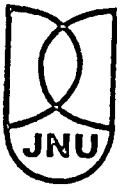
# Determinants of Standard of Living: Effects of Household Characteristics and Local Amenities

*Dissertation Submitted to Jawaharlal Nehru University*
*In partial fulfillment of the requirements*
*for award of the degree of*

**MASTER OF PHILOSOPHY**

**Pinaki Joddar**




Center for Economic Studies and Planning

School of Social Sciences

JAWAHARLAL NEHRU UNIVERSITY

New Delhi 110067

2006

CENTRE FOR ECONOMIC STUDIES & PLANNING
SCHOOL OF SOCIAL SCIENCES
JAWAHARLAL NEHRU UNIVERSITY
NEW DELHI-110067, INDIA

## Certificate

This is to certify that the dissertation entitled "**Determinants of Standard of Living: Effects of Household Characteristics and Local Amenities**", submitted by me in partial fulfillment of the requirement for the award of **Master of Philosophy** has not been previously submitted for any other degree of this or any other university.

**Pinaki Joddar**

We recommend that this dissertation be placed before the examiners for evaluation.

Pradipta Chaudhury
**Prof. Pradipta Chaudhury**
Chairperson,
CESP/SSS.

Archana Aggarwal
**Prof. Archana Aggarwal,**
Supervisor,
CESP/SSS.

Phone : 91-11-26717676, 26717557 Ext. 4421/26704421 Cable : JAYENU Fax : 91-11-26717603, 26717585, 26717586

*To*

*Ma, Baba & Didi*

## Acknowledgment

*I express my deep gratitude to my supervisor Dr. Archana Aggarwal for her guidance and encouragement throughout my dissertation. Her enduring patience and insightful criticism have made my work easier and fruitful.*

*I am grateful to Asseem Prakash, Dr. Alakh N Sharma, Dr. Preet Rastougi, Dr. Shaktiveil and Dr. Sandip Sarkar and Dr. R. P. Mamgain for their constant encouragement.*

*I am thankful to all the faculty members and office bearers of the Center for Economic Studies and Planning.*

*I thank all my friends, especially Arjun, Bose, Uma, Kalpana and Nupur who have been of great encouragement to me throughout my dissertation work.*

*I am grateful to Arpita for her invaluable help in my dissertation work.*

*Finally, I am grateful to my parents, who were a constant source of inspiration and encouragement.*

## Contents

## List of Tables

## List of tables in Appendix I

# Chapter I
## Introduction

Standard of living, its definition, determinants and means of improvement for the general population, are perhaps, the most significant driving force behind the development of modern economics. Inferences about this concept and possible implications for the general masses can be traced back to the early social thinkers like Aristotle. It is true that we do not directly enquire about our living standard on a daily basis. Yet the desire for a better life shows our awareness about this particular concept. In fact fastest improvement of the standard of living of the public is the motivation behind any policy formulation. Indeed the motivations behind the policies like 'Five Year Plans' or the newly introduced 'National Rural Employment Guarantee Act' (2006) is to improve the standard of living of the population. It is also one of the few economic concepts that are not treated with skepticism. Reason being that even an ordinary person can easily understand the notion of standard of living. In these circumstances we expect that it would not be difficult to find a comprehensive and non-technical definition of standard of living. Unfortunately, the situation is not so. For example, should we just define living standard as the quality and quantity of commodities and services available to people? Or, more clearly, by the level of consumption achieved by an individual(s) or a household(s) or a nation(s)? Should we disentangle the idea of *quality of life* from the concept of standard of living? Like, one could be *well off* without being *well.* One could be *well* without being able to lead the life she/he *wanted.* One could lead the *desired* life without being *happy.* One could be *happy,* without having much *freedom.* One could have a fair amount of *freedom,* without *achieving* much.[1] The list seems unending. Even if all these concerns are resolved with consensus, we shall still be left with the question of understanding the possible determinants of standard of living. It is a well-established fact that individual or household specific characteristics have an effect on living standard. However, this is not whole story. Locational attributes of the families or individuals also influence their standard of living. The selection of the place of living by a family or an individual depends on the utility derived by them from that place. If features of the place

[1] See A. Sen (1987)

of residence prevent them from maximising their standard of living, then they would migrate to a better place. However, there is cost associated with this migration, which may bar them from relocation. *In this study we will show that location specific features, together with the usual household characteristics are important determinants of the well-being of the families. We will also show that the effects of local amenities (disamenities) are different for the poor as compared to the rich.*

Empirical analysis requires a definite indicator for standard of living. However, the concept of standard of living is unclear. Various indicators, and combinations thereof, such as average income, poverty level, life expectancy, infant mortality, literacy rate, calorie consumption, etc. have been used in empirical analysis till date. On the theoretical side, three approaches of living standard *utility* or *welfare* approach, *opulence* approach and *capability* approach have been developed in the literature.

The utility approach is well represented in the writings of Pigou where he pioneered the concept of 'economic welfare'. Economic welfare was defined by him as "that part of social welfare that can be brought directly or indirectly into relation with the measuring-rod of money"[2]. His justification for this distinction was that an individual's economic welfare might be high even though she/he may be quite unhappy and possibly have low welfare.

Standard of living has also been conceptualised as *opulence*. Reference to it can be found in the works of Adam Smith. Smith had tried to understand the overall well being of the nations in terms of their affluence. He said that the twin objectives of political economy are "first, to provide a plentiful revenue or subsistence for the people, or more properly to enable them to provide such revenue or subsistence for themselves; and secondly, to supply the state or commonwealth with a revenue sufficient for the public services"[3]. Application of the opulence approach is widespread in modern economic literature. It generally takes the form of analysis of real income indicators and indexation of the commodity bundles consumed by households and/or individuals. Since

[2] Pigou (1952)
[3] Smith (1776)

evaluation of real income is often done in terms of indifference mapping, representing preferences; one has to be careful to avoid misinterpreting opulence theory as the utility approach. It is to be kept in mind that under the affluence theory of standard of living the *commodity basis of utility* is being evaluated not the utility itself, either in terms of desiredness or satisfaction.

The third approach has been developed by Amartya Sen who has proposed a theory that is directly linked with human capability and freedom.[4] Freedom in this approach was defined in a positive sense, like to be free to this or to be that, not in a pessimistic manner where individuals or households are barred from doing something. Focus in capability approach is not on the set of commodities individuals/households can successfully command, but on the ability of utilising or living well with the goods and services at their disposal.

The task now is to choose a particular approach that can show and determine the various factors that may influence standard of living. The choice is indeed difficult. First, we have to make a selection about the space for evaluation i.e. which one of the approaches is appropriate for our purpose. Second, what category of life we are going to evaluate? We can define life in material sense, spiritual sense, in terms of cultural practices, political affiliation and aspirations, etc. Third, what will be our unit of evaluation? Will it be an individual or a household or a group identified on the basis of class, caste, creed, gender and occupation? And lastly, does the existing data provide us enough information to proceed with our stated objective? The opulence of the families or individuals i.e. *money-metric* approach seems to be best suited for our purpose. Application of the other two approaches is difficult due to non-availability of required data. Also, using the money-metric approach for analysing the standard of living one can draw certain inferences that would be useful for the policy makers.

In fact economists are arguing for quite some that consumption expenditure is a better measure for judging the relative living standard of the families. Slesnick (1993), for example, suggested that consumption based measure of household welfare is more

[4] See A. Sen (1979, 1980, 1984, 1985, 1987, 1992 and 1999)

appropriate for measuring poverty. Similarly, Cutler and Katz (1992) suggested that distribution of resources is better expressed by consumption or permanent income than current income. Theoreticians are also of the opinion that if families plan their spending on the basis of their expected lifetime income, then consumption of households provides a better measure of resources than annual income.[5] With the availability of National Sample Survey (NSS) data on consumption expenditure of households along with their social and demographic features, the empirical analysis visualised here becomes feasible. One can use incidence of poverty within the households, estimated on the basis of consumption expenditure, as a measure for standard of living. Before proceeding further, three brief points need to be mentioned here. *First*, the present exercise considers household as units of measurement, not the individuals. *Second*, household consumption expenditure basically indicates purchasing power of the families. If families are to be ranked into different categories according to their purchasing power, then are the measures of incidence of poverty suitable indicators of this? What are the existing examples where researchers have used this measure and tried to understand the possible determinants of standard of living? Are there any other measures used in the empirical literature? Thirdly, if we accept that households can be grouped into poor or non-poor classes, then, do the existing data measure the extent of deprivation or more appropriately lack of purchasing power among the families perfectly?

Given the sheer magnitude of the poor in India, the existence of large body of work on poverty and standard of living is expected. Meenakshi and Ray (2002), in a study using NSS 1993-94 data have argued that household size and adult/child relativities significantly affect poverty status of the families. They have also shown that scheduled caste (SC) or scheduled tribe (ST) families have higher probabilities of being poor. Female-headed households are also shown to be more vulnerable to incidence of poverty. In another study, Ray (2000) has explored the possible determinants of poverty among households and its impact on child welfare. Number of adult members, number of children, level of education of the most educated male and female members of the family, gender of the head, age of head of the family, location (rural or urban) are included as

[5] Poterba (1989)

possible determinants in his analysis. Also, several features related to the place of residence like price level of subsistence items, domestic product, female life expectancy, infant mortality rate, proportion of children completing primary education, per capita supply of food grains through PDS, proportion of families receiving subsidised food grains, availability of electricity, gini index are also considered in this analysis. Here also, it was concluded that household size and adult/child relativities affect poverty status of the families. It was also emphasised that poverty works as strong stimulus for the families to send their children to work. Again, children from backward caste households (SC or ST families) are found to be more likely to work. He also found that increased awareness among the adult members of the families is likely to reduce poverty. Relationship between "headship" and poverty status is an issue that has been deeply probed.[6] In fact Gagagopadhya and Wadhwa (2003) have pointed out that head of the household is not a mere reference point but does have an economic impact. They have tried to asses whether the female-headed households are more vulnerable to poverty in India using a host of explanatory variables like education of the head, family size, land cultivated, etc. They have come to the conclusion that less educated, female-headed households are most vulnerable to poverty. It was further stressed that this is a conclusive proof of gender discrimination practiced in India, as education is the result of the decisions made within a household. Economists have tried to understand the implication of caste identity of the households on the living standard. A major study by Borooah (2005) has looked into this issue. She has shown that family income would *inter alia* depend on factors like, land ownership, number of adult workers, possession of non-land productive asset, level of education of the head of household and geographic location along with caste identity of the families. It is emphasised that a major part of the SC and ST families are treated unequally in our society compared to the upper caste Hindu families. This explains inferiority of quality and quantity of economic, educational and psychological endowment possessed by these backward caste families.

Another strand of literature that has come up in recent times focuses on the determinants of the nutritional or calorie adequacy of the households. In fact calorie

[6] Se for example Dreze and Serinivasan (1995); Visaria and Visaria (1985); Barros, *et al* (1997); Kossoudji and Muller (1983).

sufficiency has become a major focus for studying living standard of households. Jha and Gaiha (2005) have hypothesised that nutritional status of the families would be decided by price indices of the region, land ownership by the families, ownership of dwelling, mode of transportation indicating remoteness, share of irrigated land per family, occupation, religion, caste, family size, head-sex, head-age and education. Using the data from NSS 43rd round (1987-88), 50th round (1993-94) and 55th round (1999-2000) for rural families they have established that the above mentioned attributes have a varying effect on the level of nourishment of the families. Sinha (2005) has looked at the calorie intake of the rural households at different levels of consumption. In this analysis price of major food products, wheat, rice, bajra and gram are considered as important sources of variation in the calorie consumption of the families along with overall monthly per capita consumption expenditure and usual household-specific characteristics. Results of her study support the findings mentioned above, that the standard of living of the families varies with the characteristics possessed by them and the places where they are located.

In the international arena we have seen many studies, where economists have looked in to the possible determinants of living standard of the families. For example Geda, *et al* (2005), have found that poverty status of the families in Kenya is strongly associated with education, household size and engagement in agricultural activities. Fissuh and Harris (2005) have found that family size and regional unemployment do not affect the living standard of the families in Eritrea significantly. However, education, remittances, home ownership, access to sewage and sanitation facilities indeed affects poverty status of the families. Herrera (2001) has found that standard of living of the families in Peru is strongly related with possession of productive asset and provision of public goods by the government. Blundell and Preston (1996) have found that in United Kingdom living standard of the individuals belonging to the younger age cohort are markedly different from that of more experienced people.

There are numerous examples in theoretical and empirical literature where, economists have tried to understand what determines living standard of the families. Great emphasis is given in these studies on the family and individual specific features as possible determinants. However, there are few examples in LDCs, where economists

have explored the effects of location specific features on household living standard. This study is an attempt to bridge this gap.

To assess the suitability of the existing data for categorising the families according to their standard of living, one has to look into the philosophy of statistical measurement of incidence of poverty. "The Indian poverty lines are based explicitly on estimates of the normative nutritional requirement of the average person in the rural and urban areas of the country separately. These national norms, which are 2,400 kilo calories/day and 2,100 kilo calories/day for rural and urban areas respectively, are not arbitrary figures, but have been derived from age-sex-occupation-specific nutritional norms by using all-India demographic data from the 1971 census"[7]. As it is recognised that human existence needs more than just food, "...provision for other goods and services also needed to be made"[8]. As a consequence, actual consumption expenditure of households collected during the 1972-73 NSS round was used. The lowest expenditure class that consumes the specified norms is identified from the estimated average calorie intake of every expenditure class and the per capita expenditure of that lowest expenditure group has been defined as the poverty line. Using this poverty line the entire population is then divided into two categories, 'Below Poverty Line' (BPL) and 'Above Poverty Line' (APL). This particular way of estimation is defined as *head count* measurement of poverty. Also, rupee value of the poverty line is regularly updated in order to reflect inflation over time though the basket of good and services considered in the poverty calculation have not changed subsequently to preserve inter-temporal comparability. On theoretical and statistical ground, it is one of the most comprehensive definitions of poverty available anywhere in the world. However, many social scientists have criticised this head count measure of poverty. It was pointed out that assessment of living standard across the regions and within a region is inherently difficult as consumption habit, life style, public amenities, epidemiological environments, etc. are not uniform. Nutritionists have also emphasised the inadequacy of calorific measurement of deprivation. Their argument is that calorie based measure of food adequacy is not all encompassing, especially from the point of view of nutritional requirement. It is correct

[7] P. Sen, (2005)
[8] Same as footnote 6

to say that "mere consumption of adequate number of calories may not ensure sufficient intake of other nutrients" however, it is also possible that "any exogenously specified norm of nutritional adequacy based on a number of nutrients never finds reflection in actual consumption behaviour"[9] as taste and preferences are the prime determinants of choice of diet not prior scientific knowledge about nutrition content in the food items. Apprehension against the money-metric calorie adequacy measures of poverty was expressed by asking whether "the poverty line discourse is intrinsically meaningful when assessing the extent, nature, and forms of deprivation experienced in society"[10]. Myriad forms of insecurities or deficits or exclusions that exist in our society may not be necessarily linked with income poverty of a household. Researchers are concerned about the sensitivity of the head count measure in the presence of poor households with consumption close to the poverty line. Defined as *density effect* in literature, this suggests that a small increase in average per capita expenditure could lead to a misleadingly large decline in the incidence of poverty if the poor households are heavily clustered near the poverty line. Moreover poverty line approach explicitly focuses on private consumption capability of households whereas the crucial role played by the public distribution system is ignored. Private consumption based measures of poverty assume money can buy health, education and other necessary services anywhere and anytime. This is an extremely strong assumption to make and may not be appropriate for our nation. Again, purchasing capability of households is also correlated with the asset base of the families, not just with income earnings. Disregard of household asset base in the head count measures of poverty fails to address the issue of the sources of finance for the expenditures incurred. It is important to know whether the expenditure is financed through *positive* savings or *negative* savings. Another serious drawback of the poverty estimates based on the benchmarks proposed by the 'Planning Commission' is that it takes into consideration only the average monthly per capita consumption expenditure of households. It does not tell us anything about intra-household allocation of resources. Numerous examples have been cited in studies that, within a family certain members

[9] Same as footnote 6
[10] A. Saith (2005)

identified on the basis of sex, age or occupation, sometimes receive less attention than the other dominant members.

The list of concerns about poverty line based estimates of household well-being is quite long. Then how can we justify its use as a yardstick for living standard? NSS data for consumption expenditure gives information for both food and non-food items. As a result monthly per capita private expenditure on non-food items by households can be used as a suitable proxy for material prosperity. But in practice expenditures on both food and non-food items are considered in the calculation for monthly per capita consumption and poverty incidence indicates only food insufficiency. Discounting the non-food items in the poverty estimation is off course a major drawback. However, minimum requirement of non-food basic goods and services for a household is a very subjective concept and, therefore, it is virtually impossible to formulate a poverty benchmark based on the non-victuals. On the other hand sufficiency of food is perhaps the most basic concern of a family, which is directly linked with the issue of survival. Ensuring food-sufficiency for the general mass is a primary duty of the policy makers, especially in a country like India where a vibrant and highly participatory democracy exists and voting rights ensures the millions of poor to have a decisive say in the national policy making. This justifies the case for considering food sufficiency of households as an indicator for standard of living.

The discussion till now elaborated alternative concepts of standard of living, their salient features and feasibilities of utilising them in an empirical exercise. We have discussed the type of data we need for analysing the effects of possible determinants on household standard of living, their availability and the practical problems associated with existing database. Here we have consciously chosen households, as the unit of measurement. Till date household standard of living has mostly been associated with characteristics like demographic composition of the family, religious affiliation, caste identity, occupation, asset ownership, level of literacy among the household members, gender of the head of household, number of adult workers in a family, etc. Here, we hypothesise that location specific features are also important. Many economists have incorporated variables like per capita domestic product of a state as one of the crucial

indicators of calorie sufficiency of households. Female and children work participation, life expectancy; growth rate of employment; rate of urbanisation etc. have also found application in the existing empirical analyses about well-being. Commitment of the ruling power for overall development, general health of the population, availability of employment, infrastructure facilities, technological progress, political stability, efficiency of the existing law and order mechanism can be cited as a few of the indicators which influence the per capita consumption expenditure of the households. Notice that household have no direct control over them. Here we will try to analyse the effects of these features on the well-being of the families. Dividing the household standard of living into just two categories (poor and non-poor) may not be adequate if our intention is to highlight the dissimilar effects of various determinants at different levels of living. It will not be sufficient to resort to the usual least squares mechanism for this purpose. This particular issue will be addressed in the next section.

This paper is organised in the following way. In Chapter 2 we will be discussing the alternative econometric frameworks that can be used to analyse the effects of household and location specific features on standard of living. Chapter 3 will be devoted to summarise the salient features of the determinants. In Chapter 4 and 5, findings from the econometric model will be discussed and lastly, chapter 6 concludes this dissertation.

## Chapter II
## Framework for Empirical Analysis

We have considered consumption expenditure of households as an indicator of standard of living. Two different processes of categorisation of standard of living are used in this study. In the first classification, households are grouped into two categories, such as poor households and non-poor households. Classification of families in this manner indicates whether the present standard of living is sufficient to achieve calorie sufficiency. Enabling the families to achieve this is the aim of the policy makers. However, division of families into poor and non-poor categories may not be sufficient to highlight the variations in the effects of the determinants at different levels of living. For a comprehensive understanding of the impacts of the household and location specific features on standard of living, entire distribution of the consumption expenditure has to be analysed. Because of this, another set of categorisation of the living standard of the families is done. Families are divided into several sub groups, such as, very poor, poor, middle class, rich and very rich. Accordingly, two different econometric approaches are used in this paper. For the first classification we have utilised the *binary logit regression* model whereas in the other case *quantile regression* method is used. The philosophy behind these two different methods and the process of estimation will be elaborated shortly. We begin our discussion with the features of households and local amenities (disamenities) that can influence the standard of living of the families.

### II.1 Household Characteristics and Local Amenities

We have hypothesised that standard of living of the households depends on characteristics of the families and the availability of local amenities, i.e.

Standard of living = $f$(household characteristics, local amenities)

We have considered that household features like family size, occupation, number of adult workers in a family, ethnic background, land ownership, sex of the head of the families, age of the head of the families and level of education of the family heads can influence standard of living.

*Family size*: Family size is included in this analysis to take account of the economies of scale and congestion effects. Family size determines how much a household should spend on a particular item and what would be the share of a particular member in the total consumption expenditure. If we can establish that an additional member will lead to a fall in the standard of living of the families, it would boost up the argument for family planning methods.

*Occupation*: Occupation determines the earning, which in turn decides the consumption capabilities of the families. It has been observed that households from an occupation class are doing better than the families with other occupation. Quantifying the effects of occupation on standard of living will be helpful in deciding which way the employment generation programs should move.

*Number of adult worker in a family*: An additional adult worker would bring extra income to the family. This would help them to improve their standard of living. However, the effect of an additional worker on the standard of living of the families may differ in rural and urban areas. We have included this particular feature of the families to assess whether an additional member will be equally helpful for the families in these two locations.

*Ethnic background*: In the existing literature ample proof has been given about the effect of caste identity of the families on their standard of living. We will reexamine whether the caste identity still have an influence on the poverty status of the families. We will also try to understand whether the effects of caste on consumption expenditure are different for rich and poor families. For a complete understanding of the effects of ethnic background of the households we have also included religion in this analysis. Our intention here is to analyses how the standard of living of the families in rural and urban areas changes with the religious affiliation of the households.

*Ownership of land*: Land ownership gives us some idea about the financial condition of the families. Land is a useful asset to possess that can help the families in times of distress. Because of this ownership of land can be very important for the poor families.

On the other hand, rich families with sufficient financial back up may not attach high value on the land ownership.

*Head of the family- Sex, Education and Age*: Head of the family generally plays the most influential role in deciding the consumption basket appropriate for the family and just distribution of the goods and services within the family members. Because of this, special attention is given to the characteristics of the heads of the households. We will be focusing on three particular features, namely, sex, level of education and age of the heads of the families. In India, traditionally male members of the families head the household. If a female heads a household, it normally indicates absence of adult male members in the family. In labour market, certain discrimination works against female. It is believed that females are less capable in taking up responsible and sophisticated job. This severely curtails the earning potential of the female-headed families. Moreover less attention is given to the education of the girls than the boys within a family. As result, when a female has to take up the responsibility of running a household, she is less educated to pursue a high paying career. As a consequence we expect that female-headed households more likely to be poor.

We have considered the education level of the family head. As mentioned earlier, a family with poorly educated head is likely to earn livelihood from casual labour work or self-employment in low paying occupation. We will check whether the households with inadequately educated heads are more likely to be poor. Again, it is expected that education of the head of the family is not very important for the very poor families or very rich families. On the contrary, for the middle class families this is an issue of great importance. Slight improvement in the education level can bring about substantial improvement in the standard of living of the families.

It is expected that households with more experienced members as head are likely to have better standard of living. On the other hand a less experienced family head means new entrant in the labour market. Their earning may not be stable. So, age of the head of the families may give us some insight about the standard of living.

We have hypothesised that the above-mentioned household specific features alone may not be sufficient to explain the variations in the standard of living of the families. For a comprehensive understanding of the causes of differences in the standard of the living, availability of several amenities (disamenities) in the place of residence of the families are included here. Let us discuss them one at a time and the logic behind their inclusion in the empirical analysis.

*Prosperity*: Level of prosperity of a region should have an effect on the standard of living of the families living there. Families living in a prosperous location are likely to have better employment opportunities and have greater access to other necessary amenities. These improve their standard of living than that of the families from a less affluent region. Moreover, effects of prosperity of the locations are possibly different for rich and poor families.

*Responsiveness of the administration to the development needs*: Level of development expenditure incurred by the states, shows the administrative willingness for overall development in the region. A household residing in a place where performance in this regard is less than sufficient is deprived of basic facilities, like health, education, housing, water and sanitation, etc. It is possible that families living in such places have low level of living. It is also possible that states that have high development expenditure are the states with low level of development. So, it is likely that families living in locations with high development expenditure are actually poor. Moreover, rich households do not possibly give much importance to the level of development expenditure incurred by the local administration as they can pay for their own services. It is the poor families and the middle class households for whom availability amenities is important. We will check in our empirical analysis how the responsiveness of the administration to the development in the region will affect the standard of living of the families.

*Knowledge environment*: Knowledge environment in the place of residence indicates the level of awareness among the general public. Literacy rate in the states are used as proxy for knowledge environment. It is commonly accepted that employment opportunities and hence standard of living of the families are high in high literate areas. In the empirical

analysis literacy rates in the regions are considered to analyse the effects of awareness on the standard of living of the families.

*Lack of opportunities for employment for youth*: Lack of opportunities for productive employment directly affects standard of living of the families. Households with unemployed members cannot achieve their full income potential. Accordingly unemployment among able-bodied young members has an economic ill consequence for the families. This has a negative repercussion on the morale of the families. We expect that regions with high rate of unemployment among youth are economically backward and families living in such places are most likely to be poor. However we have to be careful while interpreting the results because rate of open unemployment in India is low, especially in rural areas. Moreover, members from poor families generally enter the labour market at early years of their life. But, young members from rich families tend to pursue higher education.

*Health*: Better health among members of the family is a prerequisite for better living. Households with members who are all in good physical condition can exploit the existing avenues fully to enhance the earning of the family and hence upgrade the standard of living. Good physical health among the members saves the households from incurring frequent expenditures due to illness. We expect that general condition of health in a region give us some indication about the physical condition of the families living there. The generally accepted notion is that families living in poor health region are in a poor physical condition and their standard of living will be lower than the families from better health region. However, it is to be kept in mind that standard of living of the rich families are less likely to be affected by the general condition of health in a region.

*Infrastructure*: Access to better infrastructure facilities plays an important role in determining the standard of living of the families. Households settled in a region endowed with good infrastructure will be more productive and hence, their earning potential will be higher. To capture the effects of access to better infrastructure facilities on the standard of living, four different dimensions, *energy*, *connectivity*, *health facilities* and *communication facilities* are considered here. There is a widespread variation in the

availability of the above-mentioned indicators across the region in India.[11] Accordingly we expect that families living in places where infrastructure facilities are less than adequate are likely to have poor standard of living. We also expect that standards of living of very poor families and very rich families are less responsive to the availability of these facilities. Very poor households are already living in miserable condition irrespective of the characteristics of the location. Affluent families on the other hand can make their own arrangements. So, diversity in the results of the empirical analysis is expected.

*Technological progress*: Technological progress brings sophistication in life. It opens up new employment opportunities and helps to upgrade standard of living of the families. On the other hand families living in a less technically developed region have to rely on traditional means of earning. We expect that families living in technically less developed region are more likely to be poor. *Intensity of cropping* and *consumption of chemical fertilizer* are considered in this analysis as measures of technological progress experienced in a region. These two indicators are directly associated with the development in agriculture. Agricultural activities are mostly concentrated in rural areas in India. However, agriculture has been the critical force for sustaining development in India. Overall development in the economy is correlated with the agriculture sector as food and other essentials for the rest of the economy are provided by this sector. As a result, technological progress experienced in agriculture in a particular region has wider effect on the well being of the population in that region and is not confined within the agrarian economy only. Though, we expect that the effects of availability of irrigation facilities and use of fertilizers on the standard of living of the urban households would be limited.

*Political stability*: Political stability (instability) in a region has a far-reaching effect on the population living there. Frequent changes in the political power may cause regular changes in the policies. This may have an impact on the well-being of the families, as they have to adjust their budgetary allocation for various consumption items depending

[11] See Chapter III

on the current policy. Rich and middle class families attach high values to political stability in their place of residence.

*Lawlessness*: High incidence of crime in a region indicates lack of safety of the general population living there. Individuals restrained from of carrying out their daily activities due to lawlessness in the region, will not be able to achieve full income potential. This in turn will affect the standard of living of the individuals and the families. Affluent households prefer a less crime prone region as their place of residence. We expect that poor families will be severely affected by the high incidence of crime in the region.

*Efficiency of judiciary*: If high crime rate signifies the lawlessness of a state, efficient functioning of the local judiciary can give some practical and moral support to the families living there. Household deprived of the trust that local administration will come to their help in emergency cannot operate with zeal and full capacity. We hypothesise that the efficiency in performance of the local judiciary will have a direct effect on the standard of living of the families.

### II.2 Models for Empirical Analysis

In this section we will outline the theoretical models that are considered here to analysis the effects of household and location specific characteristics on the standard of living. As mentioned earlier, observed standard of living (y) of the families are classified in two categories, poor and non-poor. We assume unobserved actual standard of living (y*) of the families are related to the vector of household and location specific characteristics (**x**) by the following structural equation,

$$y^* = \mathbf{x}'\beta + \varepsilon \qquad (1)$$

Here, y* varies from $-\infty$ to $+\infty$, $\beta$ is the vector of parameters that we want to estimate and $\varepsilon$ is the stochastic error term. The relation between observed standard of living (y) and actual standard of living (y*) can be made with a simple measurement equation

$$\begin{aligned} y &= 1 \text{ if } y^* > 0 \\ y &= 0 \text{ if } y^* \leq 0 \end{aligned} \qquad (2)$$

The measurement equation in (2) can be interpreted as follows. Every household has a desire to improve their standard of living. Households that are characterised as poor (i.e. y = 1) must have a strong desire, positive in statistical sense ($y^* > 0$), to go beyond the poverty threshold. Again, it is immaterial for the non-poor families (i.e. y = 0) to breakaway from the poverty clutch ($y^* \leq 0$). This relation between the actual and observed standard of living can be suitably expressed by the following probabilistic term.

$$\begin{aligned} &\text{Probability (household is poor)} \\ &\equiv \text{Prob}\,(y = 1 \,|\mathbf{x}) \\ &= \text{Prob}\,(y^* > 0 \,|\mathbf{x}) \\ &= \text{Prob}\,(\mathbf{x}'\beta + \varepsilon > 0 \,|\mathbf{x}) \\ &= \text{Prob}\,(\varepsilon > -\mathbf{x}'\beta \,|\mathbf{x}) \end{aligned} \tag{3}$$

The above specification shows that probability depends on the distribution of the error term $\varepsilon$. If we assume $\varepsilon$ is symmetrically distributed, then we can write

$$\text{Prob}\,(y = 1|\mathbf{x}) = \text{Prob}\,(\varepsilon < \mathbf{x}'\beta \mid \mathbf{x}) = F\,(\mathbf{x}'\beta), \tag{4}$$

where $F\,(\mathbf{x}'\beta)$ is the *cumulative density function* of the observed standard of living. The above probabilistic framework can be expressed in the usual regression formulation as

$$E\,(y\,|\mathbf{x}) = 1.\,F\,(\mathbf{x}'\beta) + 0.\,[1 - F\,(\mathbf{x}'\beta)] = F\,(\mathbf{x}'\beta)$$

$$\text{i.e. Prob}\,(y = 1\,|\mathbf{x}) \equiv F\,(\mathbf{x}'\beta) \tag{5}$$

As the actual standard of living is unobserved we have to make assumption about the distribution of $\varepsilon$. Because of theoretical simplicity $\varepsilon$ is assumed to be distributed logistically with mean 0 and variance equal to $\pi^2/3$. With this assumption we arrive at the *binary logit model* where

$$\text{Prob}\,(y = 1|\mathbf{x}) = \exp\,(\mathbf{x}'\beta) \,/\, 1 + \exp\,(\mathbf{x}'\beta) \equiv \Lambda(\mathbf{x}'\beta) \tag{6}$$

The unknown parameter vector $\beta$ is estimated by *maximum likelihood* method. However, there are certain properties of the logit model that need to be mentioned here. *First*, estimated parameters of the logit model, $\beta$, like any other nonlinear regression framework, are not the usual marginal effects ($\partial y/\partial x_k$). Hence the estimated values of $\beta$

do not directly tell us the how the household and location specific characteristics affect the observed standard of living of the families. Because of this we calculate the predicted probabilities of being poor (or non-poor). *Second*, the marginal effects in binary logit model, unlike the linear regression model, depend on the all the regressors considered here.[12] So, while calculating the marginal effects of the dependent variables, we keep all the household and location specific characteristics constant at their mean level. *Third*, as several of the family specific and location specific characteristics are categorical variable, we have made use of dummies in our empirical analysis. Now, computation of the marginal effects becomes more complicated in the presence of dummies. So we have to calculate discrete changes in the predicted probabilities for a given change in the independent variable, holding all other variables constant.[13] The discrete changes calculate the differences in probability of being poor (non-poor) given that the households have two different qualities.

As described earlier, we will also be focusing on the impacts of the various determinants at different levels of standard of living. For this purpose we will be directly using the consumption expenditure of the households as an indicator of standard of living. However, the present purpose requires an approach very different from the least squares methodology. In least-squares regression we calculate how the mean of dependent variable changes with the vector of covariates. The implicit assumption behind this approach is that possible differences in terms of the impact of the exogenous variables along with the conditional distribution are unimportant. But our intention here is not only to calculate the effects of household and location specific characteristics on the consumption expenditure of the families at their average.

Unlike the least squares process, the *quantile regression* (QR) method, first introduced by Koenker & Bassett (1978), allows for a full characterisation of the conditional distribution of the dependent variable. In nutshell, this procedure allows researchers to focus on quantile treatment effects rather than on average (mean) treatment

---

[12] Symbolically the marginal effects are expressed as, $\partial$ Prob $(y = 1 \mid x) / \partial x = \Lambda(x'\beta)\,[1 - \Lambda(x'\beta)]\,\beta$

[13] Symbolically the discrete changes are expressed as, $\Delta$ Prob $(y = 1|x) / \Delta x_k$ = Prob $(y = 1|x, x_k + \delta)$ – Prob $(y = 1| x_k)$

effect. This procedure also has several other virtues. *First*, as the dependent variable is divided into several quantiles, outlier data points receive less weight on dependent variables under the QR technique than least squares method. This reduces the potential effect of the outliers on the estimated parameters. *Second*, "by allowing the parameter estimates for the marginal effect of the explanatory variables to differ across the quantiles of the dependent variables, robustness to potential heteroscedasticity is achieved"[14]. *Third*, estimates produced in quantile regression process may be more efficient than the least squares estimates in the presence of non-normal error terms. In fact Koenker and Basset suggested this technique as robust estimation process than OLS for non-normally distributed error terms. The main advantage of the quantile regression process can be summarised by stating that it relaxes the restrictions on the parameters to be constant across the entire distribution of the dependent variables.

Let y be the household consumption expenditure and **x** be the vector of household characteristics and local amenities. Quantile distribution of consumption expenditure, divides the households in rural and urban areas into $10^{th}$, $25^{th}$, $50^{th}$, $75^{th}$ and $90^{th}$ quantiles. Now for the $\theta^{th}$ quantile of the we assume that,

$$y_i = x'_i \beta_\theta + u_{\theta i}; \theta \in (0, 1) \quad (8)$$

Here, $\beta_\theta$ is the parameter that tells us the effect household and location specific characteristics on the consumption expenditure of the households belonging to the $\theta^{th}$ quantile. The distribution of the error is not specified. It is only assumed that $u_{\theta i}$ satisfies the *quantile restriction*

$$Qunat_\theta[u_{\theta i} | x_i] = 0 \quad (9)$$

This restriction tells us that only the disturbance term $u_{\theta i}$ satisfies the assumption that the $\theta^{th}$ quantile of $u_{\theta i}$ i.e. $y_i - x'_i \beta_\theta$ conditional upon the vector of regressors is equal to zero. This assumption leads to the following form:

$$Qunat_\theta(y_i | x_i) = x'_i \beta_\theta \quad (10)$$

where $Qunat_\theta(y_i | x_i)$ denotes the $\theta^{th}$ quantile of $y_i$, conditional on the regressor vector $x_i$. The quantile restriction is laid only to identify the constant terms in $\beta$ uniquely. The

[14] Rangvid (2003)

parameter space for $\beta$ is $B_\theta$ and $B_\theta \subseteq \Re^k$. Coefficient of the $\theta^{th}$ regression quantile of y is estimated by solving the following problem of minimisation of the sum of absolute deviations[15]

$$\min_\beta \{\sum_{i: y_i \geq x'_i\beta} \theta | y_i - x'_i\beta| + \sum_{i: y_i < x'_i\beta} (1-\theta) | y_i - x'_i\beta|\} \qquad (11)$$

The variation in the values of $\theta$ traces the entire distribution of household living standard and one can infer about the influences of different household and location specific factors at any given quantile.

Solution to the problem in (11) is not difficult; however, estimation of the variance-covariance matrix may pose certain difficulties. For estimation of standard errors correctly, modern econometric practices resort to *bootstrap re-sampling* technique. In this process standard errors are obtained by bootstrapping the entire vector of observations. This has been originally proposed by Efron (1979). This procedure is called the design matrix bootstrap, where pairs $(x_i, y_i)$ i =1, 2,...,n are drawn at random from the original observations with replacement. An estimator of the parameter vector, $\beta_\theta$, is recomputed for each observation for each of these samples drawn. "Repeating this procedure B times yields a sample of B parameter vectors whose sample covariance matrix constitutes a valid estimator of the covariance matrix of the original estimator"[16]. Statistical softwares, like STATA, do this entire process automatically, although a major decision is left to the researchers about the choice of the number of bootstrap repetition. Unfortunately there is no unanimity among econometricians about the choice for number of bootstrap repetition. In the present study, we have used 200 bootstrap repetitions. However one has to keep in mind that larger the number of repetition longer it will take to obtain the estimates even in the presence of modern high-speed computers.



[15] In econometric literature this is known as *Least Absolute Deviation* (LAD) method.
[16] Rangvid (2003)

## Chapter III

## Data – Descriptive Summary

Household consumption expenditure is the focus of this study. National Sample Survey Organisation (NSSO) has been collecting the data for consumption since 1972-73 on quinquennial as well as annual basis[17]. We have used the data from the 55$^{th}$ round (6$^{th}$ of the quinquennial rounds) of NSS for the period 1999-2000. This is also the latest of the quinquennial rounds. During this round expenditure incurred by selected households on a set of items, broadly classified into food and non-food commodities, were collected[18]. Households were selected through a stratified random sampling procedure. Under this process, villages (panchyat wards for Kerala) from rural areas and urban blocks from urban areas were selected as sample *first stage units* (FSUs). Then households were picked up as *ultimate sampling units* (USUs) by a method of circular systematic sampling from the corresponding frame in FSUs. These selected households were asked to furnish detailed information about their expenditure on various items in the last 7 days and/or last 30 days or last 365 days prior to the date of the survey depending on the type of goods consumed. For food items both 7 days and 30 days recall period were used whereas information about expenditures incurred on fuel and light, non-institutional medical services, entertainment, personal effects, toilet articles, sundry articles, consumer services, conveyance, rent, consumer tax & cess were collected for the last 30 days prior to the date of the survey. Expenditure on items like clothing, bedding, footwear, education, institutional medical services and durable goods was collected for the last 365 days only. Then, aggregate consumption expenditure in a month for households was calculated from this information. Dividing the monthly consumption figures by the number of members in a family, data for *per capita monthly consumption expenditure*

[17] Quinquennial rounds of NSS known as fat rounds since the size of the sample under these rounds are large and evenly spread over the sates depending on their share in aggregate national population. On the other hand annual rounds have smaller sample size. For this reason quinquennial rounds have higher representative value.

[18] The items included in the food category are cereals & substitutes, pulses, milk & milk products, edible oil, egg, fish, meat, vegetables, fruits (fresh & dry), sugar, salt, spices, beverages, pan, tobacco and intoxicants. In the non-food category items like fuel & light, clothing, bedding, footwear, education, medical (institutional & non-institutional), entertainment, personal effects, toilet articles, sundry articles, consumer services, conveyance, rent, consumer tax & cess and durable goods are considered.

(MPCE) in rupee for each of the selected households were generated. Entire process of collecting consumption data for households was conducted under the 'Schedule 1.0' of the 55th round of NSS. Along with data for consumption expenditure, certain information related to the household and the members of the households were also collected in the NSS. We have hypothesised that local amenities (disamenities) have an effect on the standard of living of the families. Information about these location specific features is collected from diverse sources. Note that our analysis is restricted to the sixteen *non-special categories* of states in India.[19] Availability of large samples for these states in NSS and easy access to region specific information from other secondary sources is the reason of this. A total of 61,711 households in rural areas and 40,616 households in urban areas are considered here.

### III.1 Dependent Variable – Monthly Per Capita Consumption Expenditure (Rs.)

In money metric approach real income of the families should be used as an indicator for standard of living. However, data for income is rarely collected. Common equivalent used for income is consumption expenditure. Monthly per capita consumption expenditure (MPCE), which is considered as a proxy for well-being of the families in this study, had served a dual purpose. First, using the official estimates for poverty line for each state, household in rural and urban areas were grouped into two categories, poor families and non-poor families. Note that households with MPCE equal to the specified poverty figures were also categorised as poor. Data for 1999-2000 show that 21 per cent of the households in rural areas were poor. The corresponding figure for urban areas was 18 per cent. Secondly, for a comprehensive analysis of the effects of various determinants on standard of living, distribution of MPCE was divided into several expenditure quantiles. Since consumption expenditure of a particular household depends on the state specific price indices, a comparable series of consumption figures across the states was generated through the following process. First, poverty ratio for each state was calculated by dividing the state-specific poverty estimates by the all-India poverty figures for rural

[19]The non-special category states are Andhra Pradesh, Assam, Bihar, Gujarat, Haryana, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal. Three states, namely, Bihar, Uttar Pradesh and Madhya Pradesh represented here in undivided status

and urban areas separately.[20] The MPCE figures were then divided by these state-specific poverty ratios to get a comparable series of consumption expenditures of the households. Newly calculated per capita monthly consumption figures in logarithmic form were used to get different expenditure quantiles. In Table 1, cut off points for different expenditure quantiles are reproduced. Naturally, as we go up the expenditure quantiles, values of the cut off points also increase.

Table 1: Cut-off points (in Rs.) for different expenditure quantile by residence

| Expenditure quantiles | Rural | Urban |
|---|---|---|
| $10^{th}$ | 270.31 | 378.79 |
| $25^{th}$ | 345.42 | 513.69 |
| $50^{th}$ | 465.22 | 767.10 |
| $75^{th}$ | 649.52 | 1189.62 |
| $90^{th}$ | 920.69 | 1768.02 |

Source: Calculated from unit level record given in Sch1.0, NSS $55^{th}$ Round.

Distribution of average monthly per capita consumption expenditure across different types of families gives us an idea about the differences in standard of living. Per capita expenditure in a month of an average household was Rs. 559.36 and Rs.980.03 in rural and urban areas respectively. Again, per capita average monthly expenditure of a poor family in the rural areas was Rs.265.03. It was Rs.294.33 below the average. On the other hand, average MPCE of a poor family in urban areas was Rs.357.97, about Rs. 622.06 below average. In contrast, average monthly per capita expenditure of a non-poor family in rural areas was Rs.637.59, which was Rs.372.55 more than that of a poor household. The gap between expenditure of a non-poor household and an average household was Rs.78.33 in rural areas. In urban areas, average MPCE of a non-poor family was Rs.1,119.03. This was Rs.761.06 more than the average MPCE of the poor families in urban areas. Again in urban areas the expenditure gap between a non-poor and an average family was Rs.138.51.

[20]All-India poverty line for rural areas was Rs. 327.56 in 1999-2000 and that for the urban areas was Rs. 454.11. State-specific poverty lines depend on price indices in the states. All-India poverty line on the other hand depends on the national price index. Ratio of these two is thus free of effect of price of commodities in the states.

### III. 2. Determinants of the Living Standard

As mentioned earlier we have considered two sets of determinants of living standard of the families, *characteristics of the households* and *local amenities* (*disamenities*). In the previous chapter we have outlined the variables that are considered for the empirical analysis. In the following section we will represent the summary statistics of these variables. The data for each of the variable is related to the period 1999-2000.

### III. 2. 1. Summary Statistics of the Characteristics of the Households

*Family size*: Average household size in our sample, for both rural and urban areas, was 5. However, in the rural area average family size varied from 4 to 6 across the states. The variation in average family size across the states in urban areas was between 4 and 5. Also, average size of a poor family in both rural and urban areas was higher than that of a non-poor family. In rural areas, average size of poor and non-poor household was 6 and 5 respectively. The corresponding figures in urban areas were 6 and 4 respectively.

Occupation: Main occupation classes in rural areas were *self-employment in non-agriculture*, *agricultural labour*, *other labour*, *self-employment in agriculture* and *other*. On the other hand urban households were classified into four categories, *self-employed*, *regular wage/salary earning*, *casual labour* and *other*. In rural areas *self-employment in agriculture* was the most prominent occupation among the households. It was found that 37 per cent of the rural families were of this type. Share of household with *agricultural labour* as main occupation was also high (29 per cent). 15 per cent of households belong to the *self-employment in non-agriculture* category. Only 7 per cent of the households in rural areas had *other labour* as main occupation and the remaining 12 per cent belong to *other* category. On the other hand in, in urban areas, *regular wage/salary earning* families had the largest share (41 per cent). *Self-employed* households also had large presence (37 per cent). 13 per cent of the urban families were from *casual labour* category. The remaining 10 per cent had *other* occupation. Looking into the standard of living of the families, we see that 34 per cent of *agricultural labour* households and 25 per cent of *other labour* households were poor in rural areas. Incidence of poverty was

low for households categorised as *self-employed in agriculture* and *other*. Share of poor families for these two categories of households were 15 percent and 11 per cent respectively. In urban areas, incidence of poverty was highest among *casual labour* category. Forty five per cent of casual labour households were poor in urban areas. Incidence of poverty was lowest for the *regular wage/salary earning* households (only 10 per cent). Also, 20 per cent of *self-employed* families were poor in these areas.

Table 2a: Distribution of rural households by occupation and poverty status

| Occupation categories | Poor | Non-poor | All |
|---|---|---|---|
| Self-employed in Non-agriculture | 18.0 | 82.0 | 100.0 |
| Agricultural Labour | 34.1 | 65.9 | 100.0 |
| Other labour | 24.6 | 75.4 | 100.0 |
| Self-employed in Agriculture | 14.7 | 85.3 | 100.0 |
| Other | 11.0 | 89.0 | 100.0 |

Source: same as Table 1

Table 2b: Distribution of urban households by occupation and poverty status

| Occupation categories | Poor | Non-poor | All |
|---|---|---|---|
| Self-employed | 19.7 | 80.3 | 100.0 |
| Regular | 9.9 | 90.1 | 100.0 |
| Casual labour | 44.7 | 55.3 | 100.0 |
| Other | 11.0 | 89.0 | 100.0 |

Source: same as Table 1

*Number of adult workers in a family*: In our sample, average number of adult workers in a family, for both rural and urban areas, was 2. However, the number of adult workers in a family varied from 0 to 22 in rural areas. On the other hand the number of adult workers in urban areas varied from 0 to 13. In rural areas, average number of adult workers from both poor and non-poor family was 2. The corresponding numbers in urban area were 2 and 1. It was also observed that, number of number of adult workers in poor families was always higher than or equal to that in non-poor families.

*Ethnic Background*: Ethnic identity of the households is expressed in terms of their caste and religious identity. In NSS four broad categories of caste groups, namely, *scheduled tribe* (ST), *scheduled caste* (SC), *other backward caste* (OBC) and *other* were considered. In our sample for rural areas, 10 per cent of the families were from ST category. The corresponding figure for urban areas was only 3 per cent. Again, share of

SC families in rural and urban areas were 19 per cent and 13 per cent respectively. 37 per cent of rural households were from OBC community. 30 per cent of the urban families in urban areas were also from this group. About 53 per cent of urban families were from *other* caste category whereas in rural area share of this community was only 33 percent. In the empirical analysis we have grouped the SC, ST and OBC families as *backward caste* families and the *other* caste households are identified as *non-backward.* Incidence of poverty within the *backward caste* households was higher than the non-backward caste families for every state. We have found that 25 per cent of the families from *backward caste* in rural areas were poor. The corresponding figure for urban areas was 26 per cent. In contrast, only 12 per cent and 11 per cent of the *non-backward caste* households were poor in rural and urban areas respectively.

Eighty four per cent of households in rural areas and 78 per cent in urban areas were from 'Hindu' religion. In contrast, share of 'Muslim' families in rural and urban areas were only 10 per cent and 15 per cent, respectively. Two per cent and 3 per cent of households in rural areas were 'Christian' and 'Sikh' respectively. In urban areas 3 per cent and 2 per cent of the households follow these religions. Households from 'Other' category had only 1 per cent and 2 per cent share in rural and urban areas respectively. The 'Other' category includes religions like 'Jainism', 'Buddhism', 'Zoroastrianism', etc. It was observed that 21 per cent of the 'Hindu' families in rural areas were poor. The corresponding figure in urban areas was 17 per cent. Incidentally, occurrence of poverty was highest among the Muslims. 26 per cent of 'Muslim' families in rural areas and 30 per cent of that in urban areas were poor. Incidence of poverty within 'Sikh' was lowest. Only 4 per cent of them were poor in both rural and urban areas

Table 3: Distribution (%) of households by religion, residence and poverty status

| Religion | Rural | | | Urban | | |
|---|---|---|---|---|---|---|
| | Poor | Non-poor | All | Poor | Non-poor | All |
| Hindu | 21.0 | 79.0 | 100.0 | 16.8 | 83.2 | 100.0 |
| Muslim | 26.1 | 73.9 | 100.0 | 29.8 | 70.2 | 100.0 |
| Christian | 16.7 | 83.3 | 100.0 | 9.1 | 90.9 | 100.0 |
| Sikh | 4.1 | 95.9 | 100.0 | 4.1 | 95.9 | 100.0 |
| Others | 24.3 | 75.7 | 100.0 | 15.2 | 84.8 | 100.0 |
| Total | 21.0 | 79.0 | 100.0 | 18.2 | 81.8 | 100.0 |

Source: same as Table 1

*Ownership of land*: Six per cent of the families had no land in rural areas. In contrast, 35 per cent of the urban households did not possess land. We have also found that 20 per cent of the landless families in rural areas were poor. The corresponding figure in urban areas was 13 per cent. On the other hand incidence of poverty within the landed families was 21 per cent in both rural and urban areas.

*Head of the household – Sex, Education and Age*: In both rural and urban areas, 90 per cent of the households were headed by a male member of the family. The remaining 10 per cent were female-headed families. Twenty one per cent of the male-headed families were found to be poor in rural areas. The corresponding figure in urban areas was 18 per cent. In contrast, 19 per cent of the female-headed households were poor in both rural and urban areas.

In NSS surveys, level of education of an individual is categorised in fourteen groups, *not literate, literate through attending: NFEC/AEC, TLC, others; literate but below primary, primary, middle, secondary, higher secondary, graduate and above in: agriculture, engineering/technology, medicine, other subjects.* To capture the effect of education of the head of family on the standard of living, we have grouped these fourteen categories into the following classes, *illiterate or educated below primary level* and *educated up to primary level or beyond.* In our sample, individual who was *illiterate or educated below primary level* was heading 62 per cent of families in rural areas. In contrast, this type of individuals was heading only 31 per cent of the households in urban areas. Incidence of poverty within families with household heads who were either uneducated or have some informal education in rural areas was 27 per cent. Thirty six per cent of this type of families was poor in urban areas. On the other hand 12 per cent of the families with head who was educated up to primary level of beyond were poor in rural areas. The corresponding figure in urban areas was 10 per cent.

Average age of the head of a family in rural areas was 46 years and that for urban areas was 44 years. Average age of the head of a poor family in rural areas was 43 years. In non-poor families average age was 46 years in rural areas. Average age of the head for poor and non-poor families was same (44 years) in urban areas.

In the previous pages various features of households and head of the families are described. Three of these features, such as, family size, number of adult workers in a family, age of the head of family are quantitative variables and the rest are qualitative variables. To use qualitative characteristics in the econometric models, we used several dummy variables. In these dummies one category of households is considered as *reference* category and the remaining households are compared with them. The list of dummies related to households is as follows.

Table 4: List of Qualitative Characteristics, Dummy Variables and 'Reference' categories

| Characteristics | Dummy Variables used in the Analysis | Reference |
|---|---|---|
| Occupation (Rural) | Self-employed in Non-agriculture, Agricultural Labour, Other Labour and Other Household | Self-employed in Agriculture |
| Occupation (Urban) | Self-employed, Casual Labour and Other Household | Regular Wage / Salary Earning |
| Caste | Backward Caste: ST, SC and OBC together | Other caste |
| Religion | Muslim, Christian, Sikh and Other religion | Hindu |
| Land ownership | Household does not own land | Household owns land |
| Head sex | Female head | Male head |
| Head Education | Illiterate or literate below primary | Primary & beyond |

### III.2.2 Summary Statistics of the Characteristics of the Local Amenities

*Prosperity:* Per capita net state domestic product (NSDP) is considered as an indicator for level of prosperity in a region. Per capita NSDP for 1999-2000 (at 1993-94 factor cost) was included in the analysis. In the same period, per capita Net National Product (NNP) was Rs.10,071. Using the figure for NNP, households were divided into two categories, *first*, families living in *less* prosperous region (states where per capita NSDPs were lower than the per capita NNP);and, *second*, families living *more* prosperous region (states with per capita NSDPs more than or equal to the per capita NNP). Andhra Pradesh, West Bengal, Rajasthan, Madhya Pradesh, Assam, Orissa, Uttar Pradesh and Bihar were the states that come under *less* prosperous region and the remaining states belonged to the second category. Sixty six per cent households in rural areas and 51 per cent households

in urban areas were located in the *less* prosperous region. Twenty six per cent of the rural families and 21 per cent of the urban families from *less* prosperous region were poor. The corresponding figures for *more* prosperous region were 11 per cent and 15 per cent respectively. In the econometric analysis, the reference category for the dummy for prosperity was the *more* prosperous region.

*Responsiveness of the administration to the development needs*: To quantify the responsiveness of the administration to the development needs, per capita development expenditure (in Rs.) conceded by the states was compared with the national per capita development expenditure for the period of 1999-2000. Data for development expenditures in states are available from the Reserve Bank of India (RBI). In 1999-2000, per head development expenditure in the nation as whole was Rs.1,755. We classified the households in two categories, *first*, families living in the region where the administration was *less* responsive to the development needs (i.e. per capita development expenditure of the states were less than the national average); and, *second*, families living in the region where the administration was *more* responsive (i.e. per capita development expenditure of the states was more than or equal to the national average). It was found that the *less* responsive region was constituted of states such as Andhra Pradesh, Rajasthan, West Bengal, Assam, Bihar and Uttar Pradesh. Fifty three per cent of the rural families and 41 per cent of the urban families were living in the *less* responsive region. Twenty four per cent of the rural families and 19 per cent of the urban families living in such place were poor. Rest of the states formed the *more* responsive region. Only 18 pet cents of the families from this region, in both rural and urban areas were poor. In this analysis, *more* responsive region was considered as the reference category for the dummy variable for responsiveness to the development needs.

*Knowledge environment*: To analyse the effects of level awareness in the locality on the household standard of living, literacy rate of the population in the region was included in the empirical model.[21] Literacy rates in the states for 1999-2000 were calculated from the unit level data from NSS 55$^{th}$ round for rural and urban areas separately. In 1999-2000, all-India literacy rate for rural areas was 55.8 and that for urban areas was 79.8.

[21]Literacy rate is defined as the share of literate individuals in total population aged 7 years or more.

Households were divided in two groups, *first*, families residing in *low* literate region (which included states with literacy rates less than the national rate);and, *second*, families living in *high* literate region (which included states with literacy rates more than equal to the national rate). In rural areas, Karnataka, Orissa, Uttar Pradesh, Madhya Pradesh, Rajasthan, Andhra Pradesh and Bihar were the states that form *low* literate region. The remaining states constituted the *high* literate zone in rural areas. It was found that 58 per cent of the families in rural areas live in the *low* literate region and incidence of poverty within the households from this region was 24 per cent. Punjab, Haryana, Madhya Pradesh, Orissa, Andhra Pradesh, Rajasthan, Uttar Pradesh and Bihar were the states in urban areas that formed the *low* literate region. Forty seven per cent of the urban families were located within this region and 21 per cent of the families from this region were poor. In the econometric analysis, the dummy for knowledge environment had used the *high* literate region as the reference category.

*Lack of opportunities for employment for youth*: To assess the impact of unavailability of employment opportunities on the standard of living of the families, we have considered the *current daily status* (CDS) unemployment rate for the youth in the selected states.[22] According to this status, unemployment rate among youth in India in 1999-2000 was 110 and 154 in rural and urban areas respectively. Families in rural and urban areas were classified in two groups. The first group consists of the families that were living in places with *low* opportunities for employment for youth (i.e. states with unemployment rate more than or equal to the national rate) and the second group considers the families living in places with *better* opportunities for employment (i.e. the states with less than the nation rate of unemployment). Rural areas of Kerala, West Bengal, Tamil Nadu, Assam, Orissa and Bihar constituted the first group and 40 per cent of the rural families were living in these states. Twenty eight per cent of the rural families from this region were poor. In urban areas, Kerala, Assam, Orissa, Bihar, West Bengal, Himachal Pradesh,

[22]Unemployment rate is defined as the number of persons unemployed per thousand individuals in the labourforce. Employment and Unemployment Survey (EUS) of NSS in 1999-2000 gathered data for number of person-days unemployed on an average during the reference period of seven days preceding the date of survey and on the basis of this rate of unemployment among youth (i.e. individuals aged 15 to 29 years) was estimated. This is defined as Current Daily Status (CDS) unemployment rate, which is considered to be the most inclusive rate of unemployment.

Maharashtra and Tamil Nadu were the states that belong to the first group and 48 per cent of the urban families were located within these region. Seventeen per cent of the urban families located in these states were poor. Here we have considered the region with *better* opportunities for employment as the reference category, in both rural and urban areas.

*Health*: Condition of physical health within a family is not directly observable. Thus we have used some broad indicators for good health or poor health in a region. Using the data related these broad indictors households divided in two categories, families living in a *poor health* region and families living in a *better health region.* In the econometric analysis, dummy variable for condition of health in the area of living considered the *better health* region as the reference category. Standard of living of the families from the *poor health* region was compared with families from the other region. Life expectancy at birth (LEB) for 1998-2002 and infant mortality rate (IMR) in 1999 were considered as broad indicators of health in a region. LEB, which is a positive indicator of health, was 61.2 years in rural areas for this period and that in urban areas was 67.9 years. Rajasthan, Uttar Pradesh, Orissa, Assam, Bihar and Madhya Pradesh were the states where LEB was below national average in rural areas. Fifty one per cent of the rural families were living in the *poor health* region and 29 per cent of them were poor. In urban areas of Andhra Pradesh, Bihar, Assam, Rajasthan, Gujarat, Orissa, Madhya Pradesh and Uttar Pradesh LEB was below national average. Accordingly it was found that 49 per cent of the urban families were living in this *poor health* region and 22 per cent of them were poor.

Infant mortality rate, which is a negative indicator of health, had national average of 75 and 44 in rural and urban areas respectively in 1999. In rural areas of Orissa, Madhya Pradesh, Uttar Pradesh, Rajasthan, Assam and Andhra Pradesh, IMR was more than 75. In Uttar Pradesh, Orissa, Rajasthan, Haryana, Bihar, Madhya Pradesh and Gujarat IMR was greater than national average, for urban areas. States with IMR more than national average was considered as *poor health* region. Forty eight per cent of the rural families and 40 per cent of the urban families were located within the *poor health* region. Also, 24 per cent of the rural families from the *poor health* region were poor. The corresponding figure in urban areas was 22 per cent.

*Infrastructure*: To capture the effect of access to infrastructure facilities on the standard of living, four different dimensions, namely, *energy*, *connectivity*, *health facilities* and *communication facilities* were considered here. Using these indicators households was divided into two groups, *first*, families living in places with *poor* infrastructure facilities; *second*, families living in places with *better* infrastructure facilities. To quantify the quality of infrastructure related to energy, state-wise data for annual per capita consumption of electricity in KWH for 1999 were used. Annual consumption of power for this period in India was 353 KWH per person. In Assam, Madhya Pradesh, Himachal Pradesh, Rajasthan, Kerala, West Bengal, Uttar Pradesh and Bihar per capita annual consumption of power fell short of national average. Fifty nine per cent of the rural families and 46 per cent of the urban families were living in these states. Twenty per cent of the rural families and 19 per cent of the urban families, who were living in this inadequately electrified region, were poor.

Road length per 1 lakh population was used to quantify the quality of connectivity within a region. Average road length per 1 lakh population in India in 1999 was 256.1 km. In Bihar, Tamil Nadu, Andhra Pradesh, Gujarat, Uttar Pradesh, Haryana and West Bengal road length was lower than the national average. Shares of families residing in the poorly connected region were 54 per cent and 53 per cent in rural and urban areas respectively. Twenty two per cent of the rural families from the inadequately connected region were poor. The corresponding figure for urban areas was 18 per cent.

We have used population served per hospital bed is as an indicator of quality of infrastructure related to health. Higher the number of individuals served per bed *poor* is the condition of health infrastructure. As on January 1999, number of population served per hospital bed in India was 1328. In Madhya Pradesh, Bihar, Orissa, Haryana, Uttar Pradesh, Rajasthan, Assam, Punjab and West Bengal number of people served per hospital bed was higher than the national average. The share of families who were residing in region with *poor* health facilities was 63 per cent and 48 per cent in rural and urban areas respectively. Twenty seven per cent of the rural families from the *poor* health facility region were economically poor. The corresponding figure in urban areas was 19 per cent.

Quality of communication in a particular region was measured by *teledensity*.[23] In 1999, teledensity in India was around 0.51 and 7.29 in rural and urban areas respectively. In rural areas of Bihar, Madhya Pradesh, Rajasthan, West Bengal, Orissa, Assam and Uttar Pradesh teledensity was lower than the national average. Fifty per cent of the rural households were located within the low teledensity region. In Uttar Pradesh, Karnataka, Andhra Pradesh, Rajasthan, Assam, West Bengal, Bihar and Madhya Pradesh urban teledensity was below national average. Fifty four per cent urban families were residing in the region with *poor* communication facilities. Moreover, 26 per cent of the rural families and 21 per cent of the urban families living in this type of region were poor. The dummies for infrastructure considered the regions with *better* infrastructure facilities as reference category.

*Technological progress*: Intensity of cropping in a region for 1999-2000 was quantified by percentage of net irrigated area to the net sown area. Forty one per cent of the net sown area in the country was irrigated in this period. In Maharashtra, Rajasthan, West Bengal, Orissa, Madhya Pradesh, Gujarat, Karnataka, Assam, Himachal Pradesh and Kerala share of net irrigated land to net sown land was below the country average. Fifty three per cent of the families in rural areas and 58 per cent in urban areas were residing in theses states. Incidence of poverty among households living in the inadequately irrigated area was 21 per cent and 18 per cent in rural and urban area respectively.

Data related to use of chemical fertilizer per hectare of gross cropped area across the states show that, in 1999-2000 average consumption in India was 95.6 kg per hectare. The states where use of fertilizer fell short of national average were Assam, Maharashtra, Gujarat, Kerala, Madhya Pradesh, Orissa, Rajasthan and Himachal Pradesh. Fifty eight per cent of the rural households were living in these states. The corresponding figure in urban sector was 56 per cent. Twenty one per cent of the rural families and 19 per cent of the urban families in these states were poor. Data for percentage of net irrigated area and consumption of fertilizer were used to classify the families in two groups, *first*, families living in a place that is *adequately* developed in terms of technology; and, *second*, place

[23] Teledensity in state is defined as the number of telephone connection per 1,000 populations

that is *not adequately* developed. The reference category for both of these dummies was *adequately* developed region.

*Political stability*: To measure political stability (instability) in a particular state we have compared whether the same political party was elected from the same seat in two consecutive state assembly elections. A constituency was considered as *stable* if the same political party was elected consecutively from a particular constituency. On the other hand if two different parties have won from the same seat in two successive elections, then the constituency was considered as *unstable*. From the data available from the Election Commission of India (ECI), number of *stable* and *unstable* seats in a state was calculated. A state was considered as *politically stable* if the number of *stable* constituencies exceeds the number of *unstable* constituencies. In the opposite scenario, the state would be called *politically unstable*. The years of election, considered here, were 1999-2000 and the year before that. If the current election in a state was not held on 1999-2000, then latest of the state elections and the previous election were considered. The following table gives the list of *politically stable* and *unstable* states calculated in this manner. It is also observed that 65 per cent of the rural families and 61 per cent of the

Table 5: Political stability or instability and states

| Stability/Instability | States |
|---|---|
| Stable | Andhra Pradesh, Gujarat, Himachal Pradesh, Kerala, Madhya Pradesh and West Bengal |
| Unstable | Assam, Bihar, Haryana, Karnataka, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu and Uttar Pradesh |

urban families were located in the *unstable* region. In rural areas, 17 per cent the families living in *politically stable* place were poor. Twenty three per cent of the families from *unstable* region were poor in rural areas. Share of poor families in *politically stable* and *unstable* place in urban areas was 17 per cent and 19 per cent respectively. We have used *stable* region as reference category for the dummy variable for political stability.

*Lawlessness*: Lawlessness in a state was measured by incidence of cognizable crime that falls under the 'Indian Penal Code' (IPC) Act per 1 lakh population.[24] In 1999, rate of crime in India was 178.9 per 1 lakh population. In Rajasthan, Kerala, Madhya Pradesh, Gujarat, Tamil Nadu, Karnataka, Haryana and Maharashtra incidence of crime was higher than the national average. Families were divided in two groups, *first*, families living in *high* crime region (i.e. states with crime rate higher than national rate); and *second*, families living in *low* crime region (i.e. states with crime rate lower than national rate). Forty one per cent of the rural families were located within such region. The corresponding figure for urban areas was 55 per cent. Sixteen per cent of the rural families and 19 per cent of the urban families living in the *high* crime region were poor. The reference category for the dummy for lawlessness was *low* crime region.

*Efficiency of judiciary*: Efficiency of the local judiciary was identified with the percentage of *pending cases* in each state for the total cognizable crimes case in 1999. In this period, 46.8 per cent of the cognizable crime cases were having pending status in India. Households were divided into two categories, *first*, families living in a judicially *efficient* place (i.e. states where % of pending cases were lower than national rate); and *second*, families living in judicially *inefficient* place (i.e. states where % of pending cases were more than national rate). Gujarat, Orissa, Himachal Pradesh, Bihar, Maharashtra, Assam, Kerala, Punjab, Rajasthan, Uttar Pradesh and Madhya Pradesh were the states that constitute the *judicially inefficient* region. Share of rural families that live in such place was 72 per cent whereas 65 per cent of the urban families were residing there. Also, incidence of poverty among families from the judicially *inefficient* region was 24 per cent and 19 per cent in rural and urban areas.

[24] The criminal procedure Code (Cr.P.C) divides all crimes into two broad categories, namely, cognizable (Sec.2(c) CrPc) and Non-cognizable (Sec.2 (1) CrPc). Cognizable crimes are always dealt by the police whereas the non-cognizable crimes are generally left to be pursued by the affected parties themselves in Courts. Again, the cognizable crimes can be of two types, such as, crimes that that fall within the jurisdiction of Indian Penal Code Act and crimes that come under Special Local Laws (SLL). Cognizable crimes that come under IPC Act are, crimes against body, against property, against public order, economic crimes, crimes against women, crimes against children and other IPC crimes.

## Chapter IV
## Results - Binary Logit Regression

In the previous chapters we have outlined the list of possible determinants and the theoretical process of estimating their effect on household standard of living. For estimation we have used two different econometric approaches, *binary logit regression* and *quantile regression.* Binary logit model was used to estimate the probabilities of being labeled as a poor (or non-poor) household. Results from the logit regression suggest that probability of being poor in rural areas was 0.146 and that in urban areas was 0.106. Coefficients estimated in the logit model are not the usual marginal effects as estimated form the least-squares method.[25] Marginal or discrete changes in probability caused by variation in the values of the dependent variable were calculated by keeping other determinants of living standard constant at their mean level. In tables 6 and 7, marginal and the discreet changes in the probabilities being poor are reported

### IV.1 Household Characteristics and Marginal/Discrete Changes in Probability

*Family Size*: It was found that one additional member would increase the probability of being poor by 2.7 per cent in rural areas, holding all other variables at their mean. The corresponding rise probability in urban areas was 3.1 per cent. We have also checked the odds ratios of the effect of an additional member on the poverty status the families.[26] For each additional member, odds of being labeled as poor would increase by a factor of 1.243 in rural areas and 1.393 in urban areas respectively. This clearly shows that an addition to the family size put constraint on the resources on the households. The negative effect of an additional member for the urban families is more prominent. This suggests that urban families live with a constrained budget and adoption of family planning methods may be more beneficial for them.

*Occupation*: Probability of being poor for the occupation class 'Self-employed in Non-agriculture' was higher than the reference category by 4.0 per cent.[27] Being 'Agricultural

[25] See Chapter II.
[26] Odds ratio was used here to compare the odds of being poor against odds of being non-poor.
[27] 'Self-employed in Agriculture' is the reference category in rural areas.

Labour' would increase the probability of being poor by 16.8 per cent (from 0.11 to 0.278). Similarly, Being 'Other Labour' would increase the probability by 13.1 per cent. Estimated coefficient for the 'Other' occupation category was not statistically significant. Possibly the consumption pattern of the households with 'Other' occupation was similar to that of the reference category. The large increases in the probability of being poor for the 'Agricultural Labour' and 'Other Labour' suggest that labour class in the rural areas are severely deprived. Families dependent on manual labour work are possibly landless or marginal landholders. They depend on the on the jobs provided by the economically strong communities in rural areas. Their source of earning is not stable and strongly correlated factors like monsoon, good harvest, etc. On the other hand self-employed families engaged in agricultural and non-agricultural activities are the landed class or the trading community. Over the year they have built up a strong economic base. We can draw conclusion that immediate provisions for the social and employment security measures for the labour class in the rural areas is the need of the time. Effort for the further land reforms is also necessary.

Results of logit regression in urban areas show that probability of being poor for the 'Self-employed' households would increase by 4.0 per cent (from 0.092 for regular to 0.133 for 'Self-employed'). The increase in probability of being poor for the 'Other' category of households was 4.6 per cent (from 0.102 for regular to 0.148 for 'Other'). Lastly, the increase in probability of being poor was largest for the 'Casual Labour' households (an increase of 22 per cent). We can see from these results that labour class in urban areas is most deprived. The plight of the labor class has gone up in recent times with increasing informalisation of the workforce. Families, who migrate to urban centers in search for a better living, could not find job in the formal economy. They are mostly absorbed in the pool of casual labour in the urban areas. Casual labour classes are traditionally being exploited because of the lack of bargaining power on their behalf and are deprived from sufficient wage, employment security, etc.

*Number of adult workers in a family*: An addition to the number of adult worker(s) in a family had a positive effect on the standard of living in both rural and urban areas. For rural families, an additional adult worker would reduce the probability of being poor by 1

per cent. The effect on probability was same in urban areas. Checking the odds ratios, we found that, an additional adult worker would decrease the odds of being poor by factor of 0.926 in rural areas. In urban areas the corresponding figure was 0.901. These results support our conjecture about the effect of additional adult worker on the living standard of the families. However, the effect is not as high as expected.

*Ethnic background*: Results from logit regression show that *backward* caste households had higher probability of being poor than the *non-backward* caste families. Probability of being poor for the *backward* caste families would increase by 8.8 per cent in rural areas. The corresponding rise in the probability in urban areas was 7.7 per cent. Our results suggest that caste still define disparity in India. In fact, these results support the findings form the earlier studies mentioned in chapter I.

Our results show that being 'Muslim' would increase the probability of being poor by 3.4 per cent in rural areas and 3.5 per cent in urban areas. Probability of being poor for the 'Other' religion class would increase by 5.6 per cent in rural areas. However for 'Sikh' households in rural areas, reduction in the probability of being poor was observed (it had decreased by 4.7 per cent). Estimated coefficient for 'Christian' was not statistically significant suggesting that their consumption behaviour was not different from the 'Hindu' households in rural areas. In urban areas, having 'Christian' religion would decrease the probability of being poor by 2.8 per cent. For 'Other' religion the decrease in probability of being poor was 2.6 per cent. Coefficient for the 'Sikh' religion was not statistically significant in urban areas. This was possibly due to the similar consumption pattern of the 'Sikh' and 'Hindu' families in urban areas. The increases in the probability of being poor for the 'Muslim' families in rural and urban areas can be explained by their low literacy, dependency on the traditional means of living, larger family size. Sikh' households have strong economic base in rural areas due to developed farming facilities. In urban areas 'Sikh' families are involved in prosperous trading activities. Also, there exists a strong community network within the 'Christian' and 'Sikh' religion. This explains their relatively better standard of living.

*Ownership of Land*: We have expected that landed households have better standard of living that the landless families. However, coefficient of dummy variable for landownership in rural area was not significant. Actually share of landless families was very little in rural areas.[28] Moreover, landed class had included the small and marginal landholders along with the large landowners. This shows the insufficiency of classifying the families in the rural areas in just two categories on the basis of the landownership Moreover, in urban areas probability of being poor for the landless households had decreased by 3.5 per cent. The contradictory result suggests that urban families probably attach less weight on land as an asset. Poor and lower middle class families cannot afford to purchase high priced land in urban areas. High middle class and rich families, on the other hand prefers to possess other assets like, house, savings account, shares, gold and valuable metals, etc.

*Head of the family – Sex, Education and Age*: In both rural and urban areas, probability of being poor for female-headed households was higher than the male-headed families. In rural areas, the probability of being poor for the female-headed households would increase by 3.4 per cent. The corresponding rise in probability in urban areas was 1.5 per cent. Our result for this feature of the households is expected and supports the findings of the existing researches.

Probability of being poor for the families with households-head who are *illiterate or educated below primary level* in rural areas would be higher than the reference category by 9.8 per cent. Similarly, in urban areas, probability of this type of families of being poor would increase by 14.4 per cent. This result also goes well with our conjecture about the effect of the education of the head on the family on the standard of living.

In rural areas, single year increase in the age of the head of household would decrease the probability of being poor by 0.3 per cent only. In urban areas the same increase in age of the head would reduce probability by 0.2 per cent only. Looking at the odds ratios we see that, one-year increase in the age of the head of household would reduce odds of being poor by a factor of 0.978 in rural areas. In urban areas odds of being

[28] See chapter III.

poor reduced by factor of 0.975 for single year increase in the head of the household. These results support our hypothesis that households with more experienced family head have better standard of living. However, the positive effects of the higher age of the family head on the standard of living were only marginal.

Table 6a: Discrete changes in the probability of being poor in rural areas

| Characteristics | from: x = 0 | to: x = 1 | Discrete Changes in Probability |
|---|---|---|---|
| Self-employed in Non-agriculture | 0.1408 | 0.1812 | 0.0404 |
| Agricultural Labour | 0.1104 | 0.2783 | 0.1679 |
| Other Labour | 0.1388 | 0.2699 | 0.1311 |
| Muslim | 0.1431 | 0.1772 | 0.0341 |
| Sikh | 0.1478 | 0.1006 | -0.0472 |
| Other Religion | 0.1458 | 0.2020 | 0.0562 |
| Caste | 0.0933 | 0.1805 | 0.0872 |
| Head-sex | 0.1432 | 0.1755 | 0.0323 |
| Head-education | 0.0925 | 0.1909 | 0.0984 |
| Prosperity | 0.0008 | 0.7303 | 0.7295 |
| Administrative Responsiveness | 0.5634 | 0.0272 | -0.5362 |
| Knowledge Environment | 0.3665 | 0.0664 | -0.3001 |
| Unemployment | 0.1596 | 0.1283 | -0.0313 |
| Life Expectancy at Birth | 0.0694 | 0.2770 | 0.2076 |
| Infant Mortality Rate | 0.1916 | 0.1070 | -0.0846 |
| Electricity | 0.0570 | 0.2586 | 0.2016 |
| Road Length | 0.0687 | 0.2576 | 0.1889 |
| Hospital Bed | 0.2474 | 0.1050 | -0.1424 |
| Teledensity | 0.7349 | 0.0223 | -0.7126 |
| Irrigation | 0.0311 | 0.4268 | 0.3957 |
| Fertilizer | 0.3472 | 0.0340 | -0.3132 |
| Political Stability | 0.0309 | 0.2935 | 0.2626 |
| Judicial Efficiency | 0.0613 | 0.2006 | 0.1393 |

Note: '0'stands for the reference category. Results for the characteristics 'Other Household', 'Christian', 'Land' and 'Crime' are not given here, as the estimated coefficients were not statistically significant.

Table 6b: Marginal changes in the probability of being poor in rural areas

| Characteristics | from: x = min | to: x = max | Diff: min to max | Marginal Effect | Factor Change in Odds |
|---|---|---|---|---|---|
| Family Size | 0.0633 | 0.9998 | 0.9364 | 0.0271 | 1.2427 |
| Number of Adult Worker | 0.1671 | 0.0359 | -0.1313 | -0.0028 | 0.9262 |
| Head-age | 0.3147 | 0.0485 | -0.2663 | -0.0096 | 0.9776 |

Table 7a: Discrete changes in the probability of being poor in urban areas

| Characteristics | from: x = 0 | to: x = 1 | Discrete Changes in Probability |
|---|---|---|---|
| Self-employed | 0.0919 | 0.1326 | 0.0407 |
| Casual | 0.0882 | 0.3080 | 0.2198 |
| Other Household | 0.1018 | 0.1477 | 0.0459 |
| Muslim | 0.1008 | 0.1363 | 0.0355 |
| Christian | 0.1065 | 0.0785 | -0.0280 |
| Other Religion | 0.1061 | 0.0798 | -0.0263 |
| Caste | 0.0756 | 0.1523 | 0.0767 |
| Land | 0.1191 | 0.0839 | -0.0352 |
| Head-sex | 0.1041 | 0.1189 | 0.0148 |
| Head-education | 0.0743 | 0.2187 | 0.1444 |
| Prosperity | 0.0125 | 0.5035 | 0.4910 |
| Administrative Responsiveness | 0.1997 | 0.0382 | -0.1615 |
| Life Expectancy at Birth | 0.2000 | 0.0519 | -0.1481 |
| Electricity | 0.1314 | 0.0814 | -0.0500 |
| Road Length | 0.0597 | 0.1711 | 0.1114 |
| Hospital Bed | 0.2520 | 0.0367 | -0.2153 |
| Irrigation | 0.0648 | 0.1481 | 0.0833 |
| Fertilizer | 0.1461 | 0.0680 | -0.0781 |
| Political Stability | 0.0675 | 0.1388 | 0.0713 |
| Crime | 0.0698 | 0.1465 | 0.0767 |
| Judicial Efficiency | 0.0413 | 0.1692 | 0.1279 |

Note: '0'stands for the reference category. Results for the characteristics 'Sikh', 'Knowledge Environment', 'Unemployment' and 'Teledensity' are not given here, as the estimated coefficients were not statistically significant.

Table 7b: Marginal changes in the probability of being poor in urban areas

| Characteristics | from: x = min | to: x = max | Diff: min to max | Marginal Effect | Factor Change in Odds |
|---|---|---|---|---|---|
| Family Size | 0.0342 | 0.9981 | 0.9639 | 0.0313 | 1.3934 |
| Number of Adult Worker | 0.1213 | 0.0345 | -0.0867 | -0.0098 | 0.9013 |
| Head-age | 0.2572 | 0.0294 | -0.2278 | 0.0023 | 0.9754 |

### IV.2. Local Amenities and Discrete Changes in Probability

*Prosperity*: We have expected that families living in a prosperous place have better standard of living. The effect on probability of being poor, as estimated from the logit regression supports this hypothesis. In fact the effect of prosperity in a region on the standard of living of the families was very large. Probability of being poor for the rural families living in a *less* prosperous region was higher by 73.0 per cent than the families living in *more* prosperous region. In urban areas, the increase in probability of being poor

for the families from *less* prosperous region was 49.1 per cent. Prosperity in a region indicates overall development in that place. Households have better employment opportunities and enjoy other facilities that can be made available with the accumulated wealth in the region. As a result we have observed such large impact of the prosperity on the standard of living of the households.

*Responsiveness of the administration to the development needs*: Results form the logit regression do not give support to the idea that households living in *more* responsive region have less probability of being poor. We have found that the probabilities of being poor would decrease in *less* responsive region by 53.6 per cent and 16.2 per cent in rural and urban areas respectively. There may be two reasons for these contradictory results. *One*, the level of development expenditure is generally high in less developed region than the developed region. As a result concentration of poor families is high in *more* responsive places. *Second*, per capita development expenditure may not be a suitable proxy for the willingness of the local administration for the development in the region.

*Knowledge environment:* We have found that probability of being poor in *low* literate region would decrease by 30 per cent in rural areas. This is contrary to the idea that high literacy in region has a positive effect on the standard of living of the families. But the results of the effect of education of the family-head show that better educated families have low probability of being poor. Form these two results we may conclude that effect of education on the standard of living is internally decided within the households in rural areas. Literacy in the place of living has little effect on the household living standard. In urban areas, the dummy for literacy did not yield statistically significant result. In fact urban literacy rates between the states did not vary much. Hence the results did not show the expected difference in probabilities of being poor in the *high* and *low* literate places.

*Lack of opportunities for employment for youth*: Probability of being poor for families living in a place with *low* opportunities for employment for youth was lower than the reference category by 3.1 per cent in rural areas. This is contrary to our belief that high unemployment in a region would negatively affect the living standard of the households. However, we have found that open unemployment in rural India was low. Also, in some

of the developed states high unemployment among the youth indicate continuation with higher studies. Lastly, except for few states, rate of unemployment among the youth did not vary much. As a consequence we cannot firmly say that higher rates of unemployment among youth in rural areas would adversely affect the well-being of the families. Moreover, the dummy for unemployment rate in urban areas was not statistically significant. This may be due to the reason that in urban areas differences in unemployment rates between the *low* opportunity region and the *high* opportunity region was not much.

*Health*: We have expected that standard of living of the families living in a *poor* health region would be poor. In rural areas the results for the dummy for life expectancy at birth show that families have higher probability of being poor in a *poor* health region than a *better* health region. Probability of being poor in a *poor* health region was higher by 20.8 per cent in rural areas. On the contrary in urban areas, the probability of being poor would decrease by 14.8 per cent in *poor* health region. In rural areas, families are still dependent on manual work, which needs good physical health. In urban areas work environment are becoming mechanized increasingly. This explains the positive effects of good health on the standard of living in rural areas. We have observed that LEBs across the states in urban areas did not vary much. Thus differences in the living standard of the urban families on the basis of the LEB could not prove the conventional idea.

Probability of being poor in rural areas would decrease by 8.5 per cent in places with *low* IMR than *high* IMR region. This does not support our conjecture about the positive effects of good health on standard of living in rural areas. IMR in rural areas, except for few states, does not vary much. So division in consumption behaviour of the households on the basis of IMR in the place of residence may not show significant differences. Lastly, statistical tests have shown that the dummy for IMR was collinear with the dummy for LEB in urban areas. Hence the dummy for IMR in urban areas was dropped from the final analysis.

*Infrastructure*: Adequate availability of electricity should improve the standard of living of the families. It is observed that probability of being poor was higher by 20.2 per cent

in poorly electrified region than the better-electrified places in rural areas. On the contrary, probability of being poor in urban areas would decrease by 5.0 per cent in less electrified places. In less developed states energy requirement of the rural families are mostly met by the traditional sources. On the hand electricity is made available to rural families in relatively progressive states. Hence concentration of better-off families in rural areas was found in those states. On the other hand in urban areas, differences in consumption of power in less electrified places and better-electrified places are not much. As a result, consumption behaviour of the urban families in less-electrified places and better-electrified places did not show expected differences.

Road connectivity had a significant effect on the poverty status of the households. Probability of being poor in inadequately connected places would increase by 18.9 per cent in rural areas. The corresponding increase in probability of being poor in urban areas was 11.1 per cent. Better road connectivity is very important for the families. Families living in well-connected region can access better employment opportunities, schooling facilities, health facilities, etc. available in others areas. But, families living in remote places are denied of these facilities. This results support our conjecture about the impact of road connectivity on standard of living.

We also assumed that better health infrastructure would have a positive effect on the standard of living of the families. However, in both rural and urban areas, the probability of being poor had actually gone down in places with better health facilities. In rural areas it had decreased by 14.2 per cent and in urban areas the decrease was 21.5 per cent. Condition of health infrastructure in rural India is uniformly poor. On the other hand, health facilities are available in most of the urban centers. Because of this, we cannot expect consumption pattern of the households would be significantly different between places with good health facilities and inadequate facilities.

Teledensity in rural areas are uniformly poor across the states. Hence communication facilities did not significantly affect the standard of living of the rural families. In fact probability of being poor had actually gone down in rural areas with poor communication facilities. Statistical procedure suggested colinearity of the dummy for

teledensity in urban areas. Hence this particular feature was dropped from the final analysis.

*Technological progress*: In rural areas, probability of being poor in less-irrigated areas was higher by 39.6 per cent than the high-irrigated places. In urban areas, probability of being poor would increase by 8.3 per cent in inadequately irrigated places. These results support our hypothesis that technological development measured in terms of extent of irrigation has positive effect on the standard of living of the families. Moreover, impact of availability of irrigation facilities on the standard of living of the urban families is indeed limited.

It was found that probability of being poor in places with less than average use of chemical fertilizer would decrease by 31.3 per cent and 7.8 per cent in rural and urban areas respectively. These results are contradictory to our hypothesis. Possibly, use of chemical fertilizer is not a suitable proxy for technological development. In some of the developed states, like Maharashtra and Gujarat, agriculture is not the prime mover of the economy. Again, in states, like Himachal Pradesh, economy was not traditionally dependent on agriculture. These states also came under the category where consumption of chemical fertilizer fell short of national average. As a result classification of the households on the basis of use of fertlizer did not produce the desired results.

*Political stability*: Our hypothesis was that political stability has a significant effect on the standard of living of the families. The probability of being poor in *politically unstable* places was higher by 26.3 per cent than the *politically stable* places in the rural areas. Similarly, in urban areas, probability of being poor in *politically unstable* places would increase by 7.1 per cent. The results support our conjecture about the effect of political stability. Notice that, impact was greater on the rural families than the urban households. This suggests that rural households are more vulnerable to the fluctuations in policy changes caused by political instability. On the other hand urban families, especially middle class and the rich households, have greater say over the policy formulations. They are also protected form vulnerabilities due to vote bank politics.

*Lawlessness*: Coefficient of the dummy variable for crime rate in rural areas was not statistically significant. Crimes in rural areas are largely not reported. Also, there still exists a cooperative atmosphere in rural areas. As a result crimes in rural areas are not as high as the urban centers. On the contrary, crimes in urban areas have increased manifolds in recent times. It has taken up new forms. Explosive growth in urban population, incessant migration from rural areas, growing aspiration of the youth, greater economic inequality, etc. has caused the crimes in urban areas to shoot up. There is a growing sense of insecurity among the families. Our result from logit regression also supports this. We have found that probability of being poor in *high* crime region was higher by 7.7 per cent than the *low* crime region in urban areas.

*Efficiency of judiciary*: Probability of being poor in judicially *inefficient* region was higher by 13.9 per cent than the judicially *efficient* region in rural areas. Similarly, in urban areas, the probability of being poor in *inefficient* region would increase by 12.8 per cent. Our results support the hypothesis that judicial efficiency (inefficiency) has a significant impact on the standard of living of the families.

# Chapter V
## Results- Quantile Regression

In the previous section we have delineated what were the probabilities of having a particular standard of living (poor or non-poor) and how they vary with changes in the characteristics possessed by families and local amenities (disamenities). In this chapter we will be representing the findings of the *quantile regression* process. As mentioned earlier, the purpose of using this regression is to check whether the effects of household and location specific characteristics vary with the changes in standard of living of the families. Monthly per capita consumption expenditure of the families is taken to be the proxy for standard of living. The results from the quantile regression for rural and urban areas are given in Table 9 and 10 respectively. We will also give the results from OLS regression. Coefficients estimated through least-squares method gives the marginal changes in the consumption expenditure at their mean for a unit change in the values of the determinants.

### V.1 Household Characteristics and Changes in MPCE

*Family size*: Estimated coefficients show that an additional family member had a negative and significant effect on the per capita monthly expenditure of the households. The OLS results for rural areas suggest that an additional member in the family would reduce MPCE by 5 per cent. The corresponding reduction in urban areas was 10 per cent. On the other hand quantile regression results show that in rural areas effect of an additional member was more or less uniform across the expenditure quantiles. The poor families (at the $10^{th}$ and $25^{th}$ quantiles) in rural areas had to reduce consumption expenditure by 5.4 per cent for an additional member. Similarly, the rich families had to reduce expenditure by 5.4 per cent at the $75^{th}$ quantile and 5.2 per cent at the $90^{th}$ quantile. In contrast, the effect of an additional member is descending across the quantiles in urban areas. The poor families (at the $10^{th}$ and $25^{th}$ quantiles) had sacrificed 8.7 per cent and 9.4 per cent of their consumption for an addition to the family size. The reduction in the median expenditure quantile was 10.1 per cent. The reduction in MPCE for the rich households (at the $75^{th}$ and $90^{th}$ quantile) was 10.4 per cent and 10.5 per cent. These results support

the findings from the logit regression. These findings further show the how much consumption the families have to forego for an additional family member. Poor households had to sacrifice between 5 per cent 9 per cent of their consumption. This is a significant loss for them. Rich urban families sacrifice more, indicating the tight budgetary condition they live in. The quantile regression results indicate that benefits of family planning. Poor and rich families both can gain by restricting their family size.

*Occupation*: A self-employed family in non-agriculture in the poorest expenditure quantile was consuming 5.2 per cent less than that of a self-employed household in agriculture. At the $25^{th}$ and median quantile, being self-employed in non-agriculture activities would reduce consumption by 4.4 per cent and 2.6 per cent. The results for higher expenditure quantiles were not statistically significant. This suggests that the consumption pattern of the rich self-employed families engaged either in farm or non-farm activities are more or less similar. Also, we can infer that there exists a difference within the self-employed families in non-farm activities at lower and median quantiles. However, as purchasing power increases, the inequality within the group reduces.

In contrast, the difference in MPCE between the 'Agricultural Labour' households and the reference category was ascending across the expenditure quantiles. The poorest of the 'Agricultural Labour' families consumed 29.8 per cent less. Being 'Agricultural Labour' would reduce consumption by 31.2 per cent and 35.3 per cent at the $25^{th}$ and $50^{th}$ quantile. In the higher expenditure categories ($75^{th}$ and $90^{th}$ quantiles) expenditure would reduce by 41.6 per cent and 46.5 per cent. The presence of this occupation class at higher expenditure quantiles suggests some of the families receive additional income from other sources, like remittances sent by the relatives. However, share of these types of families are very low. Above-mentioned results suggest that standard of living of the families with 'Agricultural Labour' as main occupation is lower than the self-employed farmers. The differences in the estimated coefficients across the quantiles further points out that standard of living of the 'Agricultural Labour' households are not uniform.

The standard of living of 'Other Labour' families was lower than the self-employed farmers. However, the gaps between consumption for the 'Other Labour' and the reference category were not as large as the 'Agricultural Labour'. We have expected that even within the 'Other Labour' category standard of living would vary. Being, 'Other Labour' would reduce consumption by 23.5 per cent at the $10^{th}$ quantile and 19.9 per cent at the $25^{th}$ quantile. However, reduction in expenditure at higher quantiles ($75^{th}$ and $90^{th}$ quantile) was 23.6 percent and 26.7 per cent. Inequality of the estimated coefficients across the expenditure quantiles supports our hypothesis. In rural areas, some of the non-farm labour works, like, construction works, machine repairing, etc. are high paying. This explains the presence of 'Other Labour' households in top expenditure quantiles.

Only the households with 'Other' type of occupation had consistently performed better than the self-employed families engaged in farming. Households of this type consumed 8.6 percent more than the reference category in the $10^{th}$ quantile. Being 'Other' household would increase MPCE of the families by 12 per cent and 15.4 per cent at the $25^{th}$ and $50^{th}$ quantile. At higher expenditure quantiles ($75^{th}$ and $90^{th}$) MPCE of the 'Other' families would further increase by 16.9 per cent and 18.0 per cent. The coefficients show that 'Other' types of families are the most prosperous families in rural areas. Possibly they are the large landholders who do not directly participate in agriculture. Also, they are likely to hold some important administrative post in the villages and have political power.

In urban areas, being 'Self-employed' would reduce the expenditure of the families by 9.9 per cent at the $10^{th}$ expenditure quantile. As we move up the distribution, the gap between the expenditure of the self-employed families and the regular salary earning families diminished. Coefficient for the highest expenditure quantile was not statistically significant. The results show that standard of living of the rich self-employed households was not much different from the rich 'Regular Wage/Salary Earning' families. Moreover we see a converging pattern in the standard of living of these two types of families.

The gap between MPCE for the households working as 'Casual Labour' and the 'Regular Salary/Wage Earning' households had worsened across the expenditure quantiles. The expenditure gap had increased from 41.2 per cent at $10^{th}$ quantile to 65.1 per cent at the highest expenditure quantile. The result for the higher expenditure quantiles should not be given much importance as the presence of "Casual Labour' in the higher quantiles was minuscule. The differences in the estimated coefficients suggest that even within the 'Casual Labour' class there is dissimilarity in standard of living across the quantiles.

The coefficients estimated for different expenditure quantiles for the dummy for the 'Other' occupation class were not statistically significant, except for the $25^{th}$ quantile. This suggests that standard of living of the 'Other' families and 'Regular Wage/Salary Earning' families in urban areas are not significantly different.

*Number of adult workers in a family*: We hypothesised that an addition to the number of adult workers in a family would improve their standard of living. We further assumed that the effect of additional adult worker in the family would not be uniform across the expenditure quantiles. Results for the quantile regression process support these hypotheses. In rural areas an additional adult worker would increase the MPCE of the poor ($10^{th}$ and $25^{th}$ quantile) families by 1.8 per cent and 1.4 per cent. In the median quantiles the expenditures improved by 1.2 per cent. For the rich households ($75^{th}$ and $90^{th}$ quantile) the MPCE increased by 0.9 per cent and 0.7 per cent. These coefficients tell us that poor families derive higher benefit due to an additional adult worker. For rich families who are already achieved a comfortable standard of living, an additional worker does not does not bring higher benefits. Rural households generally depend on agriculture and other traditional activities to earn a living. In rural India, traditional sector is already overcrowded and opportunities for improved earning are limited. When a member of a family enters the rural labour market, she/he has to depend on these traditional sources of employment. Hence for the rich families, an additional adult worker does not mean higher benefits. On the other hand poor families, marginal improvements in earning would bring higher benefits.

In contrast, rich urban families derive higher benefit from additional adult worker. An additional adult worker would increase the MPCE of the families by 3.3 per cent 5.7 per cent the in $75^{th}$ and $90^{th}$ quantile. On the other hand MPCE of the families in $10^{th}$ quantile had increased by only 2.4 per cent. The increase in MPCE of the urban families in the $25^{th}$ and $50^{th}$ quantile was 2.0 per cent due to an addition to the number of adult workers in the family. In urban areas, opportunities for employment are diverse and earning potential is also high. However, availing better employment opportunities in urban areas require higher education. Members from rich families can afford to educate themselves sufficiently to pursue a high paying career. As a result we see that rich families derive large benefits from an additional adult worker.

*Ethnic background*: Least squares results show that consumption expenditure of the *backward* caste households was lower than the *non-backward* caste families. Results from the quantile regression show that being backward caste would reduce consumption expenditure of the rural families by 15.7 per cent in the $10^{th}$ and $25^{th}$ quantiles. In rest of the quantiles, expenditure of the *backward* families was lower by 15.5 per cent. The coefficients estimated were also statistically significant. From these results we can conclude that standard of living of the *backward* caste families are lower than the others. Moreover, within the *backward* caste households there exists dissimilarity in standard of living. In urban areas, coefficients were different and statistically significant across the quantiles. Hence inequality within the *backward* caste families was observed in urban areas. Moreover, the estimated coefficients were ascending across the quantiles. This suggests that gap in the standard of living between the *backward* and *non-backward* caste households widens with improvements in the consumption expenditure.

Being 'Muslim' would reduce the MPCE of the poor ($10^{th}$ and $25^{th}$ quantiles) households by 3.2 per cent and 3.6 per cent in the rural areas. On the other hand, in urban areas, being 'Muslim' would reduce the expenditure of the poor families by 8.5 per cent and 7.3 per cent. At the median expenditure quantile ($50^{th}$ quantile) the MPCE of the 'Muslim' families was lower than the 'Hindu' households by 2.6 per cent and 7.3 per cent in rural and urban areas. At higher expenditure quantiles the gap between the 'Muslim' and 'Hindu' families had widened. These results suggest that there still remains

a considerable gap in the standard of living between the 'Muslim' and 'Hindu' families. Even for the rich families, the standard of living did not show any sign of convergence between the 'Hindu' and 'Muslim' households. Quantile regression results for the dummy for 'Christian' families show that MPCE of these families were marginally lower than the 'Hindu' families in rural areas. However, none of these coefficients were statistically significant. This is possibly due to the fact standard of living of the 'Christian' families are not significantly different form the 'Hindu' households. 'Christian' families have a strong networking within themselves and literacy is quite high for these families. As a result standard of living of the Christians expected to be high or equal to the Hindus. Our hypothesis is verified from the results of the quantile regression in urban areas. Being 'Christian' would increase the MPCE of the families by 6.7 per cent in the $10^{th}$ quantile and 6.2 per cent in the $25^{th}$ quantile. For rich families the increase in MPCE was 10.2 pr cent and 10.6 per cent in the $75^{th}$ and $90^{th}$ quantiles. We have expected that 'Sikh' families have better standard of living. Over the years Sikhs have developed a strong economic base in both rural and urban areas. Being 'Sikh' would increase the MPCE in rural areas by 9.3 per cent and 11.2 per cent in the $10^{th}$ and $25^{th}$ expenditure quantiles. The corresponding figures in urban areas were 13.6 per cent and 10.4 per cent. At the higher quantiles ($75^{th}$ and $90^{th}$ quantiles) being 'Sikh' would increase the MPCE by 13.1 per cent and 14.6 per cent in rural areas. Similarly, in urban areas MPCE would increase by 10.8 per cent and 7.4 per cent. The coefficients show sign of convergences between the Sikhs and Hindus in the standard of living in urban areas. However, in rural areas the gap between the standard of living of 'Sikh' and 'Hindu' families had widened in higher expenditure quantiles. 'Sikh' families dependent on agriculture in rural areas from the higher expenditure quantiles are highly prosperous. This explains the very high standard of living among the Sikhs in rural areas. Lastly, coefficients for the dummy for 'Other' religion class were not statistically significant at higher expenditure quantiles in rural areas. This is possibly due to the fact that consumption expenditure of the families from 'Other' and 'Hindu' religion are similar. On the other hand coefficients for the dummy for 'Other' religion were statistically significant across the quantiles in urban areas. Moreover, the gap in standard of living between the 'Other' religion families and 'Hindu' families had widened with

improvements in expenditures. We can also infer from these results that there exists a variation within the 'Other' religion families.

*Land ownership*: In rural areas, landless families with lower standards of living were performing poorly. MPCE of landless family was lower than that of a landed family by 10.2 per cent in the $10^{th}$ expenditure quantile. This gap had further increased to 11.5 per cent in the $25^{th}$ expenditure percentile. At the median quantiles the gap was 9.4 per cent. In the higher quantiles, the results were not significant. We can infer from these results that landownership has a significant impact on the standard of living of the poor and middle class families. However, for rich families ownership of land does is not of great importance. In urban areas being landless would cause the MPCE of the families to fall by 7.4 per cent and 8.9 per cent in the $10^{th}$ and $25^{th}$ quantile. At the $50^{th}$ quantile MPCE of the landless families was lower by 6.5 per cent. At the higher expenditure quantiles ($75^{th}$ and $90^{th}$ quantiles), being landless would cause the MPCE to fall by 4.8 per cent and 5 per cent. These coefficients were statistically significant. The results of quantile regression for urban areas suggest that, ownership of land significantly affect consumption expenditure of the poor families. However, for rich families land as an asset is not as important as the poor. Rich in urban areas has strong economic base and prefers other assets like savings in bank, house, shares, etc. in their portfolio.

*Head of the family – Sex, Education and Age*: The quantile regression results in rural areas show at $10^{th}$ quantile, MPCE of the female-headed families was lower by 2.3 per cent than the male-headed households. In the other expenditure quantiles the MPCE of the female-headed households were marginally higher than the male-headed families. However, none of the coefficients were statistically significant, except for the $50^{th}$ quantile. In urban areas the estimated coefficients for different expenditure quantiles were not statistically significant. This shows that consumption pattern of the female and male-headed families are not significantly different across the expenditure quantiles.

In both rural and urban areas, households with illiterate or less educated family-head have lower MPCE across the expenditure quantiles. At lower quantiles ($10^{th}$ and $25^{th}$ quantiles) the differences between MPCE of the families with lowly educated head

and highly educated head were 16.0 per cent and 17.7 per cent respectively in rural areas. The corresponding figures in urban areas were 27.2 per cent and 32.7 per cent respectively. In rural areas, at the higher expenditure quantiles ($75^{th}$ and $90^{th}$) these gaps increased to 24.8 per cent 29.0 per cent respectively. In urban areas, the gaps in MPCE for higher expenditure quantiles were far more prominent (41.4 per cent and 49.2 per cent at the $75^{th}$ and $90^{th}$ quantiles respectively). These results suggest that education of the family-head has a major influence on the standard of living of the families. The wide differences in MPCE for these two types of families at higher expenditure quantiles further suggest that effect of education on the rich and middle class families are far more prominent than the poor.

Our results suggest that the effect of the age of the family-head on the expenditure pattern was significant but marginal. In rural areas, MPCE of the poor families ($10^{th}$ and $25^{th}$ quantile) had increased by only 0.4 per cent for a single year increase in the age of the family head. In the $50^{th}$ and $75^{th}$ quantile the increase was only 0.5 per cent. At the highest quantile the increase was only 0.6 per cent. In urban areas, a one-year rise in the age of the family head would cause the MPCE to increase by 0.5 per cent for the poor families. In the median quantile in urban areas the increase was 0.6 per cent. For the rich families the corresponding rise in MPCE was only 0.7 per cent. The marginal increases in the MPCE of the families with age of the family-head suggest that experience of the family-head has a weak effect on the standard of living of the families. However, statistically significant coefficients across the expenditure quantiles tell us that impacts of the age of the family-head are dissimilar at different levels of standard of living.

Table 8: Quantile regression and OLS results for rural areas

| *Characteristics* | **10%** | **25%** | **50%** | **75%** | **90%** | **OLS** |
|---|---|---|---|---|---|---|
| Family size | -0.054 | -0.054 | -0.056 | -0.054 | -0.052 | -0.05 |
| | (39.10)** | (49.23)** | (54.69)** | (47.65)** | (34.84)** | (71.04)** |
| Self-employed in Non-Agriculture | -0.052 | -0.044 | -0.026 | -0.013 | -0.002 | -0.03 |
| | (3.36)** | (3.78)** | (2.35)* | (0.88) | (0.07) | (3.42)** |
| Agricultural Labour | -0.298 | -0.312 | -0.353 | -0.416 | -0.465 | -0.38 |
| | (19.77)** | (27.12)** | (33.79)** | (28.06)** | (21.45)** | (35.95)** |
| Other Labour | -0.235 | -0.199 | -0.204 | -0.24 | -0.236 | -0.23 |
| | (9.43)** | (10.28)** | (11.73)** | (10.39)** | (7.73)** | (15.13)** |
| Other Household | 0.086 | 0.12 | 0.154 | 0.169 | 0.18 | 0.14 |
| | (5.04)** | (8.75)** | (12.54)** | (12.57)** | (7.83)** | (14.97)** |
| Number of Adult Worker | 0.018 | 0.014 | 0.012 | 0.009 | 0.007 | 0.01 |
| | (7.30)** | (6.93)** | (5.83)** | (4.05)** | (2.10)* | (7.61)** |
| Caste | -0.157 | -0.157 | -0.155 | -0.155 | -0.155 | -0.16 |
| | (17.70)** | (21.27)** | (26.00)** | (19.58)** | (12.85)** | (28.17)** |
| Muslim | -0.032 | -0.036 | -0.026 | -0.029 | -0.032 | -0.03 |
| | (3.87)** | (5.84)** | (4.01)** | (4.16)** | (3.03)** | (4.70)** |
| Christian | -0.01 | 0.007 | -0.015 | -0.014 | -0.028 | -0.01 |
| | (0.57) | (0.56) | (1.03) | (0.82) | (1.23) | (0.81) |
| Sikh | 0.093 | 0.112 | 0.126 | 0.131 | 0.146 | 0.14 |
| | (4.90)** | (4.96)** | (6.99)** | (6.26)** | (5.11)** | (9.03)** |
| Other Religion | -0.097 | -0.063 | -0.037 | -0.016 | 0.026 | -0.04 |
| | (2.83)** | (2.50)* | (1.89) | (0.58) | (0.81) | (2.19)* |
| Land | -0.102 | -0.115 | -0.094 | -0.051 | -0.062 | -0.09 |
| | (2.89)** | (3.22)** | (2.63)** | (1.35) | (1.17) | (3.19)** |
| Head-sex | -0.023 | 0.005 | 0.046 | 0.073 | 0.058 | 0.04 |
| | (1.35) | (0.41) | (3.04)** | (5.24)** | (2.74)** | (3.45)** |
| Head-Age | 0.004 | 0.004 | 0.005 | 0.005 | 0.006 | 0.01 |
| | (21.43)** | (26.37)** | (29.71)** | (29.63)** | (23.62)** | (39.35)** |
| Head-Education | -0.16 | -0.177 | -0.2 | -0.248 | -0.29 | -0.22 |
| | (17.13)** | (25.21)** | (29.31)** | (32.30)** | (26.89)** | (40.40)** |
| Prosperity | -1.447 | -1.418 | -1.337 | -1.253 | -1.135 | -1.28 |
| | (15.29)** | (18.19)** | (16.55)** | (13.81)** | (9.54)** | (20.37)** |
| Administrative Responsiveness | 0.734 | 0.684 | 0.599 | 0.498 | 0.406 | 0.56 |
| | (18.22)** | (18.77)** | (16.28)** | (11.91)** | (7.64)** | (19.74)** |
| Knowledge Environment | 0.336 | 0.352 | 0.366 | 0.399 | 0.385 | 0.37 |
| | (16.24)** | (20.82)** | (26.86)** | (24.30)** | (17.76)** | (28.66)** |
| Unemployment | 0.046 | 0.046 | 0.06 | 0.096 | 0.111 | 0.07 |
| | (3.78)** | (5.18)** | (7.34)** | (8.69)** | (7.58)** | (9.92)** |
| Life Expectancy at Birth | -0.236 | -0.32 | -0.403 | -0.528 | -0.58 | -0.43 |
| | (6.25)** | (10.22)** | (14.92)** | (15.41)** | (11.44)** | (17.42)** |
| IMR | 0.082 | 0.112 | 0.171 | 0.243 | 0.27 | 0.18 |
| | (5.64)** | (10.18)** | (16.41)** | (16.27)** | (14.04)** | (18.60)** |

*Continued ...*

Table 8: (continued)

| Characteristics | 10% | 25% | 50% | 75% | 90% | OLS |
|---|---|---|---|---|---|---|
| Electricity | -0.355 | -0.326 | -0.273 | -0.205 | -0.155 | -0.25 |
| | (9.93)** | (10.09)** | (8.29)** | (5.68)** | (3.25)** | (10.15)** |
| Road length | -0.32 | -0.284 | -0.23 | -0.179 | -0.172 | -0.23 |
| | (10.36)** | (9.59)** | (7.56)** | (5.63)** | (3.98)** | (10.29)** |
| Hospital Bed | 0.157 | 0.143 | 0.152 | 0.141 | 0.094 | 0.14 |
| | (5.96)** | (7.12)** | (7.42)** | (6.20)** | (2.99)** | (8.85)** |
| Teledensity | 0.872 | 0.906 | 0.851 | 0.804 | 0.792 | 0.83 |
| | (8.46)** | (10.63)** | (9.38)** | (8.31)** | (6.00)** | (12.17)** |
| Irrigation | -0.58 | -0.577 | -0.533 | -0.496 | -0.505 | -0.53 |
| | (12.65)** | (14.30)** | (12.80)** | (11.34)** | (8.35)** | (16.80)** |
| Fertilizer | 0.441 | 0.453 | 0.415 | 0.35 | 0.283 | 0.39 |
| | (11.85)** | (14.14)** | (14.36)** | (10.63)** | (6.74)** | (15.69)** |
| Political Stability | -0.49 | -0.461 | -0.401 | -0.341 | -0.312 | -0.38 |
| | (12.94)** | (13.99)** | (11.86)** | (8.94)** | (6.31)** | (15.18)** |
| Crime | 0.031 | 0.047 | 0.067 | 0.104 | 0.146 | 0.08 |
| | (2.31)* | (5.08)** | (7.69)** | (9.55)** | (10.32)** | (9.95)** |
| Judicial Efficiency | -0.205 | -0.193 | -0.16 | -0.079 | -0.044 | -0.13 |
| | (7.62)** | (9.23)** | (8.15)** | (3.33)** | -1.34 | (7.58)** |
| Constant | 6.867 | 7.011 | 7.128 | 7.253 | 7.476 | 7.12 |
| | (87.09)** | (99.16)** | (100.14)** | (91.88)** | (67.75)** | (133.21)** |
| (Pseudo) R-squared | 0.18 | 0.20 | 0.22 | 0.23 | 0.24 | 0.37 |
| Observations | 61,711 | | | | | |

Note: *t* statistics is given in the parenthesis.

* Statistically significant at 5% level; ** Statistically Significant at 1% level.

Table 9: Quantile regression and OLS results for urban areas

| Characteristics | 10% | 25% | 50% | 75% | 90% | OLS |
|---|---|---|---|---|---|---|
| Family Size | -0.087 | -0.094 | -0.101 | -0.104 | -0.105 | -0.10 |
| | (43.93)** | (54.45)** | (60.81)** | (52.01)** | (47.96)** | (82.74)** |
| Self-employed | -0.099 | -0.097 | -0.077 | -0.038 | 0.008 | -0.06 |
| | (8.17)** | (8.78)** | (7.40)** | (3.03)** | (0.47) | (7.31)** |
| Casual Labour | -0.412 | -0.456 | -0.524 | -0.613 | -0.651 | -0.54 |
| | (19.99)** | (31.77)** | (36.03)** | (28.83)** | (27.16)** | (32.78)** |
| Other Household | -0.034 | -0.051 | -0.024 | 0.003 | 0.002 | -0.02 |
| | (1.53) | (2.78)** | (1.37) | (0.14) | (0.08) | (1.36) |
| Number of Adult Worker | 0.024 | 0.02 | 0.02 | 0.033 | 0.057 | 0.03 |
| | (6.07)** | (5.86)** | (5.61)** | (7.31)** | (10.18)** | (9.63)** |
| Caste | -0.175 | -0.175 | -0.18 | -0.186 | -0.181 | -0.19 |
| | (16.48)** | (19.16)** | (19.73)** | (17.06)** | (12.04)** | (24.34)** |
| Muslim | -0.085 | -0.073 | -0.073 | -0.068 | -0.084 | -0.08 |
| | (8.24)** | (9.10)** | (9.03)** | (7.93)** | (6.62)** | (11.99)** |
| Christian | 0.067 | 0.062 | 0.097 | 0.102 | 0.102 | 0.09 |
| | (3.72)** | (3.73)** | (4.99)** | (4.82)** | (4.52)** | (6.43)** |
| Sikh | 0.136 | 0.104 | 0.077 | 0.108 | 0.074 | 0.11 |
| | (5.33)** | (4.64)** | (2.77)** | (4.02)** | (2.33)* | (5.80)** |
| Other Religion | 0.073 | 0.084 | 0.08 | 0.104 | 0.121 | 0.09 |
| | (3.23)** | (3.11)** | (3.58)** | (3.88)** | (2.35)* | (5.36)** |
| Land | 0.074 | 0.089 | 0.065 | 0.048 | 0.05 | 0.06 |
| | (6.99)** | (10.64)** | (7.72)** | (4.67)** | (3.49)** | (8.42)** |
| Head-Sex | -0.036 | -0.021 | -0.001 | 0.012 | 0.02 | 0.00 |
| | (1.87) | (1.26) | (0.06) | (0.61) | (0.80) | (0.23) |
| Head-Age | 0.005 | 0.005 | 0.006 | 0.007 | 0.007 | 0.01 |
| | (16.92)** | (22.62)** | (27.09)** | (25.14)** | (18.27)** | (31.03)** |
| Head-Education | -0.272 | -0.327 | -0.372 | -0.414 | -0.492 | -0.38 |
| | (22.66)** | (31.87)** | (36.72)** | (32.01)** | (25.27)** | (39.37)** |
| Prosperity | -0.936 | -0.805 | -0.691 | -0.601 | -0.507 | -0.70 |
| | (22.07)** | (22.54)** | (21.42)** | (13.31)** | (9.88)** | (23.20)** |
| Administrative Responsiveness | 0.276 | 0.24 | 0.235 | 0.244 | 0.182 | 0.22 |
| | (12.32)** | (12.01)** | (12.75)** | (11.31)** | (6.51)** | (13.85)** |
| Knowledge Environment | 0.06 | 0.028 | 0.005 | -0.012 | -0.019 | 0.02 |
| | (2.37)* | (1.31) | (0.24) | (0.42) | (0.52) | (0.95) |
| Unemployment | 0.038 | 0.019 | -0.002 | 0.004 | 0.019 | 0.02 |
| | (2.55)* | (1.50) | (0.14) | (0.23) | (0.92) | (1.85) |
| Life Expectancy at Birth | 0.257 | 0.201 | 0.166 | 0.139 | 0.107 | 0.17 |
| | (8.89)** | (8.16)** | (7.04)** | (4.93)** | (2.73)** | (8.50)** |
| Electricity | 0.154 | 0.146 | 0.151 | 0.154 | 0.142 | 0.15 |
| | (7.98)** | (8.74)** | (9.75)** | (7.39)** | (6.04)** | (11.15)** |

*Continued....*

Table 9: (continued)

| Characteristics | 10% | 25% | 50% | 75% | 90% | OLS |
|---|---|---|---|---|---|---|
| Road length | -0.092 | -0.097 | -0.106 | -0.115 | -0.118 | -0.10 |
| | (3.24)** | (3.96)** | (4.71)** | (3.91)** | (3.32)** | (4.94)** |
| Hospital Bed | 0.338 | 0.284 | 0.242 | 0.201 | 0.174 | 0.24 |
| | (16.24)** | (15.04)** | (14.35)** | (9.90)** | (6.88)** | (16.27)** |
| Teledensity | 0.085 | 0.061 | 0.013 | -0.012 | 0.012 | 0.04 |
| | (2.16)* | (1.80) | (0.40) | (0.27) | (0.24) | (1.60) |
| Irrigation | -0.125 | -0.167 | -0.17 | -0.164 | -0.189 | -0.16 |
| | (5.00)** | (7.10)** | (6.80)** | (6.30)** | (4.72)** | (8.45)** |
| Fertilizer | 0.305 | 0.284 | 0.232 | 0.173 | 0.141 | 0.24 |
| | (6.04)** | (6.81)** | (5.79)** | (3.16)** | (2.27)* | (6.88)** |
| Political Stability | -0.098 | -0.094 | -0.077 | -0.062 | -0.05 | -0.07 |
| | (5.72)** | (5.83)** | (5.68)** | (3.78)** | (2.38)* | (5.91)** |
| Crime | -0.246 | -0.225 | -0.185 | -0.141 | -0.128 | -0.19 |
| | (11.45)** | (12.49)** | (11.57)** | (6.13)** | (4.90)** | (12.33)** |
| Judicial Efficiency | -0.333 | -0.292 | -0.254 | -0.207 | -0.151 | -0.25 |
| | (15.95)** | (15.24)** | (14.15)** | (8.13)** | (5.95)** | (15.74)** |
| Constant | 6.837 | 7.138 | 7.439 | 7.684 | 7.922 | 7.40 |
| | (181.01)** | (231.58)** | (247.62)** | (204.19)** | (168.05)** | (292.70)** |
| (Pseudo) R-squared | 0.23 | 0.26 | 0.27 | 0.26 | 0.24 | 0.43 |
| Observations | 40,616 | | | | | |

Note: *t* statistics is given in the parenthesis.

* Statistically significant at 5% level; ** Statistically Significant at 1% level.

### V.2 Local Amenities and Changes in MPCE

*Prosperity*: Results from the quantile regression suggest that in both rural and urban areas, standard of living of the families from the *less* prosperous region were considerably lower than the families residing in *more* prosperous region. This supports our conjecture about the effect of prosperity on the living standard. We have hypothesised that the effect of prosperity will not be uniform across the expenditure quantiles. Monthly per capita consumption of the poor ($10^{th}$ and $25^{th}$ quantiles) households in less prosperous region was lower by 1.45 units and 1.42 units. The corresponding figures in urban areas were 0.94 units and 0.81 units. In the median quantile the expenditure in less prosperous region fell short of 1.33 units and 0.69 units in rural and urban areas respectively. At the higher quantiles the gap in MPCE between the less prosperous region and the affluent region had narrowed down. In rural areas, the MPCE in the deprived regions were less by 1.25 units and 1.14 units at the $75^{th}$ and $90^{th}$ quantiles respectively. The corresponding figures for urban areas were 0.60 units and

0.51 units respectively. These results suggest that, poor families are adversely affected by the lack of prosperity in the region. Rich families are also adversely affected by the deprivation their place of residence. However, the impact on them was not as severe as the poor households. Rich families can survive and prosper in any place because they can generate their own resources. On the hand poor families are dependent on the opportunities available in the region. In less prosperous places, opportunities for employment and other amenities are restricted. As a result living in less prosperous region is less advantageous for the poor.

*Responsiveness of the administration to the development needs*: OLS regression results show that MPCE of the families living in *less* responsive place was higher by 56 per cent and 22 per cent in rural and urban areas. Even the quantile regression result do not corroborate the hypothesis that standard of living of the families is better in places where the administration is responsive to the development needs. Estimated coefficients for rural and urban areas show that MPCE of the families were higher in the *less* responsive places for every expenditure quantile. However the coefficients were statistically significant and they differ across quantiles. These results are similar to that obtained from logit regression. There we have argued that less responsive places are the economically developed states. We can draw the conclusion that income elasticity of demand for the development expenditure of the families is higher in developed states than in the less developed states. Families demand more attention from the administration there. On the other hand families in *more* responsive states are not well aware of the benefits of various development measures initiated by the state government. It is also possible that in these states development programs are not properly planned and incorrectly implemented. As a result, benefits of these programs fail to reach the general public.

*Knowledge environment*: Estimated coefficients for the five expenditure quantiles show that in rural areas, MPCE of the families from the *low* literate region was higher. This goes against the conventional idea that low literacy has a negative effect on the standard of living of the families. On the other hand results for the dummy for level of education of the head of the households have shown that education has a significant effect on the standard of living across the expenditure quantiles. Combining these two results we may

infer that decision about education are taken within the families and are not greatly influenced by the literacy in the region. As a result the level of literacy rate within the families, not the overall literacy in the region, affects the standard of living in rural areas. In urban areas, dummy for the literacy show that rich families living in the low literate regions had lower consumption expenditure. In rest of the quantiles, MPCE was higher in low literate region. However, the estimated coefficients are not statistically significant. In urban areas, literacy rates do not vary much across the states. Therefore the consumption expenditure of the urban families in *low* literate region does not vary much from *high* literate region.

*Lack of opportunities for employment for youth*: Quantile regression results for the dummy for the lack of opportunities for employment in rural areas had not yield expected outcome. Rural families living in a region with high unemployment rate among youth were actually consuming more than the families from the region with low incidence of unemployment. The gaps had widened at the higher expenditure quantiles. On the other hand the coefficients estimated for the urban areas were not statistically significant. Rate of unemployment among youth do not vary significantly in the urban areas. Consequently, consumption behaviour of the families does not vary much across the regions.[29]

*Health*: The dummy for health condition in a region as indicated by life expectancy at birth produced expected results for rural areas. But, the results for urban areas were again contradictory to the general belief. In rural areas, households living in a region with low life expectancy had spent less, in every quantiles, than families from region with better life expectancy. Estimated results for the $10^{th}$ quantile show that, MPCE of families from poor health region was lower by a factor of 0.24 than the families from better health region. The gap between MPCE of the families from these two regions had broadened at higher quantiles. At the median expenditure quantile, the gap was about 0.40 units and increased up to 0.58 units at the $90^{th}$ quantile. These results indicate high income elasticity of the demand for healthy environment in rural areas. In contrast, for every expenditure category in urban areas, families from poor health region had spent more

[29] Also see chapter IV where we have elaborated on this particular issue.

than families from the other region and the results were statistically significant. The possible explanations for these unexpected results in urban areas are given in chapter IV.

Estimated coefficients for the five different expenditure quantiles had not established that high IMR in a region have a negative impact on the consumption behaviour. On the contrary, in rural region families from high IMR region spent more than the families from low IMR region. Possibly there exist some problems with the collected data. We have briefly touched upon this issue in the previous chapter. Lastly, the effect of IMR on the living standard of urban families could not be checked as this particular dummy was dropped from the regression process due to multicolinearity.

*Infrastructure*: In rural areas, families living in a region with less than adequate supply of electricity consumed less than the families from better-electrified areas. However, the gaps between MPCEs of families from these two regions had decreased with improvements in standard of living. In the $10^{th}$ expenditure quantile, difference between MPCE of families from the deprived and privileged region was around 0.36 units (35.5 per cent) and in the $90^{th}$ quantile gap had narrowed down to 0.16 units (15.5 per cent). With improvements in income families become less dependent on amount of electricity provided to them. They can make their own arrangements for meting the energy requirement. Again, the effect of adequate availability of electricity on consumption expenditure of families had not produced desired results in urban areas.

Adequacy of road length had exerted sizeable impact on the living standard of families in both rural and urban area. An average rural family residing in a region with road length below national average spent 0.32 units less than that of families living in a better-connected region. At higher expenditure quantiles ($75^{th}$ and $90^{th}$ quantiles), differences in spending got reduced by 17.9 per cent and 17.2 per cent respectively. In urban areas situation was quite opposite. Here, as living standard improves, the differences between expenditures of families from the poorly connected region and better-connected region had gradually widened (from 0.09 units in $10^{th}$ expenditure quantile to 0.12 in the $90^{th}$ quantile).

The last two indicators i.e. population served per hospital bed and teledensity did not give rise to satisfactory result in both rural and urban areas. Estimated coefficients for these two indicators in rural areas show that families belonging to the deprived region had performed better than families located in the better-off region. This was also true for the dummy for health infrastructure in urban sector. Also, estimated coefficients for teledensity in urban were not significant at higher expenditure quantiles[30].

*Technological Progress*: Results from quantile regression show that rural families from an inadequately irrigated area was consuming less than the families from better-irrigated area. This supports our conjecture about positive impact of technological progress on the standard of living. The gap in MPCE between the families from these two regions was largest at lower quantiles. Rural families from the $10^{th}$ and $25^{th}$ expenditure quantiles in the less irrigated zone had consumed 0.58 units less than the same type of families from the high-irrigated zone. However, at higher levels of living, like $75^{th}$ and $90^{th}$ quantiles, this gap had thinned down to 0.50 units and 0.51 units respectively. Families in urban area were also consuming less in a technologically underdeveloped region. Expenditure gap between these two regions had gradually widened as living standard improves. Difference in MPCE of families from these two regions for the poorest category of living ($10^{th}$ expenditure quantile) was about 0.13 units. This had gone up to 0.19 units in the highest category. This indicates as income improves; demand for technological progress increases in urban areas.

No conclusive evidence was found showing that technological development, measured in terms of use of chemical fertilizer, had a positive impact on standard of living of the families, in both rural and urban areas. In fact families from technically less developed region were spending more than the families from more developed regions. In the previous chapter we have tried to give some explanation for the contradictory results.

*Political stability*: Results from OLS estimation process suggests that in rural areas, monthly consumption of families in politically unstable region was less by 0.38 units than families from politically stable region. The corresponding number for the urban area was

[30] See chapter IV for possible explanations of these issues.

0.07 units. Outcomes of the quantile regression process also infer that families living in a politically unstable region consume less than the families from stable region for every expenditure quantile. The expenditure gap in rural areas for the 10th expenditure quantile was 0.49 units and gradually decreased to 0.31 units in the 90th quantile. The gap in MPCE due to differences in political stability in urban sector was not as high as in the rural sector. Moreover, the gap had narrowed with improvement in living standard (0.10 units in the 10th expenditure quantile to 0.05 units in the 90th quantile). These results support our hypothesis about the effect of political stability. Moreover, these results show that negative effect of the political instability on the poor families is severe.

*Lawlessness*: Quantile regression results for rural areas did not show that lawlessness, as indicated by incidence of crime in a region, have an effect on consumption behaviour of households.[31] MPCE of families located in a high crime region was actually higher than that of families in low crime region. However in urban areas, it was found that, consumption of families was indeed low in areas with high rate of crime. Moreover, differences in MPCE between families from high-crime and low-crime region were larger for families having poor standards of living. In the 10th and 25th expenditure quantiles these gaps were about 0.25 units and 0.23 units respectively. In contrast, the corresponding figures for the 50th, 75th and 90th expenditure quantiles were 0.19 units, 0.14 units and 0.13 units respectively. These results show high crime rate negatively affect the poor and rich families. However, poor families suffer the most. On the other hand rich families can afford to make arrangements for their protection. Law and order system are also more attentive to the demand for the rich families. This explains the weak effect of crime rate in the locality on the standard of living of the rich households.

*Efficiency of Judiciary*: OLS results suggest that in both rural and urban areas households from *less* efficient region were actually consuming less than the families from a *more* efficient region. The differences in consumption expenditure between families located in efficient and inefficient region were not uniform across the expenditure quantiles. In rural area, households belonging to the 10th and 25th expenditure quantiles consume 0.21 units and 0.19 units less than the same type of families located in a judicially efficient region.

[31] See chapter IV for possible explanations.

The corresponding figures in urban areas were 0.33 units and 0.29 units respectively. This gap in MPCE had narrowed down to 0.16 units and 0.08 units at the 50th and 75th expenditure quantile in rural areas. Result for the 90th quantile was not statistically significant at 5% or 1% level. However, narrowing down of this gap in higher standards of living in urban region was not so sharp. The differences in MPCE for families in efficient and inefficient region in the 75th and 90th quantile fell to only 0.21 units and 0.15 units respectively. Both of these results were significant at 1% level. These results support the hypothesis that judicial efficiency (inefficiency) has an effect on the standard of living of the families. The living standard of the ultra rich in rural areas however is not affected by judicial efficiency. We can also conclude that in both rural and urban areas, judicial inefficiency makes the poor households suffer more than the rich and middle class families.

### V.3 Results of Hypothesis Tests

Table 11 and 12 show the results for hypothesis testing for the quantile regression. Equality of the slope coefficients for the determinants of living standard across the quantiles was tested using Wald test.[32] The main diagonals of these tables show the values of F-statistics with (1, $N$ - $K$) degrees of freedom along with the associated p-values in the parentheses. In large samples F statistics follows $\chi^2$ distributions with $q$ degrees of freedom. The critical value of $\chi^2 / q$ for $q = 1$ in large sample is 3.84. Hence we reject the null hypothesis, $H_0$, if a value of $F$ is greater than 3.84. We can also reject the

Table 10a: Wald Test results for 10th and 90th quantiles (Rural)

| 10th Quantile | 90th Quantile | | |
|---|---|---|---|
| | Family Size | Number of Adult Worker | Head-Age |
| Family Size | 0.73<br>(0.3924) | | |
| Number of Adult Worker | | 8.79<br>(0.0030) | |
| Head-Age | | | 42.67<br>(0.0000) |

Note: The Numbers are F statistics with (1, N-K) df. The associated p-values are in parenthesis.

[32] Test results for the categorical variables are not included here.

Table 10b: Wald Test Results for 25th and 75th quantile (Rural)

| 25th Quantile | 75th Quantile | | |
|---|---|---|---|
| | Family Size | Number of Adult Worker | Head-Age |
| Family Size | 0.17 (0.6836) | | |
| Number of Adult Worker | | 2.30 (0.1298) | |
| Head-Age | | | 17.98 (0.0000) |

Note: Same as Table 10a

Table 11a: Wald Test results for 10th and 90th quantiles (Urban)

| 10th Quantile | 90th Quantile | | |
|---|---|---|---|
| | Family Size | Number of Adult Worker | Head-Age |
| Family Size | 50.9 (0.0000) | | |
| Number of Adult Worker | | 26.47 (0.0000) | |
| Head-Age | | | 24.82 (0.0000) |

Note: Same as Table 10a

Table 11b: Wald Test Results for 25th and 75th quantile (Urban)

| 25th Quantile | 75th Quantile | | |
|---|---|---|---|
| | Family Size | Number of Adult Worker | Head-Age |
| Family Size | 25.88 (0.0000) | | |
| Number of Adult Worker | | 8.60 (0.0034) | |
| Head-Age | | | 17.29 (0.0000) |

Note: Same as Table 10a

hypothesis of equality of slope coefficients, if the p-value is small. Test results show that all slope coefficients were actually different across the expenditure quantiles in urban areas. There was significant difference between slopes estimated for 10th and 90th quantiles, for family size, number of adult worker in a family and age of the head of household. This is also true for the differences between the slopes of these quantitative

indicators for the 25$^{th}$ and 75$^{th}$ expenditure quantiles. The test results for equality of slopes across different levels of living in rural areas show that coefficient for head-age and number of adult workers were indeed different between 10$^{th}$ and 90$^{th}$ quantile. Coefficients for head-age were also different from each other at the 25$^{th}$ and 75$^{th}$ quantiles. However, the hypothesis of equality of slope coefficients cannot be rejected for family size for 10$^{th}$ and 90$^{th}$ quantiles. This was true for 25$^{th}$ and 75$^{th}$ quantiles. Lastly, coefficients of adult workers in family were not dissimilar across 25$^{th}$ and 75$^{th}$ quantiles in rural areas.

## Chapter VI

## Conclusion

This study is an attempt to highlight the effects of certain properties possessed by the families on their standard of living. Effects of household specific features on the standard of living are well known and well researched. Here we have tried to focus on the impact of local amenities, on the well-being of the families. These are the factors on which the families do not have direct control, as they are determined exogenously. Results from the econometric exercises bring out some interesting facts. Let us briefly summarise the main findings of this study. We also provide some suggestions based on these findings for improving the standard of living of the families.

Increase in the family size had a negative effect on the standard of living. Rich families in urban areas sacrifice more of their consumption for an additional member than the poor families. The extent of sacrifices made by the families for an additional member is estimated in this study. This may provide the planners a better tool for convincing the public to adopt family planning measures. An additional adult worker improves the living standard of the families. Poor households benefit more in rural areas from an additional adult worker. In contrast rich families gain more in the urban area. Opportunities for better earning are limited in rural areas. So an additional worker does not make significant contribution to the standard of living except for the poor. Employment generation programs in rural areas are generally used to reduce poverty. Policy makers should also try to improve the existing earning potential. This needs diversification in the job market in the rural area. In urban areas better paying jobs are mostly available for rich and middle class families. Greater emphasis is needed to enable the poor households for an equitable development in the urban economy. Households with more experienced heads perform better than the families with less experienced heads. Self-employed households engaged in agricultural activities are doing better than other types of families in rural areas. Self-employed families engaged in non-farm activities are not far behind them. In urban areas, households who earn salary or wage on regular basis are doing better than the others. However, self-employed households seem to be catching up with

areas. Low earning, employment insecurities, lack of social security, etc. are the reasons for their plight. Shrinking opportunities in the *formal* sector and growing casualisation of the labour market are making their condition more difficult. The recent effort by the government to provide social security to these people is a welcome move. We need to more of such efforts. Caste and religion plays an important role in determining the standard of living. Backward caste families have low standard of living. In fact differences in standard of living between the backward caste and the high caste families remained uniform even in the higher expenditure quantiles. This suggests that improvement in consumption expenditure does not mean low caste families can enjoy the same level of comfort as others. On the other hand religion has a mixed effect on the standard of living of the families. Hindu families are better off than the Muslims. Sikhs are doing better than the Hindus. Christians are also doing better than the Hindu families but only in urban areas. Probabilities of being poor for the families from other religions are high in rural areas but low in urban areas. The history of discrimination on basis of caste and religious identity is very old in India. Backwardness of the families is also strongly associated with their economic condition. To remedy this we need to focus on economic development of the discriminated families. More affirmative action on the behalf of the civil society is warranted. We have not found conclusive evidence that landownership affects the poverty status of the families. However, it was observed that consumption behaviour of the families change with ownership of land. This is especially true for the poor and middle-income families. For them land is an important asset to own. So, the importance of land reform is still valid in our country. Consumption behaviour of the male and female-headed families is almost similar across expenditure quantiles. However, female-headed families are more likely to be poor than the families with male-heads. In our patriarchal society, families give greater attention to the education of the boys than the girls. Also, females get discriminated in the labour market. This makes the families with female heads more vulnerable to poverty. Moreover, households with poorly educated heads perform badly. The gap between families with poorly educated heads and highly educated heads broadens with improvements in consumption expenditure. This reemphasises the importance of education in determining the standard of living. State should give more attention to the education of the female.

There was much heterogeneity in the effects of the location specific amenities on the standard of living of the families. Households living in a prosperous area are surely doing better than the families from poor region. Though we found evidence for convergence in expenditure with improvements in standard of living, there remained a significant gap between families even at higher levels of expenditure. High levels of development expenditure do not mean better standard of living of the families. Less developed states spend more on development purposes. Still standard of living of the families does not improve in these states. This indicates failure on the part of the states in formulating and implementing the welfare policies. Planners should reexamine the existing development policies and prescribe innovative methods for overall development of standard of living. Surprisingly, it is seen that literacy and unemployment in rural and urban areas fail to affect the standard of living of the households. We found evidence for the high probability of being poor for families located in a region with low life expectancy. In fact families from such regions spend less across the expenditure quantiles than the households living in places with better conditions of health. However, this conclusion applies to the rural families only. Condition of health in rural areas is generally poor. Urban families have comparative advantage in this regard. This may be due to the fact that urban areas are better endowed with health facilities. The state should make an effort to close the gap. Adequate supply of electricity played an important role for the rural families. Probability of being poor for rural families living in a poorly electrified region is high. Rural electrification should be given more emphasis to improve the welfare of the families. Urban areas on the other hand are better electrified. As a result availability of electricity is not much important in deciding the living standard of the urban families. Road connectivity has an important role to play in the process of determining the standard of living of the families. Families living in poorly connected regions seem to have a low standard of living; however, the differences between the families from better connected regions decreases with improvement in standard of living in rural areas. Availability of better road facilities seems to be more important for the families from the urban area. In fact the gap between the families from poorly connected places and better-connected places seems to be worsened with advances in living

standard. Liberalisation has brought new opportunities in the economy. However, the benefits of liberalisation are concentrated in pockets with improved connectivity with the outer world. Families living in remote areas cannot access these opportunities. For an overall development of the standard of living the families, the state should improve the interconnectivity between the regions. Families living in a technologically less developed region are poorer than families from developed places.[33]Technology in modern times is improving at a very fast rate. However, the benefits of technological development are concentrated in some selected places. This has lead to an inequitable development. Policy makers must formulate plans to spread the benefits of technological development across the country. Political instability at the place of residence causes incidence of poverty to increase among families. Poor families have to suffer more in a politically unstable state. High crime rates in a region affect the families adversely in urban areas. Judicial efficiency in a region does have an effect on the standard of living of the families. At every level of living, consumption capabilities of the families from a judicially inefficient place are lower than the families from an efficient place. Moreover we have found that poor families are severely affected by the high crime rates and judicial inefficiency. The state has the duty to make life of the poor secure. We cannot expect to improve the standard of living of the families without providing them a secure environment to live in.

[33] Technology measured in terms of extent of irrigation.

## References


Barros, R., L. Fox and R. Mendonca (1997), 'Female-Headed Households, Poverty, and the Welfare of Children in Urban Brazil, *Economic Development and Cultural Change*, vol. 45(2), pp 231-57.

Basu, Sudip Ranjan (2004), 'Economic Growth, Well-Being and Governance Under Economic Reforms: Evidence from Indian States, *HEI Working Paper No: 05/2004*, University of Geneva, Switzerland.

Blundell, R. and I. Preston (1996), 'Income, Expenditure and Living Standard of UK Households', *Fiscal Studies*, vol.16, no.3, pp 40-54.

Borooah, Vani, K. (2005), 'Caste, Inequality, and Poverty in India', *Review of Development Economics*, 9(3), 399-414.

Clark, David A. (2005), 'The Capability Approach: Its Development, Critiques and Recent Advances', *GPRG Working Paper 032*, University of Manchester, U.K. Available online at http://gprg.org/pubs/workingpapers/pdfs/gprg-wps-032.pdf.

Cutler, D. and L. Katz (1992), 'Rising Inequality? Changes in the Distribution of Income and consumption in the 1980's', *American Economic Review*, vol. 82, pp 546-51.

Deaton, Angus (2003), 'Adjusted Indian Poverty Estimates for 1999-2000', *Economic and Political Weekly*, January 25, pp 322-26.

Deaton, Angus, and Alessandro Tarozzi (2000), Prices and Poverty in India' Research Programme in Development Studies, Working Paper No. 196, Princeton University.

Deaton, Angus, and Jean Dreze (2002), 'Poverty and Inequality in India, A Re-examination', *Economic and Political Weekly*, September 7, pp 3729-48.

Deaton, Angus, and V Kozel (2004), *Data and Dogma: The Great Indian Poverty Debate*. Available online at http://www.wws.princeton.edu/~deaton/paper.html.

Deshpande, A. (2000), 'Does Caste Still Define Disparity? A Look at Inequality in Kerala, India', *American Economic Review*, 90, pp 322-25.

Dreze, J. and P.V. Srinivasan (1995), 'Widowhood and Poverty in India: Some Inferences from Household Survey Data', Discussion Paper No. 125, November, IGIDR, Mumbai.

Efron, B. (1979), 'Bootsstraping Method: Another Look at the Jackknife', Annala of Statistics, vol. 7, pp1-26

Fissuh, E. and M. Harris (2005), 'Modeling Determinants of Poverty in Eritrea: A New Approach'. Available online at http://www.ideas.repec.org

Gangopadhyay, S., and Wilima Wadhwa (2003), 'Are Indian Female-headed Households More Vulnerable to Poverty?' *Working Paper*, India Development Foundation. Available online at http://www.idfresearch.org/pdf/sw%20revised.pdf.

Geda, A., N de Jong, M.S.Kimenyi and G. Mwabu (2005), 'Determinants of Poverty in Kenya: A Households Level Analysis', Department of Economics Working Paper (2005-44), University of Connecticut.

Greene, William, J. (2000), *Econometric Analysis*, 4th ed., Prentice Hall, Eaglewood Cliffs, N.J.

Herrera, J. (2001), 'Poverty Dynamics in Peru, 1997-99'. Available online at http://www.ideas.repec.org

Jha, R. and R. Gaiha (2005), 'Determinants of Undernutrition in Rural India'. Available online at http://www.ideas.repec.org

Kokenkar, R. and G.W. Bassett (1978),'Regression Quantiles' *Econometrica*, 46, 33-50.

Kokenkar, R., and G.W. Bassett (1982), 'Robust Tests for Heteroscedasticity based on Regression Quantiles' *Econometrica*, 61, 43-61.

Kokenkar, R., and K. Hallock (2001), 'Quantile Regression', *Journal of Economic Perspectives*, 15(4), 143-156.

Kossoudji, S. and E. Muller (1983), 'Economic Status of Female-Headed Households in Rural Botswana', *Economic Development and Cultural Change*, vol. 31(3), pp 831-59.

Krishnaji, N. (1984), 'Family-size, Levels of Living and Differential Mortality in Rural India – Some Paradoxes', *Economic and Political Weekly*, 19, pp 248-58.

Long, Scott, J., and Jeremy Fresse, (2001), *Regression Models For Categorical Dependent Variables Using STATA*, A Stata Press Publication, STATA Corporation.

Maddala, G.S. (1977), *Econometrics*, McGraw-Hill, New Work.

Meenakshi, J V, and Ranjan Ray (2002), 'Impact of Size and Family Composition o Poverty in Rural India' *Journal of Policy Modeling*, 24, pp 539-59.

National Sample Survey Organisation (2001a), *Level and Pattern of Consumer Expenditure in India 1999-2000*, Report 457, NSSO, New Delhi.

- (2001b), *Consumption of Some Important Items*, Report 461, NSSO, New Delhi.
- *Employment and Unemployment Situation in India 1999-2000 (Part –I)*, Report 458, NSSO, New Delhi.

Pigou, A.C. (1952), *The Economics of Welfare*, London: Macmillan.

Poterba, J. (1989), 'Lifetime Incidence and Distributional Burden of Excise Taxes', *American Economic Review*, vol. 79, 325-30.

Ppopli, G., Ashok Prikh and Richard Palmer-Jones (2005), 'Are 2000 Poverty Estimates for India a Myth, Artefact or Real?', *Economic and Political Weekly*, October 22, pp 4619-24.

Rangvid, B. S. (2003), 'Educational Peer Effects, Quantile Regression Evidence from Denmark with PISA2000 data', AKF, Institute of Local Government Studies, Denmark. Available online at http://oecd.org/dataoecd/31/13/33684822.pdf.

Saith, Ruhi (2001), 'Capabilities: the Concept and its Operationalisation', *QEH Working Paper Series 66*, Queen Elizabeth House, University of Oxford.

Saith, Ashwani (2005), 'Poverty Lines versus the Poor, Method versus Meaning', *Economic and Political Weekly*, October 22, pp 4601-10.

Sen, Abhijit (2000), 'Estimates of Consumer Expenditure and its Distribution: Statistical Properties after the NSS 55th Round' *Economic and Political Weekly*, December 16, pp 4499-518.

Sen, Abhijit, and Himanshu (2004a), 'Poverty and Inequality in India – I', *Economic and Political Weekly*, September 18, pp 4247-63.

- (2004b), 'Poverty and Inequality in India – II, *Economic and Political Weekly*, September 25, pp 4361-75.

Sen, Amartya K. (1976a), 'Real National Income', *Review of Economic Studies*, 43.

- (1979b), 'The Welfare Basis of Real Income Comparisons', *Journal of Economic Literature*, 17.
- (1980c), 'Equality of What', in Sterling M. McMurrin (ed.), *The Tanner Lectures on Human Value*, Salt Lake City: University of Utah Press, pp. 195-220.
- (1984d), *Resources, Values and Development*, Oxford: Basil Blackwell.
- (1985e), *Commodities and Capabilities*, Oxford: Elsevier Science Publishers.
- (1987f), *The Standard of Living: The Tanner Lectures*, Cambridge: Cambridge University Press.

- (1990g), 'Development as Capability Expansion', in Keith Griffin and John Knight (ed.), *Human Development and the International Development Strategy for the 1990s*, London: Macmillan, pp. 41.58.
- (1992h), *Inequality Re-examined*, Oxford: Clarendon Press.
- (1999i), *Development As Freedom*, Oxford: Oxford University Press.

Sen, Pronab (2005), 'Of Calories and Things, Reflection on Nutritional Norms, Poverty Lines and Consumption Behaviour in India, *Economic and Political Weekly*, October 22, pp 4611-18.

Sinha, K (2005), 'Household Characteristics and Calorie Intake in Rural India: A Quantile Regression Approach', the Australian National University. Available online at http://www.ideas.repec.org/p/pas/asarcc/2005-02.html.

Slesnick, D. (1993), 'Gaining Ground: Poverty in Post War United States', *Journal of Political Economy*, vol. 101, pp 1-38.

Smith, Adam (1776), '*An Inquiry into the Nature and the Causes of the Wealth of Nations*', reprinted in Edwin Cannon (ed.) (1976), '*The Wealth of Nations*', Chicago: University of Chicago Press.

Subramanian, S. (2005a), 'Unraveling a Conceptual Muddle: India's Poverty Statistics in the Light of Basic Demand Theory', *Economic and Political Weekly*, January 1, pp 57-66.

- (2005b), 'Fractions versus Whole Numbers, On Headcount Comparisons of Poverty across Variable Populations', *Economic and Political Weekly*, October 22, pp 4625-28.

Sundaram, K, and S D Tendulkar (2003a), 'Poverty Has Declined in the 1990s: A Resolution of Comparability Problems in NSS Consumer Expenditure Data' *Economic and Political Weekly*, January 25, pp 327-37.

- (2003b), 'Poverty in India in the 1990s: Revised Results for All-India and the 15 Major States for 1993-94', *Economic and Political Weekly*, November 15, pp 4865-72.
- (2003c), 'Poverty among Social and Economic Groups in India in 1990s' *Economic and Political Weekly*, *Economic and Political Weekly*, December 13, pp 5263-76.

Tarozzi, Alessandro (2002), *Estimating Comparable Poverty Counts from Incomparable Surveys: Measuring Poverty in India*, Princeton University, processed.

Visaria, P. and L. Visaria (1985), ' Indian Households with Female Heads: Their Incidence, Characteristics and Levels of Living, Jain, D and Banerjee, N. (ed.) *Tyranny of the Households*, New Delhi: Shakti Books.

Woolridge, Jeffrey, M. (1999), *Econometric Analysis of Cross Section and Panel Data*, The MIT Press, Cambridge, Mass.

## Appendix I: Distribution Household characteristics across the states

Table 1: Distribution (%) of household by state, residence and poverty status

| State | Rural | | | Urban | | |
|---|---|---|---|---|---|---|
| | Poor | Non-poor | Poverty Line | Poor | Non-poor | Poverty Line |
| Andhra Pradesh | 7.9 | 92.1 | 262.9 | 21.3 | 78.7 | 457.4 |
| Assam | 33.2 | 66.8 | 365.4 | 4.2 | 95.8 | 344.0 |
| Bihar | 36.6 | 63.4 | 333.1 | 23.8 | 76.2 | 379.8 |
| Gujarat | 9.0 | 91.0 | 318.9 | 12.2 | 87.8 | 474.4 |
| Haryana | 6.3 | 93.7 | 362.8 | 6.0 | 94.0 | 420.2 |
| Himachal Pradesh | 5.6 | 94.4 | 367.5 | 1.9 | 98.1 | 420.2 |
| Karnataka | 11.8 | 88.2 | 309.6 | 20.7 | 79.3 | 511.4 |
| Kerala | 7.2 | 92.8 | 374.8 | 13.1 | 86.9 | 477.1 |
| Madhya Pradesh | 30.3 | 69.7 | 311.3 | 30.8 | 69.2 | 481.7 |
| Maharashtra | 18.3 | 81.7 | 318.6 | 20.9 | 79.1 | 539.7 |
| Orissa | 39.0 | 61.0 | 323.9 | 31.0 | 69.0 | 473.1 |
| Punjab | 4.5 | 95.5 | 362.7 | 3.0 | 97.0 | 388.2 |
| Rajasthan | 10.1 | 89.9 | 344.0 | 15.1 | 84.9 | 465.9 |
| Tamil Nadu | 14.2 | 85.8 | 307.6 | 18.4 | 81.6 | 475.6 |
| Uttar Pradesh | 24.4 | 75.6 | 336.9 | 23.9 | 76.1 | 416.3 |
| West Bengal | 24.5 | 75.5 | 350.2 | 10.4 | 89.6 | 409.2 |

Note: Poverty Line figures are in Rs.
Source: Calculated from unit level record given in Sch1.0, NSS 55$^{th}$ Round.

Table 2: Distribution (%) of poor households by state and residence

| State | Rural | Urban |
|---|---|---|
| Andhra Pradesh | 3.1 | 10.7 |
| Assam | 8.7 | 0.5 |
| Bihar | 20.2 | 7.1 |
| Gujarat | 1.7 | 4.5 |
| Haryana | 0.5 | 0.6 |
| Himachal Pradesh | 0.7 | 0.2 |
| Karnataka | 2.5 | 6.8 |
| Kerala | 1.4 | 3.5 |
| Madhya Pradesh | 11.9 | 13.0 |
| Maharashtra | 5.7 | 14.6 |
| Orissa | 10.0 | 4.3 |
| Punjab | 0.7 | 0.7 |
| Rajasthan | 2.5 | 3.9 |
| Tamil Nadu | 4.5 | 10.1 |
| Uttar Pradesh | 17.4 | 14.7 |
| West Bengal | 8.4 | 4.7 |
| Total | 100.0 | 100.0 |

Source: same as Table 1

Table 3: Average monthly per capita consumption expenditure of families by state, residence and poverty status

| State | Rural | | | Urban | | |
|---|---|---|---|---|---|---|
| | Poor | Non-poor | Avg. HH | Poor | Non-poor | Avg. HH |
| Andhra Pradesh | 274.70 | 684.32 | 651.78 | 364.87 | 1081.3 | 928.37 |
| Assam | 260.93 | 504.20 | 423.35 | 376.76 | 1316.79 | 1277.29 |
| Bihar | 264.75 | 518.63 | 425.66 | 365.44 | 1101.72 | 926.60 |
| Gujarat | 269.14 | 678.28 | 641.65 | 380.25 | 1025.19 | 946.22 |
| Haryana | 276.82 | 713.63 | 686.04 | 373.32 | 1180.42 | 1131.74 |
| Himachal Pradesh | 281.22 | 721.15 | 696.51 | 399.14 | 1578.17 | 1555.25 |
| Karnataka | 275.83 | 676.07 | 628.99 | 351.16 | 1068.79 | 920.50 |
| Kerala | 277.00 | 846.56 | 805.83 | 362.33 | 1167.54 | 1062.2 |
| Madhya Pradesh | 261.85 | 586.89 | 488.26 | 345.39 | 980.69 | 784.89 |
| Maharashtra | 269.30 | 647.79 | 578.34 | 343.92 | 1113.24 | 952.83 |
| Orissa | 253.13 | 542.81 | 429.71 | 341.25 | 1000.32 | 795.94 |
| Punjab | 286.93 | 784.12 | 761.67 | 393.46 | 1239.93 | 1214.83 |
| Rajasthan | 275.60 | 629.41 | 593.69 | 374.99 | 1018.27 | 921.38 |
| Tamil Nadu | 266.78 | 719.11 | 654.93 | 358.1 | 1161.83 | 1014.17 |
| Uttar Pradesh | 266.72 | 596.14 | 515.67 | 360.22 | 1038.24 | 876.46 |
| West Bengal | 264.56 | 575.33 | 499.08 | 376.5 | 1203.3 | 1116.92 |
| Total | 265.04 | 637.59 | 559.36 | 357.97 | 1119.03 | 980.52 |

Source: same as Table 1

Note: Avg. HH – Average Household.

Table 4: Distribution of average size of household by state, residence and poverty status

| State | Rural | | | Urban | | |
|---|---|---|---|---|---|---|
| | Poor | Non-poor | Avg. HH | Poor | Non-poor | Avg. HH |
| Andhra Pradesh | 5 | 4 | 4 | 5 | 4 | 4 |
| Assam | 6 | 5 | 6 | 6 | 4 | 4 |
| Bihar | 6 | 5 | 5 | 7 | 5 | 5 |
| Gujarat | 6 | 5 | 5 | 6 | 4 | 5 |
| Haryana | 6 | 6 | 6 | 6 | 5 | 5 |
| Himachal Pradesh | 6 | 5 | 5 | 6 | 4 | 4 |
| Karnataka | 6 | 5 | 5 | 6 | 4 | 5 |
| Kerala | 7 | 5 | 5 | 7 | 4 | 5 |
| Madhya Pradesh | 6 | 5 | 6 | 6 | 5 | 5 |
| Maharashtra | 6 | 5 | 5 | 6 | 4 | 5 |
| Orissa | 5 | 5 | 5 | 5 | 4 | 4 |
| Punjab | 7 | 6 | 6 | 7 | 4 | 4 |
| Rajasthan | 7 | 6 | 6 | 7 | 5 | 5 |
| Tamil Nadu | 5 | 4 | 4 | 5 | 4 | 4 |
| Uttar Pradesh | 7 | 6 | 6 | 7 | 5 | 5 |
| West Bengal | 6 | 5 | 5 | 6 | 4 | 4 |
| Total | 6 | 5 | 5 | 6 | 4 | 5 |

Source: same as Table 1

Table 5: Distribution (%) of households by social group, residence and poverty status

| Caste | Rural | | | Urban | | |
|---|---|---|---|---|---|---|
| | Poor | Non-poor | All | Poor | Non-poor | All |
| ST | 39.3 | 60.7 | 100.0 | 34.3 | 65.7 | 100.0 |
| SC | 28.9 | 71.1 | 100.0 | 31.8 | 68.2 | 100.0 |
| OBC | 19.7 | 80.3 | 100.0 | 23.4 | 76.6 | 100.0 |
| Other | 12.1 | 87.9 | 100.0 | 11.0 | 89.0 | 100.0 |
| Total | 21.0 | 79.0 | 100.0 | 18.2 | 81.8 | 100.0 |

Source: same as Table 1

Table 6: Distribution (%) of households by landownership, residence and poverty status

| Landownership | Rural | | | Urban | | |
|---|---|---|---|---|---|---|
| | Poor | Non-poor | Total | Poor | Non-poor | Total |
| Owns | 94.1 | 94.3 | 94.1 | 75.0 | 63.0 | 65.0 |
| Doesn't own | 5.9 | 5.7 | 5.9 | 25.0 | 37.0 | 35.0 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

Source: same as Table 1

Table7: Distribution (%) of households by state, residence, head-sex and poverty status

| State | Rural | | | | Urban | | | |
|---|---|---|---|---|---|---|---|---|
| | Male | | Female | | Male | | Female | |
| | Poor | Non-poor | Poor | Non-poor | Poor | Non-poor | Poor | Non-poor |
| Andhra Pradesh | 7.6 | 92.4 | 10.6 | 89.4 | 21.2 | 78.8 | 22.9 | 77.1 |
| Assam | 33.3 | 66.7 | 31.9 | 68.1 | 4.3 | 95.7 | 3.4 | 96.6 |
| Bihar | 36.8 | 63.2 | 34.7 | 65.3 | 23.3 | 76.7 | 31.6 | 68.4 |
| Gujarat | 9.1 | 90.9 | 7.1 | 92.9 | 11.9 | 88.1 | 15.9 | 84.1 |
| Haryana | 6.4 | 93.6 | 5.8 | 94.2 | 6.2 | 93.8 | 4.2 | 95.8 |
| Himachal Pradesh | 5.7 | 94.3 | 5.2 | 94.8 | 1.5 | 98.5 | 4.7 | 95.3 |
| Karnataka | 11.4 | 88.6 | 14.4 | 85.6 | 20 | 80 | 25.2 | 74.8 |
| Kerala | 6.2 | 93.8 | 9.9 | 90.1 | 11.8 | 88.2 | 17.2 | 82.8 |
| Madhya Pradesh | 30.6 | 69.4 | 25.5 | 74.5 | 30.8 | 69.2 | 30.9 | 69.1 |
| Maharashtra | 18.9 | 81.1 | 12.5 | 87.5 | 20.9 | 79.1 | 20.2 | 79.8 |
| Orissa | 39.5 | 60.5 | 34.3 | 65.7 | 30.2 | 69.8 | 38.5 | 61.5 |
| Punjab | 4.5 | 95.5 | 4.8 | 95.2 | 3.1 | 96.9 | 1.6 | 98.4 |
| Rajasthan | 9.8 | 90.2 | 14.0 | 86.0 | 14.7 | 85.3 | 20.4 | 79.6 |
| Tamil Nadu | 14 | 86 | 15.3 | 84.7 | 17.9 | 82.1 | 21.5 | 78.5 |
| Uttar Pradesh | 24.2 | 75.8 | 26.9 | 73.1 | 24.1 | 75.9 | 20.9 | 79.1 |
| West Bengal | 24.5 | 75.5 | 25.4 | 74.6 | 10.6 | 89.4 | 9.2 | 90.8 |
| Total | 21.2 | 78.8 | 19.0 | 81.0 | 18.1 | 81.9 | 19.3 | 80.7 |

Source: same as Table 1

Table 8: Average age (in years) of head of households by state, Residence and poverty status

| State | Rural | | | Urban | | |
|---|---|---|---|---|---|---|
| | Poor | Non-poor | All | Poor | Non-poor | All |
| Andhra Pradesh | 43 | 44 | 44 | 42 | 43 | 42 |
| Assam | 44 | 45 | 45 | 44 | 42 | 42 |
| Bihar | 42 | 45 | 44 | 43 | 43 | 43 |
| Gujarat | 43 | 45 | 45 | 44 | 45 | 45 |
| Haryana | 41 | 46 | 46 | 39 | 46 | 45 |
| Himachal Pradesh | 48 | 48 | 48 | 51 | 43 | 44 |
| Karnataka | 44 | 46 | 46 | 44 | 43 | 43 |
| Kerala | 55 | 51 | 51 | 55 | 49 | 50 |
| Madhya Pradesh | 43 | 46 | 45 | 42 | 44 | 44 |
| Maharashtra | 43 | 47 | 46 | 44 | 44 | 44 |
| Orissa | 42 | 47 | 45 | 43 | 42 | 43 |
| Punjab | 46 | 48 | 48 | 43 | 43 | 43 |
| Rajasthan | 42 | 44 | 44 | 44 | 45 | 45 |
| Tamil Nadu | 44 | 47 | 47 | 45 | 45 | 45 |
| Uttar Pradesh | 44 | 47 | 46 | 43 | 44 | 44 |
| West Bengal | 41 | 45 | 44 | 43 | 47 | 46 |
| Total | 43 | 46 | 46 | 44 | 44 | 44 |

Source: same as Table 1

Table 9: Distribution (%) of households by state, residence and education of the head of family

| State | Rural | | | Urban | | |
|---|---|---|---|---|---|---|
| | Illiterate or below primary | Primary & above | All | Illiterate or below primary | Primary & above | All |
| Andhra Pradesh | 74.9 | 25.1 | 100.0 | 34.4 | 65.6 | 100.0 |
| Assam | 56.0 | 44.0 | 100.0 | 21.5 | 78.5 | 100.0 |
| Bihar | 69.6 | 30.4 | 100.0 | 36.1 | 63.9 | 100.0 |
| Gujarat | 60.7 | 39.3 | 100.0 | 28.8 | 71.2 | 100.0 |
| Haryana | 54.1 | 45.9 | 100.0 | 30.0 | 70.0 | 100.0 |
| Himachal Pradesh | 48.7 | 51.3 | 100.0 | 17.9 | 82.1 | 100.0 |
| Karnataka | 63.5 | 36.5 | 100.0 | 29.3 | 70.7 | 100.0 |
| Kerala | 39.0 | 61.0 | 100.0 | 23.1 | 76.9 | 100.0 |
| Madhya Pradesh | 68.9 | 31.1 | 100.0 | 34.4 | 65.6 | 100.0 |
| Maharashtra | 51.6 | 48.4 | 100.0 | 23.1 | 76.9 | 100.0 |
| Orissa | 71.1 | 28.9 | 100.0 | 38.1 | 61.9 | 100.0 |
| Punjab | 60.0 | 40.0 | 100.0 | 34.9 | 65.1 | 100.0 |
| Rajasthan | 67.8 | 32.2 | 100.0 | 31.7 | 68.3 | 100.0 |
| Tamil Nadu | 57.9 | 42.1 | 100.0 | 28.1 | 71.9 | 100.0 |
| Uttar Pradesh | 60.0 | 40.0 | 100.0 | 39.7 | 60.3 | 100.0 |
| West Bengal | 57.3 | 42.7 | 100.0 | 31.6 | 68.4 | 100.0 |
| Total | 61.9 | 38.1 | 100.0 | 30.8 | 69.2 | 100.0 |

Source: same as Table 1

## Appendix II: Local amenities and their distribution across the states

| State | PC_NSDP | PC_DEV | LIT_R | LIT_U | UNEMPL_R | UNEMPL_U | LIFE_R | LIFE_U | IMR_R | IMR_U | PC_ELECT | ROAD | BED | TELE | IRRG | FRTL | STABLE | CRIME | PENDING |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) | (17) | (18) | (19) | (20) |
| A.P | 9,445 | 1,751 | 45.9 | 74.8 | 99 | 148 | 62.4 | 67.0 | 75 | 37 | 417.68 | 239 | 1,057 | 2,110 | 41.32 | 158.1 | Stable | 160.5 | 24.4 |
| Assam | 5,785 | 1,477 | 69.8 | 87.7 | 146 | 266 | 57.1 | 66.6 | 79 | 36 | 95.46 | 329.9 | 1,782 | 820 | 21.08 | 30.8 | Unstable | 143.5 | 64.2 |
| Bihar | 3,281 | 1,401 | 41.7 | 70.1 | 110 | 244 | 57.1 | 66.8 | 64 | 55 | 140.77 | 90.6 | 3,029 | 510 | 47.74 | 97.7 | Unstable | 120.2 | 69.9 |
| Gujarat | 13,298 | 2,934 | 61.4 | 83.9 | 67 | 85 | 62.1 | 65.6 | 70 | 45 | 834.66 | 195.3 | 709 | 3,230 | 31.88 | 87.8 | Stable | 261.2 | 76.8 |
| Haryana | 13,308 | 2,417 | 63.9 | 77.4 | 81 | 83 | 64.4 | 68.6 | 70 | 58 | 530.82 | 147.3 | 2,696 | 2,680 | 81.31 | 148.5 | Unstable | 202.2 | 33.8 |
| H.P. | 11,051 | 4,795 | 73.6 | 90.3 | 61 | 205 | 65.8 | 68.3 | 55 | 37 | 339.06 | 444.5 | 1,198 | 3,440 | 18.51 | 39.4 | Stable | 167.8 | 71.1 |
| Karnataka | 10,912 | 2,164 | 53.8 | 82.2 | 58 | 105 | 62.8 | 68.9 | 69 | 24 | 360.09 | 294.4 | 1,319 | 2,850 | 24.84 | 103.4 | Unstable | 214.1 | 14.8 |
| Kerala | 10,178 | 2,212 | 89.9 | 94.1 | 363 | 343 | 73.4 | 74.1 | 14 | 16 | 327.11 | 462.1 | 327 | 4,230 | 16.97 | 70.6 | Stable | 294.4 | 58.6 |
| M.P. | 8,248 | 1,904 | 50.2 | 77.4 | 49 | 146 | 55.6 | 64.3 | 96 | 55 | 353.19 | 258.6 | 3,761 | 1,200 | 33.87 | 47.2 | Stable | 261.3 | 52.5 |
| Maharashtra | 15,178 | 2,134 | 66.0 | 86.1 | 104 | 165 | 64.4 | 70.3 | 58 | 31 | 520.51 | 422.3 | 910 | 3,738 | 16.8 | 88.9 | Unstable | 196.2 | 65.5 |
| Orissa | 5,735 | 1,755 | 53.3 | 76.8 | 113 | 255 | 57.8 | 65.6 | 100 | 65 | 354.6 | 737.4 | 2,966 | 940 | 34.4 | 44.4 | Unstable | 141.4 | 72.7 |
| Punjab | 14,809 | 2,081 | 63.0 | 79.0 | 70 | 95 | 67.7 | 71.0 | 57 | 39 | 921.13 | 275.9 | 1,560 | 4,490 | 94.48 | 184.6 | Unstable | 86.7 | 57.6 |
| Rajasthan | 8,555 | 1,662 | 46.4 | 74.3 | 44 | 88 | 59.7 | 66.1 | 85 | 59 | 334.49 | 266.3 | 2,454 | 1,760 | 36.19 | 39.5 | Unstable | 317.7 | 57.3 |
| U.N. | 12,181 | 2,028 | 64.2 | 84.4 | 181 | 156 | 63.8 | 68.9 | 58 | 39 | 537.24 | 249.3 | 1,135 | 2,710 | 54.39 | 164.9 | Unstable | 237.2 | 20.3 |
| U.P. | 5,675 | 1,052 | 51.0 | 70.5 | 61 | 125 | 58.2 | 63.1 | 88 | 66 | 175.81 | 169.8 | 2,647 | 820 | 72.17 | 125.4 | Unstable | 103.6 | 53.5 |
| W.B. | 9,320 | 1,537 | 61.7 | 81.9 | 266 | 240 | 62.5 | 69.0 | 55 | 40 | 240.41 | 101.2 | 1,453 | 1,970 | 34.92 | 136 | Stable | 84.9 | 16.2 |
| All-India | 10,071 | 1,755 | 55.8 | 79.8 | 110 | 154 | 61.2 | 67.9 | 75 | 44 | 353.39 | 256.1 | 1,057 | 2,200 | 40.53 | 95.6 | - | 178.9 | 46.8 |

*Description and Source*:

col (2): Per capita net state domestic product (NSDP) at for 1999-2000 (1993-94 factor cost); Ministry of Statistics and Programme Implementation, Govt. of India (www.mospi.nic.in.).

col (3): Per capita Development expenditure in 1999-2000; Reserve Bank of India (www.rbi.org.in).

col (4) & (5): calculated from the unit level record give in Sch.10-10.1, NSS 55th Round.

col (6) & (7): same as col (4) and (5).

col (8) & (9): Life Expectancy at birth for 1998-2002; Register General of India (www.indiastat.com).

col (10) & (11): Infant mortality rate for 1999;Sample registration System (SRS) Bulletin, vol. 35, No.1, April 2001.

col (12): Annual per capita consumption of electricity (in KWH) for 1999; Electricity Supply Industry 1999-2000, Central Electricity Authority.

col (13): Road length per 1 lakh population in 1999; Statistical Abstract of Haryana 2001-02 (www.indiastat.com).

col (14: Population served per hospital bed as on January 1999; Rajya Sabha Unstarred Question No. 795, dated 26.11.2001(www.indiastat.com).

col (15): Teledensity in 1999;Lok Sabha Unstarred Question No. 1561, dated 13.03.2002 (www.indiastat.com).

col (16); Percentage of net irrigated area per to the net sown area in 1999-2000; Statistical Abstract 2002, Ministry of Statistics and Programme Implementation , Govt. of India.

col (17): Consumption of chemical fertilizer per hectare of gross cropped area; Fertilizer Statistics, 1999-2000, The Fertilizer Association of India.

col (18): Calculated from the data available from the Election Commission of India (www.eci.gov.in).

col (19): Crime in India - 1999, National Crime Records Bureau (NCRB), Ministry of Home Affairs; Government of India.

col (20): same as col (19).