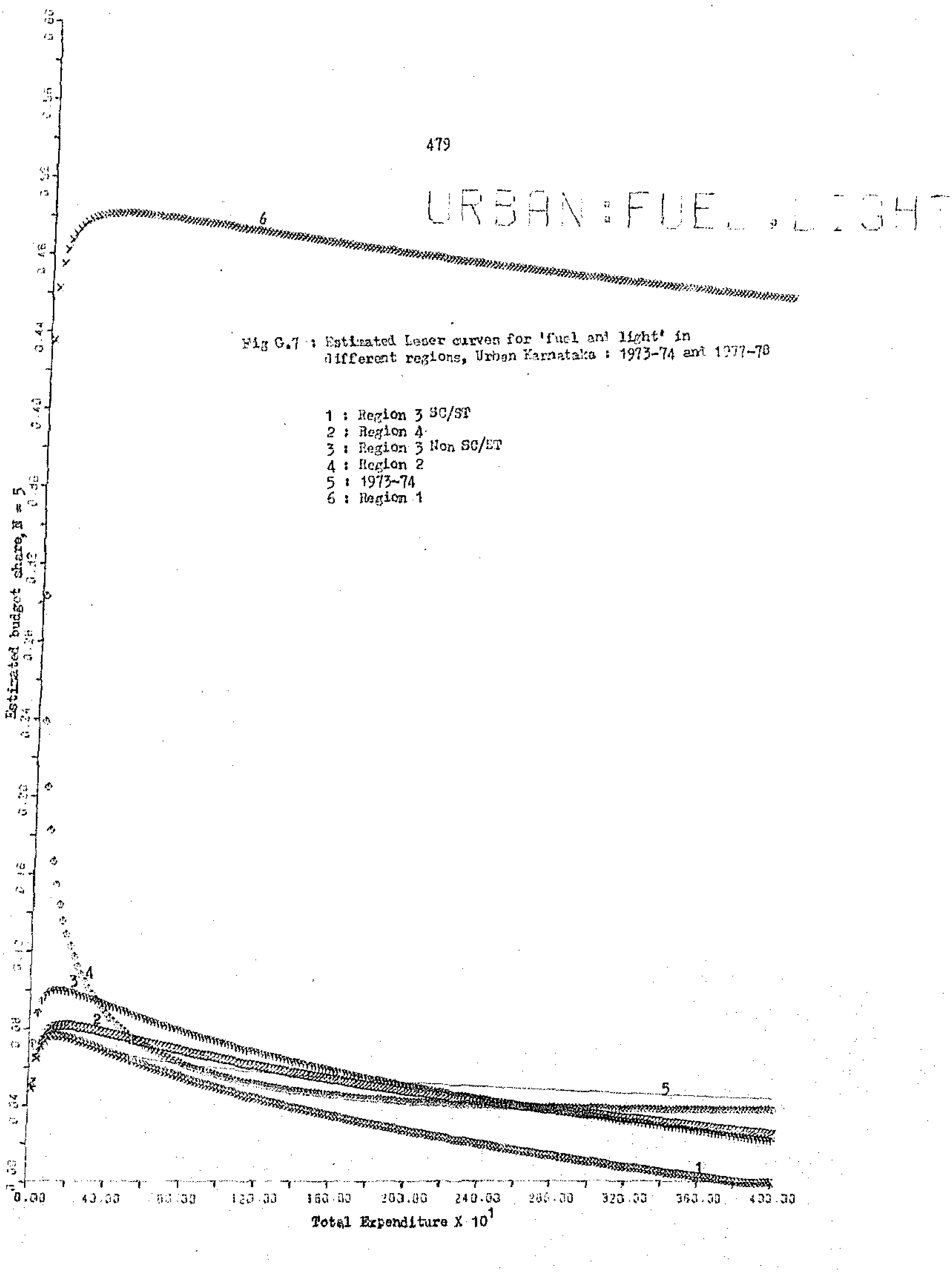


Fig G.7 : Estimated Leser curves for 'fuel and light' in different regions, Urban Karnataka : 1973-74 and 1977-78

URBAN:OTHR.FOODS

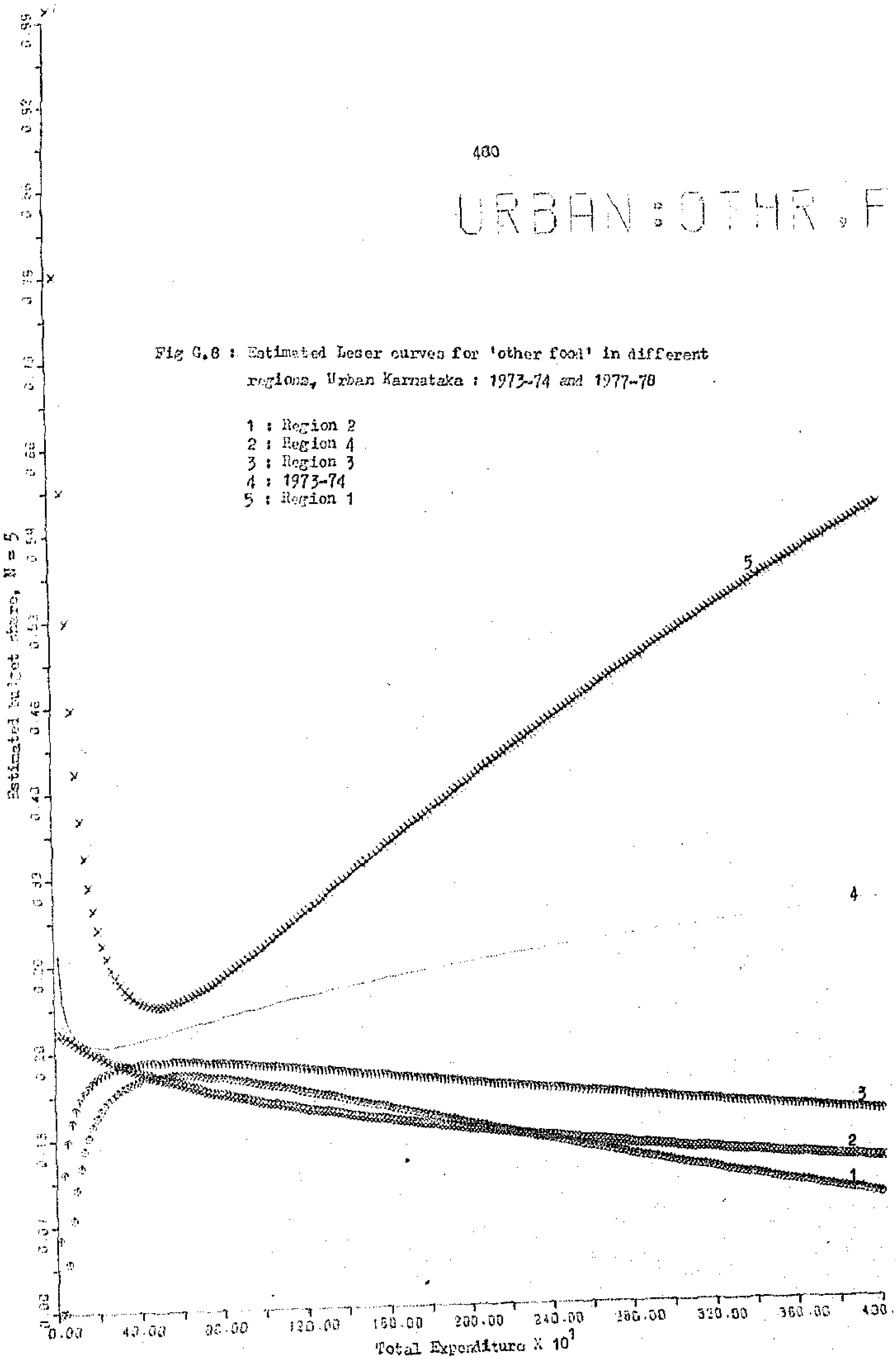


Fig G.8 : Estimated Leser curves for 'other food' in different regions, Urban Karnataka : 1973-74 and 1977-78

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