



# **National Seminar on the Results of NSS 66<sup>th</sup> Round Survey**

**20 - 21 June 2013  
Bengaluru**

National Sample Survey Office  
National Statistical Organisation  
Ministry of Statistics and Programme Implementation  
Government of India

# **Technical Session- I**

## **Employment-Unemployment**

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## Introduction

The National Sample Survey Office (NSSO) under the Ministry of Statistics & Programme Implementation is responsible for collecting regular data through nation-wide household surveys on various Socio Economic subjects. These surveys are conducted in the form of rounds generally of one year duration covering two to three subjects in a round. The results of these surveys are released in the form of various reports, which are mainly based on a pre-planned scheme of tabulation of data finalized by a team of experts. In order to encourage tabulation/ analysis of data by the researchers, the unit level data is disseminated through the Computer Centre of the Ministry.

The concept of holding National Seminars at regular intervals, usually after the release of all the reports based on data collected during a round of the survey of NSSO, was initiated in the year 2003. Till date ten National Seminars have been successfully organized starting with the Seminar on the results of NSS 56<sup>th</sup> Round (July 2000 - June 2001). Such Seminars provide an opportunity/ platform to the NSSO officials and those having interest in data thrown up by these surveys for professional interaction on issues of mutual interest. The National Seminar on the results of NSS 66<sup>th</sup> Round (July 2009 - June 2010) was held at Bengaluru during 20 - 21 June 2013, as a part of this exercise and was tenth in the series of such Seminars.

Technical Papers were invited from ISS officers, officers of State Directorates of Economics & Statistics, Central Ministries and other Organizations/ Institutions for presentation and discussion in the Seminar. In all 28 papers were selected for presentation but only 26 could be presented as authors of two papers could not make it to the Seminar. The papers were classified into two thematic groups viz. **Employment-Unemployment and Household Consumer Expenditure** and were presented in four technical sessions. The papers in each group covered various aspects of the surveys and related issues. The authors were asked to revise their papers, if they so desired, keeping in view the discussions held/ suggestions made during the Seminar. These revised papers are now being published in this volume.

Session-wise Summary of the proceedings held during the Seminar is also given in this volume. The purpose of the publication will be served well if the readers find it informative and useful.

## **National Seminar on the Survey Results of NSS 66<sup>th</sup> Round**

A National Seminar on the results of NSS 66<sup>th</sup> Round was organized at Bengaluru during 20-21 June 2013. The Seminar was chaired by Prof. R. Radhakrishna, former Chairman, National Statistical Commission and Chairman of NSS 66<sup>th</sup> Round Working Group. Dr. T.C.A. Anant, Chief Statistician of India (CSI) & Secretary, MOS&PI, Prof. A.K. Adhikari, Chairman, NSS 68<sup>th</sup> Round Working Group and various senior officers from MoSPI, other Ministries/ Departments and States/ UTs attended the Seminar.

### **Proceedings of the National Seminar on the Survey Results of NSS 66<sup>th</sup> Round**

The Seminar comprised 4 technical sessions in addition to the inaugural session. Two technical sessions each were devoted to the subjects of Employment - Unemployment and Household Consumer Expenditure. Session-wise proceedings of the Seminar are summarized below:

#### **Inaugural Session**

The DG and CEO, NSSO welcomed the participants and briefed about the subjects covered in NSS 66<sup>th</sup> round and highlighted some of the key results.

The CSI and Secretary, in his keynote address observed that besides collection of data for socio economic surveys, NSSO is involved in supervising collection of agriculture statistics, collection of prices from rural and urban areas, updation of urban frame and conducting Annual Survey of Industries. It is pertinent that 40-50% work force of the Field Operations Division (FOD) of NSSO is involved in socio economic surveys and the remaining on assisting the CSO and other ministries to collect the information from the field. NSSO is also involved in conduct of some pilot surveys such as the Periodic Labour Force Survey, Annual Survey of Services etc.

He emphasized the quality measures adopted in socio economic and other surveys in NSSO. NSS data relating to socio economic surveys are of international reputation and has withstood the scrutiny of scholars. However, he felt that there is need to adopt same quality measures for data relating to other regular surveys, viz, ASI, Agriculture surveys and price data collection.

He further advised the need to relook at the NSS work, relating to the sampling frame. Though samples are drawn independently, the frame remained the same, as Census data for Rural Frame changes only once in ten years. He felt that the NSSO may look in to the possibility of panel sampling for its socio economic surveys, especially which are quinquennial in nature. As the Urban frame is dynamic, challenges exist in merging of rural and urban results, one being based on static frame and another one on dynamic frame. Retrospective analysis involving NSS 61<sup>st</sup> and 66<sup>th</sup> rounds and Census 2011 may be carried out in this regard.

He also expressed his concern over the complexity and size of NSS schedules and felt that those may be revisited.

He advised that the papers included for this National Seminar may be got revised in the light of discussions in the Seminar and a few of them may be published in important publications such as Sarvekshana,

Professor R. Radhakrishna, in his inaugural address appreciated the efforts of NSSO, in publishing the key results within one year of the survey. Unit level data of NSS 66<sup>th</sup> round has been extensively used by social scientists, providing insight about poverty and wellbeing of the population. He highlighted some of the odd results requiring attention during the Seminar for detailed discussions:

- i) Declining female work participation rate and how to explain it. Comparison between results of two rounds of surveys may be misleading; we need to filter out cyclical effects from the secular trend.
- ii) Increasing concentration of children among poor households.
- iii) Adverse child sex ratio in Kerala, especially in Allepey district, though aggregate sex ratio is all right.
- iv) Higher incidence of child labor in the progressive states like Andhra Pradesh and West Bengal.
- v) Increased poverty in most of the States.
- vi) 75% rural poor in Punjab belonging to SC community.
- vii) Higher inequality in Kerala, while low inequality in North Eastern States.
- viii) Poverty reduction not commensurate with high growth of GSDP. The per capita expenditure is not high and wellbeing indices are adverse. Income accruing to regions may be looked into.
- ix) Universal PDS based on consumer expenditure in Kerala lags behind Tamil Nadu. There is considerable penetration of PDS in Orissa and Chhattisgarh.
- x) MGNREGA has the coverage of one third of households, however, only on an average 37 days work is available under the MGNREGA. NSS estimates of employment in MGNREGA are much lower (50%) than that provided by the Ministry of Rural Development. The scheme has been better implemented where inspection has been done.

He also viewed positively the suggestions of CSI on the issue of sampling, however he cautioned about the consideration of migration, new households, etc. in the adoption of new concept.

### **Technical Session 1A (Employment - Unemployment):**

The Session was chaired by Prof. R. Radhakrishna, former Chairman, National Statistical Commission. Five papers were presented during the Session.

### **Paper - 1: Some Observations on the Results of NSS 66<sup>th</sup> round:**

This was a divisional paper of SDRD, presented by Shri P. K. Mahapatra, DDG, SDRD. Shri Mahapatra discussed various results of NSS 66<sup>th</sup> round survey on Employment and Unemployment Situation in India.

Shri J. Dash, former DG & CEO, NSSO, remarked that the information on employment presented in NSS reports using ps+ss status (principal activity status+ subsidiary activity status) does not give the actual situation of employment but reflects only labour input. It was clarified that NSS tables for Sch. 10 provide relevant information to get actual volume of employment.

On this issue Shri P. C. Mohanan, DDG, commented that CWS (Current Weekly Status) is more objective than usual status. On the same issue Shri Salil Mukhopadhyay, Director, suggested that for measurement of under-employment, it is necessary to follow the usual status approach.

On the issue of adequate remuneration by self-employed persons Dr. R. Radhakrishna mentioned that these days multiple tasks are done by labourers. Assessment of adequate remuneration by self- employed persons can be captured in a better manner if range of income level is elicited from the respondent instead of actual remuneration. He suggested that this issue may be discussed at the appropriate level.

Shri Saurav Chakraborty, Director, suggested that measurement of under-employment can be captured better if exact time of working in a day is recorded in case of CWS/CDS (current daily status) approach instead of the current intensity (0.5/1.0) approach. He also suggested that instead of collecting information on employment from any member of the household, it should be collected separately from each employed member of the household. At this point, Dr. Radhakrishna remarked that the current approach of collecting information for all the members from one of the members of the household may have its limitations but it is able to collect some information.

**Paper - 2: Work participation and engagement in public works in rural areas - a study based on NSS - P. C. Mohanan:**

The paper was presented by the author. Shri Mohanan highlighted the participation of persons from rural areas in the MGNREGA in his paper, analysed the nature of persons seeking public works and offered an explanation for the reduced usual status Worker Population Ratio (WPR). He stressed the fact that casual workforce was not reflected in SS (Subsidiary Status). There could be cases of misclassification for the status codes '41' and '42'. The result of NSS 66<sup>th</sup> round survey shows increase in estimated person-days. He observed that it is mainly persons from the self-employed category and not the unemployed who are mostly going for MGNREGA work. He observed that participation of elderly females is more than that of younger females in MGNREGA works.

The Secretary remarked, on the issue of participation in the MGNREGA work, that public works may not be uniformly distributed throughout the year and there could be some seasonal effects. He suggested sub-round wise estimates to study the seasonality. Shri Mohanan remarked that sub-round wise estimates may be higher than full-round estimates. Dr. Radhakrishna mentioned that increase in MPCE (monthly per capita expenditure) of a

household participating in MGNREGA has been observed even for higher decile groups. It was pointed out that increase in MPCE of a household as a result of participation in MGNREGA work, might result in classification of such households in the higher decile groups. He also mentioned that Gram Sabha in a village usually identifies the MGNREGA works. Therefore, possibility of misclassification of MGNREGA works can be avoided if local Gram Sabha is consulted.

**Paper - 3: How do Self-employed Workers in India Perceive about their Earnings - Partha Pratim Sahu & Rajeev Kumar:**

The paper was presented by Shri Partha Pratim Sahu. The authors attempted to analyse the trends, patterns and prevalence of the self-employed in India and the perceptions of employed workers about their present earnings using unit level data of employment & unemployment schedules of NSS 66<sup>th</sup> and 61<sup>st</sup> rounds. Shri Sahu emphasised that no details of earnings of the self-employed are known from NSS data. There were only two questions on remuneration of self-employed persons in 66<sup>th</sup> round. The information on the satisfaction of self-employed persons was not adequate. The self-employed category is heterogeneous in nature. There is a wide variation of occupation and earnings as doctors, lawyers to the poorest workers, all fall into this category. It has been found from survey results that around 50% of the self-employed category are not satisfied with their current earnings. He suggested that the definition of 'non-remunerative' be specified. He also suggested for a special survey on self-employed persons.

Dr. Radhakrishna appreciated the paper and remarked that there is a need to incorporate some additional questions in the schedule to improve the utility of the data.

**Paper - 4: Small area improved estimates of unemployment rate amongst youths in India - Dr. B. B. Singh:**

The paper was presented by the author. Dr. Singh highlighted the fact that NSS estimates of unemployment rates for the youth have large coefficient of variation for smaller States/UTs owing to small sample size. He suggested that small area models improved the estimates provided strongly related exogenous variables are available. Spatial models under the set-up of linear mixed model have advantages as they use the relationship between small areas through common auto-correlation coefficients. He has shown in his paper that small area techniques improve the estimates of unemployment rate for the different categories of the youth.

On this issue, Shri G. C. Manna, DDG, mentioned that small states are allotted too small a size for the Central sample to yield reliable estimates. He suggested pooling of Central and State sample data to improve the reliability of the estimates. In this connection Dr. Singh proposed that higher sample size be given to smaller States and UTs for the Central sample.

**Paper - 5: Employment Situation index: Comparison of the Employment Situation across the States - Mukesh & Neha Srivastava:**

The paper was presented by Shri Mukesh. The authors attempted to study and compare the employment situation across 17 major states of the country using NSS 66<sup>th</sup> round data. The parameters used in this study relate to level of employment, growth in employment and quality of employment. The WPR, unemployment rate, under-employment incidence are taken to denote the level of employment. The Compounded Annual Growth Rate (CAGR) of the estimates of workforce between NSS 61<sup>st</sup> and NSS 66<sup>th</sup> rounds has been taken as indicator of growth in employment. The proportion of the workforce in the Regular Wage and Salaried (RWS) categories, considered to approximate the organised employment, has been taken as an indicator of quality of employment. The paper has also suggested a tool for static or temporal comparison of employment situation across the seventeen states. The study revealed that eastern and central parts of the country are lagging behind the western and southern states. All the southern states except Kerala are among the top five states of the country.

During the deliberations, several participants felt that the study is based on inadequately justified assumptions and equal weights have been given to all the indicators, which is not proper. Dr. B.B. Singh suggested that in composite index variability of all the indicators may be looked into. Shri Salil Mukhopadhyay said that uncorrelatedness of the component indices was not a necessary condition for combining them. Shri P. S. Bose, DDG, pointed out that uncorrelatedness did not imply independence. Shri O.P. Ghosh, Director, pointed out that the line diagrams with states on the horizontal axis were not appropriate. The authors were advised to re-examine the methodology for improvement.

**Technical Session 1B (Employment - Unemployment):**

The Session was chaired by Dr. T.C.A. Anant, Chief Statistician of India (CSI) & Secretary, MOS&PI. Nine papers were presented during the Session.

**Paper - 1: Designers Expectation and Enumerators Response in Household based Surveys: A measure of closeness - S. Chakrabartty & A. Baksi:**

The paper was presented by Shri S. Chakrabartty. Issue was raised that Design-time may vary from region to region and for that matter varied design-time was suggested. Use of Arithmetic Mean (A.M.) by author was criticised as A.M. has some limitations. Instead of A.M., it was suggested Geometric Mean (G.M.) could be used for measure of closeness. Author justified the use of A.M. as it will give higher estimate than G.M. He agreed that G.M. could also be used. Response code does not depend on only time factor, but also depends on socio-economic characteristics.

**Paper - 2: Survey on Employment-Unemployment by the NSSO and Labour Bureau: Emerging Issues and Way Forward Towards Developing an Integrated Database - G. C. Manna:**

The paper was presented by Shri G.C. Manna. Regarding the question what is the justification for the use of parametric Z-test, the author replied he had used it for non-availability of RSE values both for NSSO as well as Labour Bureau.

**Paper - 3: Some Field Experiences of the 66<sup>th</sup> Round of NSS on Household Consumer Expenditure and Employment - Unemployment:**

This was a divisional paper of FOD, presented by Shri. D. Sudhakar, Deputy Director. Audience was of the view that infrequent problem in the field should not be shown as generalised problem. In reply to another question, FOD said that the experiences are not imaginary but based on facts.

**Paper - 4: Occupation and Income Mobility in India: Evidence from Recent NSSO Surveys - Jhilar Ray & Rajarshi Majumdar:**

The paper was presented by Shri Jhilar Ray. A point was raised that the study is based on households where both parents and children are staying together but there is migration for better jobs and those households are excluded. Is that not a limitation of the study? Author agreed that this was a limitation but that was mainly because of lack of availability of data.

**Paper - 5: A Study on Wage Rates of casual Labour with Emphasis on Examining Effects of Vocational Training - Chandrajit Chatterjee & Ambica Anand:**

The paper was presented by Shri Chandrajit Chatterjee. A comment from the audience was that shortage of skilled workers in some sectors like in construction for lack of vocational training is true but simultaneously excess supply of skilled workers might also reduce the wage rates like what is happening now in IT sector.

**Paper - 6: Infrastructure, Wellbeing and Marginalization in Rural India - A.K. Verma, S. Chakraborty & A. Baksi:**

The paper was presented by Shri A.K. Verma. Social indicators suggested by the authors could be used for comparison with the 'Village Facility Index'. In reply to another query on whether comparing village facility index with per capita SDP (State Domestic Product) is good idea, the presenter replied that it was done in absence of village level MPCE. He also said that for proper study of village facilities, sampling of villages is to be PPS (probability proportional to size).

**Paper - 7: Employment growth in India at disaggregated level - Asis Ray & Salil Kumar Mukhopadhyay:**

The paper was presented by Shri Asis Ray. The authors viewed that the dimension of withdrawal of females from unpaid employment in primary sector gives us a caution whether we are missing some of them in our surveys.

Dr. B.B. Singh gave the suggestion that to study whether some of the female employment is missed, 'cohort analysis' for different age groups could be done.

**Paper - 8: Student Workers in India: Incidences of Earning While Learning - Salil Kumar Mukhopadhyay & Tarak Chandra Patra:**

The paper was presented by Shri Salil Kumar Mukhopadhyay. A comment from audience was that the student workers' study could be restricted to age group 5-19 years instead of 5-29 years since number of students in the age group 20-29 is very less.

**Paper - 9: Scenario of Employment in context of Female Worker in Rural India: NSS 66<sup>th</sup> Round - Hema Jaiswal:**

The paper was presented by the author. It presented trends in women employment. It analyzed whether employment provides women an opportunity to improve their well being and enhance their capabilities.

**Technical Session IIA (Household Consumer Expenditure):**

The Session was chaired by Shri Vijay Kumar, DG & CEO, NSSO. Six papers were presented during the Session.

**Paper - 1: Household Consumer Expenditure Survey: A review of NSS 66<sup>th</sup> Round:**

This paper was a divisional paper of SDRD, presented by Shri A. Baksi, Director. In NSS 66<sup>th</sup> Round, two types of schedule (Type I and Type II) differing in reference period (URP - uniform reference period, MRP - modified reference period, MMRP - mixed modified reference period) were canvassed which gave rise to three sets of MPCE. An attempt was made through this paper to compare the three sets of MPCE estimates viz. MPCE (URP), MPCE (MRP) (from Schedule Type I) and MPCE (MMRP) (from Schedule Type II) prepared from these Schedules. The paper revealed that Schedule Type II estimates of average MPCE (MMRP) are higher than Schedule Type I estimates of MPCE (both MRP and URP) across different expenditure groups of households in almost all states and sectors. It further revealed after analyzing data on informants' response and canvassing time of the schedules that Type II Schedule does not put any additional burden either on the respondent or on the investigator when compared to Schedule Type I. Prof. A. K. Adhikari and Shri G.C. Manna emphasized the need for carrying out statistical test of significance on the higher estimates observed in Schedule Type II. Professor Radhakrishna observed that there was shift between the estimates of Schedule Type I and Schedule Type II by a constant factor which may be a result of reporting/ recall error. Dr. B.B. Singh stressed the need for studying the difference at the level of households within FSUs.

**Paper - 2: Experience of Data Processing, NSS 66<sup>th</sup> Round:**

This was a divisional paper of DPD, presented by Smt. Gopa Chattopadhyay. It highlighted that the data processing problems in 66<sup>th</sup> Round were not much different when compared to earlier rounds. The limitations embedded in our survey system appear to be persistent and we are yet to develop a system to get rid of such ailments. The various type

of non-sampling errors, including inadequate understanding of concepts and definitions on the part of the investigator, lack of clarity in the instructions to the field staff, unavailability of data at the required level of detail, respondent resistance etc., remained unchanged over time. The paper presented case studies showing errors in second-stage sampling, wide variation between child populations and child workers estimated from Schedule 0.0 and Schedule 10, over-reporting of spice and edible oil, inconsistencies with respect to age of household members recorded across the block not consistent with marital status, current educational status, household industry code not consistent with that of household members etc. During the discussion, Dr. B.B. Singh stressed the need to quantify such errors in terms of frequency of occurrence for taking appropriate steps by FOD. Shri P.C Mohanan mentioned that NSSO may have to relook whether questionnaire format could be more suitable in the changing scenario with field work being assigned to Contract Investigators and respondents having time constraint.

**Paper - 3: Pattern of urban poverty in India with special reference to West Bengal: An inter-regional analysis during 1980- 2010 - Nandini Mukherjee & Biswajit Chatterjee:**

In the absence of the authors, the paper was presented by Shri Jhilar Ray. The paper attempted to analyze the pattern of urban poverty in India's States from 1980-2010 with special emphasis on inter-regional study of urban poverty in the state of West Bengal with the help of unit level consumption expenditure data from NSSO. In this paper Head Count Ratio (HCR), following Parameterized Lorenz Curve Method have been used for estimating the poverty measure to study urban poverty. The comparison of urban HCR in states and in different regions of West Bengal based on URP and MRP reveals a significant achievement in reducing poverty both at the national and state level. It also compared these estimates with Tendulkar Committee Report. The paper concluded that there was significant achievement in reducing poverty at States, Region and Districts level. However, the regional differences in poverty reduction have also been quite substantial. It also shows that due to PDS there is less number of poor in urban West Bengal. It was suggested that besides PDS, impact of other schemes of Govt. intervention may be included in the analysis like Mid Day Meal Scheme and provisions under Integrated Child Development Scheme (ICDS) etc.

**Paper - 4: A Study on Impact of Urbanization on Monthly Per Capita Household Consumer Expenditure in India - Dr. T.K. Saha & D. Chakraborty:**

The paper was presented by Dr. T.K. Saha. The authors attempted to study the impact on average MPCE due to inclusion of census towns in urban sampling frame, which do not have urban features like notified statutory towns. The paper compared the estimates of average MPCE for census towns, notified towns and rural areas. The paper concludes that irrespective of the approach used, i.e., MRP, URP or MMRP, inclusion of more samples from census towns would have downward impact on estimates of average MPCE in urban areas especially in three major states Andhra Pradesh, Kerala and West Bengal. To minimize the impact of census declared towns, the paper suggests that only statutory towns may be taken in the urban sampling frame and census town may be treated as

villages and taken into rural sampling frame. During discussion on the paper, Dr. T. C. A. Anant suggested to extend the study to rural areas with villages of large population size with non-agricultural activities.

**Paper - 5: What MPCE does not reveal - Subrata Dhar:**

The paper was presented by the author. The objective of the paper was to present that a state level indicator (e.g., MPCE) often misleads as it may camouflage the immediate and important areas of concern. The author focused his analysis on the NSS 66<sup>th</sup> Round data with particular reference to State of Kerala. Based on the Consumer Expenditure figures from earlier rounds, he contended that higher MPCE for Kerala vis-a-vis India does not portray the real situation. There is a clear divide between Rural Kerala and Urban Kerala as well as between the districts falling in North Kerala and South Kerala. The author suggested that the data needs to be analyzed at more disaggregated level to reveal the wide geographical/ social disparities existing within as well as across the country. The response to this paper was that, in Kerala, first stage units are Wards which are at different scale of development compared to villages of other states. It was also commented that interpretation based on MPCE needs to be more deeply probed at Micro level because of sample size constraint.

**Paper - 6: Expenditure Elasticity of Rice for Major States and All India - Monojit Das:**

The paper was presented by the author. The author attempted to analyze rice consumption patterns of Indian households, using a demand system and socio-demographic information. The paper tried to ascertain whether rice is a normal or an inferior good, i.e., whether per capita rice consumption goes up or down as income/ expenditure increases. In the study, Working-Lesser System has been used for estimation of expenditure of rice which is one of the basic items of consumption. The analysis was based on the data from period 2004-05 to 2009-10. It was observed that there was general decline in per capita rice consumption during 2009-10 (66<sup>th</sup> Round) as compared to 2004-05 (61<sup>st</sup> Round). The study revealed that the expenditure elasticity of rice is less than one in all major States and All India in both Rural & Urban areas. The expenditure elasticities are less than one which indicates there is increase in rice consumption in lesser proportion with the increase in MPCE. The author concluded that rice is actually essential commodity and there is little variation in its demand with change of MPCE. However, in some States like Rajasthan and Tamil Nadu the model used is not satisfactory enough to explain the factors responsible for the rice consumption. Shri O.P. Ghosh suggested that price variation should be accommodated in the model. Dr. T.C.A. Anant observed that rice is consumed by the Households from Open Market as well as from PDS where there is a significant price variation. The extent of PDS also varies from State to State which needs to be adjusted to draw a valid conclusion. The model should be refined and tested by utilising additional relevant data from NSS Surveys.

**Technical Session IIB (Household Consumer Expenditure):**

The Session was chaired by Prof. A.K. Adhikari, Chairman, NSS 68<sup>th</sup> Round Working Group. Six papers were presented during the Session.

**Paper - 1: An Estimation of Multilateral Price Index Number using 66<sup>th</sup> Round NSS data - Siddhartha Kundu:**

The paper was presented by the author. The paper explained the importance of Multilateral Price Index Numbers in making welfare comparisons across Indian States, which vary widely in price structure, and gave the details of how such index numbers had been constructed using unit values of different consumption items from the consumer expenditure data (Schedule Type 1) of NSS 66<sup>th</sup> round.

Prof. R. Radhakrishna, former Chairman, NSC, appreciated the work done by the author, saying that the Planning Commission had adopted a similar methodology in implementing the recommendations of the Tendulkar Committee on poverty estimation. He suggested that focusing on specific MPCE fractile classes within geographical regions in computing the price indices would make the exercise more useful for poverty analysis. He further said that the Planning Commission had used exogenous information provided by the Labour Bureau to compute price indices for certain services, but there were some deficiencies in the data across rounds. In preparing a spatial price index, the results would not be affected by round-to-round variation.

Shri Kundu said that obtaining suitable price indices for services was one of the crucial steps in the exercise. Using NSS data as done by the Planning Commission and in his own work to obtain price indices for health and educational services involved assumptions and produced only approximate results. It would be better, he said, if the Labour Bureau could directly collect the necessary data and make it available.

It was noted that the Retail Price Collection work of NSSO would not provide data on services as it collected only prices of goods. Also, the specification of goods in the RPC was at great variance with the Consumer Expenditure Survey classification.

Dr. T.C.A. Anant noted that an alternative source of data for services was the data used by the CSO at present to prepare CPI-Rural and CPI-Urban indices. It was also noted that unit level data used by the CSO would be required to prepare spatial indices.

**Paper - 2: Equivalence Scale: Evidences from NSS 66<sup>th</sup> Round Consumption Data - Onkar Prosad Ghosh**

The paper was presented by the author. The author explained how the use of MPCE as the basis for poverty calculations assumes that the total consumption of a household is equally shared by all members irrespective of age composition. For proper poverty comparisons, therefore, it is necessary to construct suitable equivalence scales to distinguish between households of different age compositions. He discussed the broad alternative approaches possible in this endeavor, and outlined the methodology he had adopted to construct such an equivalence scale and the results obtained, using Schedule Type 1 data of NSS 66<sup>th</sup> Round.

Prof. R. Radhakrishna appreciated the attempt to construct equivalence scales to compare levels of living of households with different age compositions. He referred to the growing

body of literature on the subject, and to the movement towards commodity-specific scales. He said that there was scope to improve upon certain aspects of the estimation procedure, such as the use of OLS. He added that higher  $R^2$  values were possible than that obtained by the author, and referred to packages available for such analysis.

The author, Shri O.P.Ghosh, explained that he was dealing with data that was not collected for the purpose for which he was using it, and that this imposed certain limitations on the methodology.

The CSI was interested in the implications of the paper for poverty analysis, in particular, on the poverty line. He also advised the author to try out slightly different definitions of “child”, that is, other choices of the cut-off age, and see how it affected the analysis.

### **Paper - 3: Change in Patterns of Consumption Expenditure: A Study on Target Household Groups – Dr. Subhra Sarker and Nilanjana Roy**

The paper was presented by Dr. Subhra Sarker. She explained that the findings on fall in share of food and rise in share of education in consumer expenditure for households with children of school going age showed that the increase in income has benefited children of school going age. Regarding the findings on share of health expenditure, she said that they were not explainable by the change in dependency ratio of the population.

### **Paper - 4: The Imaginary Growth in Consumption Expenditure – Purnachandrarao**

The paper was presented by the author. He said that the significant negative correlation found between State-level change in poverty ratio reduction during the period 2004-05 to 2009-10 and change in MPCE during the same period showed that growth in consumption expenditure cannot ensure poverty reduction. He said that most of the change in MPCE was due to inflation and the Government should concentrate on lowering prices.

### **Paper - 5: Food Consumption and Calorie intake in India: An Analysis of 50<sup>th</sup>, 61<sup>st</sup> and 66<sup>th</sup> Rounds of NSS Quinquennial Survey - Niranjan Chichuan**

The paper was presented by the author. He said that the data showed that consumption patterns in India were changing and the findings on consumption of cereals and pulses, with the related findings on calorie and protein intake, suggest that hunger and malnutrition in India continue to be cause for concern.

Dr. T.C.A. Anant drew the author’s attention to a recent paper warning against cross-country comparison of nutrition without taking genetic differences into account. He also said that concerns were being raised about the possible adverse consequences of excessive emphasis on calorie norms as a basis for measurement of under nutrition and allocation of resources. He said that current thinking was in favour of a de-emphasising of calorie norms towards a more balanced approach to nutrition taking other nutrients, in particular, proteins, into account. He also said that change in household age composition over time needed to be adjusted for such analysis.

Prof. A.K. Adhikari, Chairman of the Working Group for NSS 68<sup>th</sup> Round, advised the author to study the estimates of calorie intake per consumer unit, in addition to per capita estimates, from NSS reports.

**Paper - 6: Consumption of the Quantity of Selected Commodities of both Urban and Rural Sectors by NSS Zone-wise - Altaf Hussain Haji**

The paper was presented by the author. He explained the indices he had constructed to compare the six NSS zones of India in respect of quantity of consumption of selected commodities, namely, rice, wheat, arhar, moong, milk, eggs, meat, banana, potato, onion and tomato.

**Concluding remarks**

Prof. A.K. Adhikari, Chairman of the Working Group for NSS 68<sup>th</sup> Round, drew attention to the need for dedicated staff for field work, saying that this was only possible with permanent field officials. He also stressed the value of experience and the need for specialisation of officers involved in NSS work so that valuable experience was not lost through frequent transfers.

The Chief Statistician of India and Secretary, MoSPI expressed his satisfaction with the number and quality of papers presented during the Seminar. In his opinion, while NSS data was amenable to superficial analysis, it was possible to analyse it to get deeper insights into socio-economic realities. The schedules of enquiry, he said, should not, while trying to accommodate various requirements, lose sight of the main purpose of the survey. He insisted that we should be very clear about what we want to measure, and design our surveys accordingly. According to him, data users should participate in Working Group meetings stating exactly how they propose to use the data, in well-argued status papers.

The Secretary encouraged the authors to try to get their papers published in 'Sarvekshana' or elsewhere.

Shri Vijay Kumar, DG & CEO, NSSO observed that despite staff constraints, NSSO was doing a remarkable job. It was also providing useful assistance to states in conduct of the surveys. He added that papers presented in the Seminar indicate wide use of NSS data and reports. He thanked Prof. Radhakrishna, Prof. Adhikari and Dr. Anant for chairing different technical sessions and giving useful suggestions to the authors. He also thanked the authors for presentation of well prepared papers. He indicated that NSSO will consider allowing TA/DA to authors who are not paid by their organizations. He also thanked rapporteurs, organisers and the participants for making the Seminar a success.

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# **Some observations on the results of NSS 66<sup>th</sup> round survey on Employment and Unemployment**

**A paper by SDRD**

## *Abstract*

*NSS 66<sup>th</sup> round survey on Employment- Unemployment, besides collecting person-wise data on employment –unemployment particulars in usual activity, current weekly and current daily statuses in the usual pattern of quinquennial rounds, has also collected some data at household level on participation in MGNREG work by any household member, maintaining of bank account by any household member etc. The present paper has attempted to touch upon broad features of the survey with special reference to MGNREG job card, no. of days worked in MGNREG work, particulars of enterprise and conditions of employment, characteristics of self-employed persons etc.*

*At the outset, some historical perspectives of the quinquennial round are given along with the details of the reports that have been brought out so far on NSS 66<sup>th</sup> round survey on Employment- Unemployment. Special features of the NSS 66<sup>th</sup> round have been highlighted in the next section. In the following sections some broad outline of the boundary of the economic activity and usual activity status envisaged in the survey, estimates on special item of information like MGNREG, use of postal services by households are presented. Some aspects of informal employment have also been discussed in a separate section. Reliabilities of estimates of Broad indicators have been briefly touched at the last.*

## **1 Introduction**

1.1 Since its inception in 1950, the National Sample Survey Office (NSSO) has been collecting socio-economic data through nation-wide surveys. Among various subjects of its survey enquiry, employment and unemployment is considered as an important subject in the NSSO surveys. NSSO has been undertaking these surveys regularly for generating estimates of various parameters of the labour market to assess the volume and structure of employment and unemployment in the country. The assessment of the volume and structure of employment and unemployment using large scale household surveys commenced with the NSS 9<sup>th</sup> round (May - September, 1955). Subsequently NSSO conducted a number of surveys on this subject to firm up the concepts and methods.

1.2 The core conceptual framework for conducting such surveys was put in place by an “Expert Committee on Unemployment Estimates” (popularly known as the Dantwala Committee), set up by the Planning Commission. The Expert Committee reviewed these surveys and the indicators generated from such surveys conducted by NSS in the past. The concepts and definitions recommended by this committee formed the basis of the first quinquennial survey on employment and unemployment

conducted in the 27<sup>th</sup> round of NSS (September 1972 – October 1973). Since then, six comprehensive quinquennial surveys on employment and unemployment situation in India have been carried out in the past by the NSSO prior to the present quinquennial survey in NSS 66<sup>th</sup> round (July 2009-June 2010). These were carried out during the 32<sup>nd</sup> round (July 1977 – June 1978), 38<sup>th</sup> round (January 1983 – December 1983), 43<sup>rd</sup> round (July 1987 – June 1988), 50<sup>th</sup> round (July 1993 – June 1994), 55<sup>th</sup> round (July 1999 – June 2000), 61<sup>st</sup> round (July 2004- June 2005) in which concepts, definitions and procedures were based primarily on the recommendations of the Dantwala Committee. In addition, to meet the need for an annual series of key indicators on employment and unemployment, data on selected items on employment and unemployment particulars of the household members were collected through the annual survey on household consumer expenditure (Schedule 1.0) from the 45<sup>th</sup> round (July 1989-June 1990) of NSS. In the 60<sup>th</sup> round (January-June 2004), a separate schedule on employment and unemployment was canvassed for the first time in an annual round and particulars on employment and unemployment were collected almost in the same manner as that of the quinquennial rounds. In NSS 62<sup>nd</sup> round (July 2005 - June 2006) and in NSS 64<sup>th</sup> round (July 2007- June 2008) also a separate schedule on employment and unemployment, similar to the one canvassed during NSS 60<sup>th</sup> round, was canvassed and particulars on labour force were collected in the manner similar to the quinquennial rounds.

1.3 The results of NSS quinquennial surveys on employment and unemployment are released in the form of reports by thematic presentation of results on the major domains of labour force statistics. The eight reports planned for release on the basis of NSS 66<sup>th</sup> round are as follows:

- (i) *Employment and Unemployment Situation in India, 2009-10*
- (ii) *Informal Sector and Conditions of Employment in India*
- (iii) *Employment and Unemployment situation among Social groups in India.*
- (iv) *Status of Education and Vocational Training in India*
- (v) *Participation of Women in Specified Activities along with Domestic Duties*
- (vi) *Employment and Unemployment situation in Cities and Towns in India*
- (vii) *Home-based Workers in India*
- (viii) *Employment and Unemployment situation among Major Religious groups in India.*

Of these eight reports, the reports under serial numbers (i) to (v) and (vii) are already released. In addition to these eight reports planned, *Key Indicators of Employment and Unemployment in India, 2009-10* had been released in June 2011. Also unit-level data for NSS 66<sup>th</sup> round and the entire document of *Key Indicators of Employment and Unemployment in India, 2009-10* were placed in the public domain within one year of the completion of the survey.

1.4 This paper attempts to discuss the broad features of the employment and unemployment survey of NSS 66<sup>th</sup> round and the estimates presented in the already published two reports viz. *Employment and Unemployment Situation in India, 2009-10* and *Informal Sector and Conditions of Employment in India*.

## **2 Special features of NSS 66<sup>th</sup> round survey on Employment and Unemployment:**

2.1 NSS 66<sup>th</sup> round survey on employment and unemployment had the following distinguishing features:

- i) *Collection of information on MGNREGA*: For the rural households information was collected on ‘whether the household had Mahatma Gandhi National Rural Employment Guarantee (MGNREG) job card’, ‘whether got work in MGNREG works during the last 365 days’, ‘number of days got work in MGNREG works and ‘mode of payment of the wages earned in MGNREG works’.
- ii) *Particulars of the enterprise and conditions of employment of workers*: For all the usual status workers (excluding those engaged in growing of crops and growing of crops combined with farming of animals) viz., location of work place, type of enterprises, number of workers in the enterprise etc. and some *particulars on the conditions of employment* for the employees, like type of job contract, eligibility for paid leave, availability of social security benefits, etc.
- iii) *Characteristics of the self-employed persons*: For self-employed persons in the usual status (excluding those engaged in growing of crops and growing of crops combined with farming of animals), some particulars were collected for identification of home-based workers, viz., location of workplace, whether worked under product specifications of the employer, etc.
- iv) *Use of NCO-2004 code for collection of information of occupation of the work of the workers*: In NSS 66<sup>th</sup> round, use of 3-digit NCO-2004 code was made for collection of information on the type of occupation of the workers
- v) *A separate activity status classification for those engaged in MGNREG works*: To capture information on participation in MGNREG works at the persons level, in the current status approach, activity status corresponding to casual labour in public works has been split in two categories: code 41 for casual wage labour in *public works* other than MGNREG public works and code 42 is for casual wage labour in MGNREG public works.

## **3 Boundary of economic activity for determination of economically active persons**

3.1 The boundary of economic activity used for determination of labour force parameters in NSS quinquennial survey on employment and unemployment has fundamentally remained the same over the years, with only minor modifications made in between. In NSS surveys, prior to NSS 50<sup>th</sup> round ‘own account construction of fixed assets’ was not included in the boundary of economic activities<sup>1</sup>. From NSS 50<sup>th</sup>

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<sup>1</sup> In NSS surveys prior to 50<sup>th</sup> round, the term ‘gainful’ activity was used instead of economic activity.

round, the own account construction of fixed assets was included in the coverage of economic activities. However such inclusion did not affect the comparability of the labour force parameters over the rounds, since it was estimated from the NSS 43<sup>rd</sup> round survey that less than 1 per cent of the persons were engaged in own account construction of fixed assets during last 365 days.

3.2 Prior to NSS 61<sup>st</sup> round, activities under ‘smuggling’ were kept outside the coverage of economic activity. From NSS 61<sup>st</sup> round, activity status of a person is being judged, irrespective of the situation whether such activity is carried out illegally in the form of smuggling or not. However, in assigning the activity status of an individual in the field, it is difficult to extend the probe to ascertain whether the production of goods and services is carried out in the form of smuggling or not. Thus, in practice, production of goods and services in the form of smuggling has actually been considered as economic activity in NSS surveys even prior to NSS 61<sup>st</sup> round.

Table 1: Number of persons employed per 1000 persons (i.e., WFPR or WPR) according to usual status during 1972-73 to 2009-2010

round (year)	cate- gory of worker	all-India								
		rural			urban			all		
		male	female	person	male	female	person	male	female	person
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
66 <sup>th</sup> (2009-10)	ps	537	202	374	539	119	339	538	180	365
	ss only	10	59	34	4	19	11	8	48	27
	all (ps+ss)	547	261	408	543	138	350	546	228	392
61 <sup>st</sup> (2004-05)	ps	535	242	391	541	135	346	536	215	380
	ss only	11	85	48	8	31	19	11	72	40
	all (ps+ss)	546	327	439	549	166	365	547	287	420
55 <sup>th</sup> (1999-00)	ps	522	231	380	513	117	324	520	203	365
	ss only	9	68	37	5	22	13	7	56	32
	all (ps+ss)	531	299	417	518	139	337	527	259	397
50 <sup>th</sup> (1993-94)	ps	538	234	390	513	121	327	532	206	375
	ss only	15	94	54	8	34	20	13	80	45
	all (ps+ss)	553	328	444	521	155	347	545	286	420
43 <sup>rd</sup> (1987-88)	ps	517	245	385	496	118	315	512	217	369
	ss only	22	78	49	10	34	22	19	68	43
	all (ps+ss)	539	323	434	506	152	337	531	285	412

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38 <sup>th</sup>										
(1983)	ps	528	248	391	500	120	320	521	218	374
	ss only	19	92	54	12	31	20	17	78	46
	all	547	340	445	512	151	340	538	296	420
	(ps+ss)									
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32 <sup>nd</sup>										
(1977-78)	<b>ps</b>	537	248	395	497	123	319	529	224	371
	<b>ss only</b>	15	83	49	11	33	22	14	73	52
	<b>all</b>	552	331	444	508	156	341	543	297	423
	<b>(ps+ss)</b>									
<hr/>										
27 <sup>th</sup>	all	545	318	*	501	134	*	*	*	*
(1972-73)	(ps+ss)									
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*ps :principal status; ss :subsidiary status; ps+ss: principal and subsidiary status taken together*

*\*: proportions not derived for NSS 27<sup>th</sup> round*

*Source: NSS Report no. 537 (Employment and Unemployment Situation in India, 2009-10)*

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3.3 In NSS 66<sup>th</sup> round, the coverage of economic activities was similar to those adopted in NSS 61<sup>st</sup> round.

#### **4 Method of determination of usual principal status and subsidiary economic activity**

4.1 *Usual principal activity status:* In NSS 27<sup>th</sup> round, the usual principal activity category of the persons was determined by considering the normal working pattern, i.e., the activity pursued by them over a long period in the past and which was likely to continue in the future. A broad trichotomous classification was used to determine the broad usual activity viz. worker, unemployed and not in labour force in the NSS 27<sup>th</sup>, 32<sup>nd</sup>, 38<sup>th</sup>, 43<sup>rd</sup> rounds. Starting from NSS 50<sup>th</sup> round a dichotomous classification was used to first ascertain whether the person was belonging to the labour force or not by considering the major time criteria, not necessarily for a continuous period. It is to be noted that in deciding this, only the normal working hours available for pursuing various activities need be considered, and not the 24 hours of a day. The same dichotomous classification was also used to decide the usual principal activity of the household members in NSS 55<sup>th</sup>, 61<sup>st</sup> and 66<sup>th</sup> rounds.

4.2 *Subsidiary economic activity:* In NSS surveys prior to NSS 61<sup>st</sup> round, no minimum number of days of work, during the last 365 days, was specified to classify subsidiary economic activities and a departure was made, for the first time, in NSS 61<sup>st</sup> round when a minimum of 30 days of work, during the last 365 days, was considered necessary for classification as usual subsidiary economic activity. In NSS 66<sup>th</sup> round also same criteria is followed for determination of subsidiary economic activity.

4.3 In Table 1 estimates of worker population ratio (WPR) have been presented over the quinquennial rounds.

4.4 *Method of determination of current weekly activity (CWS) status:* Prior to NSS 50<sup>th</sup> round, current weekly activity particulars, in the quinquennial rounds, were determined by asking a single-shot question, viz., whether got work for at least one hour on any day during the last 7 days preceding the date of survey. However, from NSS 50<sup>th</sup> round onwards, the current weekly activity was determined from the time disposition of the household members for the 7 days preceding the date of survey i.e. from current daily status (CDS). The estimates of WPR according to CWS are presented in Table 2.

Table 2: Number of persons employed per 1000 persons (WPR) according to current weekly status (cws) and current daily status (cde) during 1972-73 to 2009-2010  
all-India

round (year)	cws				cde			
	rural		urban		rural		urban	
	male	femal e	male	female	male	femal e	male	female
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
66 <sup>th</sup> (2009-10)	531	223	536	130	501	182	522	117
61 <sup>st</sup> (2004-05)	524	275	537	152	488	216	519	133
55 <sup>th</sup> (1999-00)	510	253	509	128	478	204	490	111
50 <sup>th</sup> (1993-94)	531	267	511	139	504	219	496	120
43 <sup>rd</sup> (1987-88)	504	220	492	119	501	207	477	110
38 <sup>th</sup> (1983)	511	227	492	118	482	198	473	106
32 <sup>nd</sup> (1977-78)	519	232	490	125	488	194	472	109
27 <sup>th</sup> (1972-73)	530	277	491	123	503	231	477	108

Source: NSS Report no. 537 (Employment and Unemployment Situation in India, 2009-10)

## 5. Estimates of some special items of information collected in NSS 66<sup>th</sup> round of NSS

### 5.1 Participation of rural households in MGNREG works

5.1.1 In 66<sup>th</sup> round, in the household characteristics block of Employment & Unemployment schedule, a few questions were asked to the rural households for collection of information related to MGNREG works, such as 'whether the household has MGNREG job card', 'whether got work in MGNREG works during last 365 days', 'number of days worked' and 'mode of payment of the wages earned in MGNREG works'. The results are presented in Table 3.

5.1.2 From Table 3, it is observed that 35 per cent of the rural households had MGNREG job card. It is noticed that 24 per cent of the households got MGNREG works. It is further noticed that 19 per cent of the households sought but did not get MGNREG work and 54 per cent of the households did not seek MGNREG work. It can also be seen from the Table that percentage of job card holder households decreased as we go up in the decile classes. In the bottom decile class, almost 50 per cent of the households had MGNREG job cards whereas in the top decile class, it was 17 per cent. Similar feature was observed in respect of the households who got work in MGNREG works and the households who sought but did not get work. In bottom

decile class, 35 per cent of the households got work in MGNREG works and 26 per cent households sought but did not get work. In the higher decile class, the corresponding figures were 10 per cent and 12 per cent respectively. As it is expected, percentage of households who did not seek MGNREG works was more in higher decile classes than those in lower decile classes. Whereas 75 per cent of the households in the top decile class did not seek MGNREG works, the figure was 36 per cent in the bottom decile class. The Table also presents the average number of days worked during last 365 days in MGNREG works in different decile classes. It is seen that the households which worked in MGNREG works, worked on an average for 37 days during the last 365 days and the average number of days of work in MGNREG work has generally shown an increasing trend with the increase of level of living of the households. It is seen that in the bottom decile class, the households had worked on an average 32 days during the last 365 days whereas it was 40 days for the households in the top MPCE decile class.

Table 3: Number of households having MGNREG job card per 1000 households, per 1000 distribution of households by status of getting work in MGNREG works and average number of days got work during last 365 days for each decile class on monthly per capita expenditure

decile classes on MPCE	number of households having MGNREG job card per 1000 hhd.	average number of days worked during last 365 days in MGNREG works by hdds. that got MGNREG works	per 1000 distribution of households by status of getting MGNREG work				rural
			got MGNREG works	sought but did not get MGNREG work	did not seek MGNREG work	all (incl. n.r.)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	
0-10	497	32	349	258	362	1000	
10-20	468	32	342	250	386	1000	
20-30	401	33	291	220	469	1000	
30-40	415	37	289	217	469	1000	
40-50	377	35	262	222	485	1000	
50-60	382	40	274	184	517	1000	
60-70	336	42	240	179	552	1000	
70-80	317	42	218	170	585	1000	
80-90	268	44	172	169	629	1000	
90-100	167	40	103	124	746	1000	
all classes	347	37	242	193	538	1000	

Source: NSS Report no. 537 (Employment and Unemployment Situation in India, 2009-10)

## 5.2 Casual work in MGNREG public works

5.2.1 Share of MGNREG public works in all works: In the labour force framework, each individual is assigned a unique activity status code. In the quinquennial round of NSS 66<sup>th</sup> round, to capture the participation in MGNREG public works, in the current

statuses, a separate activity status was created. This activity status was carved out from the activity status code 41 (casual wage labour in public works), which is still used in the usual statuses. Thus, the existing activity status code 41 (casual wage labour in public works) was split into two codes for assigning activity status codes as per current daily activity status and current weekly activity status, as follows:

- (i) worked as casual wage labour in public works other than Mahatma Gandhi National Rural Employment Guarantee (MGNREG) public works – 41
- (ii) worked as casual wage labour in Mahatma Gandhi National Rural Employment Guarantee (MGNREG) public works – 42

However, in the usual activity status, code 41 was used for casual wage labour in public works, which included all types of public works and code 42 was not applicable in the usual activity status.

Thus, from the statuses of employment in the current statuses, the share of current weekly status workers and share of current daily status person-days in MGNREG public works can be determined. Since MGNREG works are for the rural areas, the distribution of current weekly status workers and current daily status person-days in different statuses of employment in rural areas are presented in Table 4 and in Table 5 respectively. It is seen that nearly 1 per cent of the current weekly status male workers and nearly 3 per cent of the current weekly status female workers in rural areas were classified as casual labour in public works. The same feature was observed in the distribution of the person-days worked in different statuses in employment in current daily activity status. These distributions also reveal that compared to males a higher proportion of females were engaged in casual labour in public works. Moreover, the share of casual labour in MGNREG public works among the current weekly status workers being lower than the share of casual labour in works other than MGNREG public works as well as the share of person-days worked in casual labour in MGNREG public works among the person-days worked in current daily status being lower than the share of person-days worked in casual labour in works other than MGNREG public works, may give an indication that in making distinction of public works other than MGNREG public works and MGNREG public works may be difficult in a general employment and unemployment survey.

Table 4: Distribution (per 1000) of current weekly status workers in different statuses in employment in rural areas

statuses in employment	male	female	person
(1)	(2)	(3)	(4)
self-employment	545	569	551
regular wage/ salaried employment	89	52	78
casual labour in public works other than MGNREG public works	9	18	12
casual labour in MGNREG public works	5	14	8
casual labour in works other than public works	352	347	351
all	1000	1000	1000

*Source: NSS Report no. 537 (Employment and Unemployment Situation in India, 2009-10)*

Table 5: Distribution (per 1000) of person-days worked in current daily status in different statuses in employment in rural areas

statuses in employment	male	female	person
(1)	(2)	(3)	(4)
self-employment	562	565	563
regular wage/ salaried employment	94	64	86
casual labour in public works other than MGNREG public works	9	19	12
casual labour in MGNREG public works	5	15	7
casual labour in works other than public works	330	337	332
all	1000	1000	1000

*Source: NSS Report no. 537 (Employment and Unemployment Situation in India, 2009-10)*

5.2.2 *Wage rate for work done in MGNREG works:* Table 6 presents the wage rates for the casual labourers of age 15-59 years engaged in *public works other than MGNREG public works, MGNREG public works and casual labours other than public works* during 2009-10. In this Table, daily wage rate for persons of age 15-59 years engaged as *casual labour in public works* and *casual labour in works other than public works* are also presented for 1993-94, 1999-2000 and 2004-05. At the all India level, the average daily wage-rate of casual labourers *engaged in public works other than MGNREG public works* was Rs. 98.33 for males and Rs. 86.11 for females. It can be seen that at the all India level, the average daily wage-rate of casual labourers *engaged in MGNREG public works* was Rs. 90.93 for males and Rs. 87.20 for females.

Table 6: Average wage earnings (Rs. 0.00) per day received by casual wage labour (activity status codes: 41, 42, 51) of age 15-59 years during 2009-10, 2004-05, 1999-2000 and 1993-94

type of casual labour	all-India					
	rural			urban		
	male	female	person	male	female	person
(1)	(2)	(3)	(4)	(5)	(6)	(7)
<b>NSS 66<sup>th</sup> round (2009-10)</b>						
casual labour in public works other than MGNREG public works	98.33	86.11	93.11	-	-	-
casual labour in MGNREG public works	90.93	87.20	89.03	-	-	-
casual labour in other type of works	101.53	68.94	93.06	131.92	76.73	121.83
CPI (AL) (base year 1986-87)/ CPI (UNME) (base year 1984-85)	-	-	494	-	-	503

<b>NSS 61<sup>st</sup> round (2004-05)</b>						
casual labour in public works	65.33	49.19	59.33	-	-	-
casual labour in other type of works	55.03	34.94	48.89	75.10	43.88	68.68
CPI (AL) (base year 1986-87)/ CPI (UNME) (base year 1984-85)	-	-	319	-	-	338
<b>NSS 55<sup>th</sup> round (1999-2000)</b>						
casual labour in public works	49.04	39.48	46.72	-	-	-
casual labour in other type of works	45.48	29.39	40.23	63.25	38.22	57.98
CPI (AL) (base year 1986-87)/ CPI (UNME) (base year 1984-85)	-	-	271	-	-	279
<b>NSS 50<sup>th</sup> round (1993-94)</b>						
casual labour in public works	24.65	18.52	22.44	-	-	-
casual labour in other type of works	23.18	15.33	20.54	32.38	18.49	28.77
CPI (AL) (base year 1986-87)/ CPI (UNME) (base year 1984-85)	-	-	176	-	-	173
<i>Source: NSS Report no. 537 (Employment and Unemployment Situation in India, 2009)</i>						

### **5.3 Occupational distribution of usual status (ps+ss) workers**

5.3.1 For the workers in the *usual status (ps+ss)*, information on the type of occupation in which they were engaged was collected using the 3-digit classification of National Classification of Occupation (NCO-2004). The distribution of the usual status workers in different occupation divisions are presented in Table 7.

5.3.2 Among the rural male *usual status (ps+ss)* workers, occupation of nearly 38 per cent was 'skilled agricultural and fishery workers' and another 35 per cent had 'elementary occupations', while that of 10 per cent was 'craft and related trades workers'. For rural females also, the occupational structure of the workforce was similar to that of the male workforce: nearly 47 per cent was 'skilled agricultural and fishery workers' and another 39 per cent had 'elementary occupations', while 7 per cent was 'craft and related trades workers'. In urban areas, among male *usual status (ps+ss)* workers, the share of 'craft and related trades workers' was the highest (19 per cent) followed by that of 'elementary occupations' (17 per cent) and 'service workers and shop & market sales workers' (16 per cent). Among the female *usual status (ps+ss)* workers in the urban areas, the share of 'elementary occupations' was the highest (26 per cent) followed by that of 'craft and related trades workers' (19 per cent). The occupation divisions, 'professionals', 'technicians and associate professionals' and 'service workers and shop & market sales workers' each accounted for nearly 10 per cent share of the *usual status (ps+ss)* female workers.

Table 7: Distribution (per 10000) of workers according to usual status (ps+ss) approach by occupation divisions of NCO-2004 for each state/u.t.

occupation division of NCO-2004	description of occupation division of NCO-2004	category of worker			
		rural male	rural female	urban male	urban female
(1)	(2)	(3)	(4)	(5)	(6)
1	Legislators, senior officials and managers	337	172	1411	726
2	Professionals	185	96	963	1047
3	Technicians and associate professionals	158	157	599	1068
4	Clerks	88	23	546	538
5	Service workers and shop & market sales workers	547	226	1567	1064
6	Skilled agricultural and fishery workers	3844	4678	408	735
7	Craft and related trades workers	964	653	1907	1897
8	Plant and machine operators and assemblers	324	48	884	226
9	Elementary occupations	3495	3917	1690	2645
x	Workers not classified by occupations	21	5	11	9
<b>all (incl. n.r.)</b>		<b>10000</b>	<b>10000</b>	<b>10000</b>	<b>10000</b>

*Source: Key Indicators of Employment and Unemployment in India, 2009-10*

#### 5.4 Seeking or available or suitable for the type of occupation

5.4.1 In NSS 50<sup>th</sup> and 55<sup>th</sup> round, attempts were made to collect information on skills. In NSS 50<sup>th</sup> round, information was collected in respect of some specified skills acquired by the individuals. This information was restricted to the non-workers (according to usual principal status) of age 15 years and above in NSS 55<sup>th</sup> round. The results were not satisfactory as most of the people reported to have acquired skill 'other'. The results of NSS 55<sup>th</sup> round showed that nearly 89 per cent of the non-workers in the rural areas and 86 per cent of the non-workers in the urban areas reported to have acquired skill 'others'.

5.4.2 In NSS 61<sup>st</sup> and 66<sup>th</sup> rounds, instead of collecting information on skill in NSS 61<sup>st</sup> round, information on 'seeking or available or suitable for the type of occupation' was collected from non-workers of age below 75 years. The results obtained from the 66<sup>th</sup> round are given in Table 8, in respect of the "proportion of non-workers (according to usual principal status) of age 15-59 years who had reported occupation division X". It may be noted that occupation division X includes those cases where occupation cannot be classified or the member is not willing or suitable for any job. The proportion of non-reported (n.r.) cases is also presented in parenthesis. These two will give an idea about the overall proportion of cases where the occupation could not be classifiable in any of the specific occupation divisions 1 to 9 of NCO-2004. It is seen that nearly one-fifth of the unemployed persons, in both rural and urban areas, according to usual principal status, the type of job for which one was willing or suitable could not be classified in specified occupation divisions. However, the majority (nearly two-thirds) of the non-workers, could not specify the type of job for which they are suitable in both rural and urban areas. Thus, the results of NSS 66<sup>th</sup>

round also show that it is difficult to collect the skill level of the persons who are not in labour force.

Table 8: Number per 1000 of non-workers (according to usual principal status) of age 15-59 years who were seeking/available/suitable for the type of occupation division X of NCO-2004 during 2009-10

category of persons	activity status (ps)							all-India
	81	91	92	93	94	95	97	81-97
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
rural male	227 (47)	688 (51)	634 (124)	692 (24)	708 (137)	887 (9)	568 (188)	647 (57)
rural female	108 (6)	717 (42)	585 (84)	533 (70)	661 (110)	849 (48)	676 (186)	578 (74)
rural person	189 (34)	699 (48)	585 (85)	535 (70)	680 (121)	874 (23)	617 (187)	593 (70)
urban male	224 (27)	709 (17)	651 (41)	657 (3)	728 (5)	876 (9)	736 (23)	661 (18)
urban female	131 (20)	708 (18)	684 (17)	581 (36)	691 (14)	878 (21)	871 (24)	667 (20)
urban person	193 (24)	709 (17)	684 (17)	582 (35)	710 (9)	877 (13)	786 (24)	665 (19)

Note:

1. Figures in parenthesis give the n.r. cases of seeking/available/suitable for the type of occupation.
2. Occupation division 'X' of NCO-2004, includes those cases where occupation cannot be classified or the member is not willing or suitable for any job

Source: NSS Report no. 537 (Employment and Unemployment Situation in India, 2009-10)

### 5.5 Self-employed Persons Who Reported Their Earnings as Remunerative

5.5.1 Information on earning is collected in NSS quinquennial rounds for the regular wage/salaried persons and casual workers in the current daily statuses. But data on earning for the self-employed persons are not available. To have an idea about the earnings of the self-employed, two indirect questions were asked to the self-employed persons, according to usual status (ps+ss), namely, 'do you regard the current earning from the self-employment as remunerative?' and 'what amount per month would you regard as remunerative?' Table 9 presents the proportion (per 1000) of the self-employed persons who reported their current earnings from all self-employment activities as remunerative, and their distribution over the amount of earnings regarded as remunerative by them. It is seen that nearly 49 per cent of the self-employed persons in rural areas and 58 per cent in urban areas, reported their earning as remunerative. Nearly 54 per cent of the self-employed persons in rural area 76 per

cent in the urban area regarded an amount more than Rs 3000 per month as remunerative.

Table 9: Number of self-employed persons according to usual status (ps+ss) reporting their earning from self-employment as remunerative per 1000 of self-employed persons and their per 1000 distribution by amount (Rs.) regarded as remunerative during 2009-10

category of persons	no. per 1000 of self-employed persons reporting earning as remunerative	all-India per 1000 distribution of self-employed persons reporting earning as remunerative by amount (Rs.) regarded as remunerative						
		0	1001	1501	2001	2501	more than 3000	all (incl. n.r.)
		1000	1500	2000	2500	3000	3000	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
rural male	489	35	53	94	67	117	618	1000
rural female	485	95	144	153	95	148	361	1000
rural person	488	53	82	113	76	127	537	1000
urban male	600	18	22	42	30	60	823	1000
urban female	481	143	127	104	81	139	397	1000
urban person	578	38	38	50	38	73	756	1000

Source: NSS Report no. 537 (Employment and Unemployment Situation in India, 2009-10)

## 5.6 Location of workplace

5.6.1 Information on location of workplace was collected for all the workers according to usual status (ps+ss) engaged in industry groups 012, 014, 015 and industry divisions 02-99 of NIC-2004. Of these, industry groups/ divisions, 012, 014, 015, 02 and 05 are in the *[ag]ricultural sector [e]xcluding [g]rowing of [c]rops, market gardening, horticulture and growing of crops combined with farming of animals (AGEGC activities for short henceforth)*. The location of workplace for each of the working members of a household was categorised as follows:

no fixed workplace

workplace located in:

own dwelling unit

structure attached to own dwelling unit

open area adjacent to own dwelling unit

detached structure adjacent to own dwelling unit

own enterprise/unit/office/shop but away from own dwelling

employer's dwelling unit

employer's enterprise/unit/office/shop but outside employer's dwelling

street with fixed location

construction site

others

The specified locations (except 'no fixed workplace') of workplace were further distinguished depending upon the location of the workplace in rural and urban areas. It may be noted that in NSS 61<sup>st</sup> round, no separate category of location for 'structure attached to own dwelling unit', 'open area adjacent to own dwelling unit', 'detached structure adjacent to own dwelling unit' were distinguished. These additional locations of workplace were same as recommended in the report of 'Independent Group on Home-based Workers in India' constituted by the Ministry of Statistics and Programme Implementation, Government of India. The results obtained from the survey on NSS 66<sup>th</sup> round are given in Tables 10 and 11 respectively for the workers engaged in industry groups 012, 014, 015 and industry divisions 02-99 of NIC-2004. It is seen from Table 10 and Table 11 that for nearly 14 per cent of workers in rural areas and 10 per cent of the workers in urban areas, location of workplace was own dwelling unit. For the workers in rural areas, nearly 5 per cent worked in a 'structure attached to own dwelling unit' and each of the workplaces 'open area adjacent to own dwelling unit' and 'detached structure adjacent to own dwelling unit', shared nearly 3 per cent of the of the rural workforce. For the workers in urban areas, nearly 3 per cent worked in a 'structure attached to own dwelling unit' and each of the workplaces 'open area adjacent to own dwelling unit' and 'detached structure adjacent to own dwelling unit', shared nearly 1 per cent of the of the urban workforce.

Table 10: Per 1000 distribution of workers (ps+ss) **residing in rural areas** engaged in AGEFC and non-agriculture sectors by **location of work place** during 2009-10

rural all-India			
location of workplace	male	female	person
(1)	(2)	(3)	(4)
1. no fixed place	57	17	46
<b>workplace in rural areas and located in:</b>			
2. own dwelling unit	85	298	140
3. structure attached to own dwelling unit	37	108	55
4. open area adjacent to own dwelling unit	18	54	27
5. detached structure adjacent to own dwelling unit	17	56	27
6. own enterprise/ unit/ office/shop but away from own dwelling	111	40	92
7. employer's dwelling unit	25	31	27
8. employer's enterprise/ unit/ office /shop but outside employer's dwelling	222	235	226
9. street with fixed location	33	10	27
10. construction site	194	66	161
11. others	89	36	75
<b>rural areas (2 to 11)</b>	<b>831</b>	<b>934</b>	<b>858</b>
<b>workplace in urban areas and located in:</b>			
12. own dwelling unit	1	0	1
13. structure attached to own dwelling unit	0	0	0
14. open area adjacent to own dwelling unit	0	0	0
15. detached structure adjacent to own dwelling unit	0	0	0
16. own enterprise/ unit/ office/shop but away from own dwelling	10	2	8

17. employer's dwelling unit	2	2	2
18. employer's enterprise/ unit/ office /shop but outside employer's dwelling	38	14	32
19. street with fixed location	4	1	3
20. construction site	23	9	19
21. others	7	6	7
<b>urban areas (12 to 21)</b>	<b>87</b>	<b>34</b>	<b>73</b>
<b>total(including n.r.)</b>	<b>1000</b>	<b>1000</b>	<b>1000</b>

*Source: NSS Report no. 539 (Informal Sector and Conditions of Employment in India)*

Table 11: Per 1000 distribution of workers (ps+ss) **residing in urban areas** engaged in AGE GC and non-agriculture sectors by **location of work place** during 2009-10

urban all-India			
location of workplace	male	female	person
(1)	(2)	(3)	(4)
1. no fixed place	90	27	79
<b>workplace in rural areas and located in:</b>			
2. own dwelling unit	3	9	5
3. structure attached to own dwelling unit	2	4	3
4. open area adjacent to own dwelling unit	1	2	1
5. detached structure adjacent to own dwelling unit	1	0	1
6. own enterprise/ unit/ office/shop but away from own dwelling	13	4	12
7. employer's dwelling unit	2	3	2
8. employer's enterprise/ unit/ office /shop but outside employer's dwelling	16	14	16
9. street with fixed location	2	2	2
10. construction site	7	2	6
11. others	2	1	2
<b>rural areas (2 to 11)</b>	<b>51</b>	<b>41</b>	<b>49</b>
<b>workplace in urban areas and located in:</b>			
12. own dwelling unit	55	254	91
13. structure attached to own dwelling unit	24	37	26
14. open area adjacent to own dwelling unit	7	14	8
15. detached structure adjacent to own dwelling unit	9	10	9
16. own enterprise/ unit/ office/shop but away from own dwelling	165	54	145
17. employer's dwelling unit	26	117	43
18. employer's enterprise/ unit/ office /shop but outside employer's dwelling	425	360	413
19. street with fixed location	35	29	34
20. construction site	79	35	71
21. others	27	13	24
<b>urban areas (12 to 21)</b>	<b>851</b>	<b>924</b>	<b>864</b>
<b>Total (including n.r.)</b>	<b>1000</b>	<b>1000</b>	<b>1000</b>

*Source: NSS Report no. 539 (Informal Sector and Conditions of Employment in India)*

## 5.7 Use of postal services by the households

5.7.1 At the request of Department of Posts, Government of India, information on a few items related to holding of some specified Post Office accounts and use of some specified postal services was collected in the household characteristics block of the employment and unemployment survey schedule. Table 12 below gives the proportion of households per 1000 households having specified post office accounts, average number of such accounts held per household and number of households using specified services during the last 3 months.

Table 12: Number of households with member(s) reported having specified post office account per 1000 of households (P), and average number of such accounts (0.0) held per household (A) as on the date of survey and number of households with members(s) reported using specified services in any post office during the last 3 months per 1000 of households (P)

type of estimate	specified post office account					specified services in any post office				
	savings bank account	recurring deposit account	monthly income accounts scheme	other	any	money order	instant money order	international money transfer service	any	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
<b>rural</b>										
P	225	35	7	12	250	13	1	1	14	
A	1.2	1.2	1.2	1.3	1.3	-	-	-	-	
<b>urban</b>										
P	121	65	25	21	179	20	2	2	22	
A	1.3	1.2	1.2	1.5	1.6	-	-	-	-	

Source: NSS Report no. 537 (Employment and Unemployment Situation in India, 2009-10)

## 6 Information on Informal employment:

6.1 *Industry of work for coverage of informal sector and conditions of employment:* Certain probing questions to collect information on informal sector and informal employment were asked to all the workers, whether engaged in the usual principal status or in the subsidiary status, engaged in non-agricultural sector and the agricultural sector, excluding 'growing of crops, market gardening, horticulture' (industry group 011 of NIC - 2004) and 'growing of crops combined with farming of animals' (industry group 013 of NIC - 2004) of the agricultural sector. Thus, coverage of the activities for *informal sector and conditions of employment* of the employees was restricted to the workers engaged in industry groups viz. 012, 014, 015 and industry divisions 02-99 of NIC-2004. Of these, industry groups/ divisions, 012, 014, 015, 02 and 05 are in the *[ag]ricultural sector [e]xcluding [g]rowing of [c]rops, market gardening, horticulture and growing of crops combined with farming of animals (AGEGC activities for short henceforth)*. The industry groups/ divisions 012, 014, 015, 02 and 05 will henceforth be called as AGE GC for the purpose of discussion of this report. The industry divisions 10-99 are for the non-agricultural sector. It is seen from Table 13, that industry division/groups 012, 013, 014, 02-05 shared only 5 per cent of the total workers in the rural areas and 2 per cent of the

workers in the urban areas. Non-agricultural sector (NIC-2004, codes 10-99) engaged nearly 32 per cent of the usual status workers in rural areas and 93 per cent of the usual status workers in the urban areas. For the employees (i.e., regular wage/salaried and casual labours) engaged in NIC-2004 divisions/groups 012, 014, 015, 02, 05, 10-99 further information on conditions of employment was collected. The particulars of the conditions of employment were

- i) type of job contract-
  - a. no written job contract, and
  - b. written job contract (viz., for 1 year or less, 1 year to 3 years and 3 years or more)
- ii) whether eligible for paid leave
- iii) availability of social security benefits (viz., PF/pension, gratuity, health care, maternity benefits, etc.)
- iv) method of payment.

Table 13: Per 1000 distribution of workers (ps+ss) by industry groups/divisions during 2009-10 all-India

category of persons	industry groups/ divisions			
	AGGC	AGEGC	non-agriculture	01-99
(1)	(2)	(3)	(4)	(5)
			rural	
male	603	26	371	1000
female	690	103	207	1000
person	630	50	320	1000
			urban	
male	49	10	941	1000
female	102	36	862	1000
person	59	16	925	1000
			rural+urban	
male	450	22	528	1000
female	595	92	313	1000
person	491	41	468	1000

Note: 1: Ref: NSS Report No. 537 (Employment and Unemployment Situation in India, 2009-10)

3. industry groups/ divisions: AGGC (growing of crops, market gardening, growing of combined with farming of animals): 011, 013, AGE GC: 012, 014, 015, 02, 05, non-agriculture: 10-99, all: 01-99

Source: NSS Report no. 539 (Informal Sector and Conditions of Employment in India)

6.2 Sample sizes: Table 14 gives the number of sample employees surveyed in different industry divisions/groups. It can be seen that the number of sample employees (status in employment 31, 41 and 51) for the industry groups/divisions 012, 014, 015, 02, 05, even at the all-India level is very small and as such this poses severe limitation in drawing valid inferences on the basis of the estimates for such category of employees even at the all India level. However, for the industry divisions

10-99, i.e., for the non-agricultural sector the number of sample employees is found adequate.

Table 14: Number of sample usual status (ps+ss) workers engaged in different industry groups/ divisions and status in employment in the employment and unemployment survey during 2009-10

status in employment	all-India					
	rural			urban		
	industry groups/divisions					
	AGEGC	non- agri- culture	AGEGC and non- agriculture	AGEGC	non- agri- culture	AGEGC and non- agriculture
(1)	(2)	(3)	(4)	(5)	(6)	(7)
<b>male</b>						
11-21	1265	18077	19342	392	18976	19368
31	161	11284	11445	123	18631	18754
41	8	710	718	1	289	290
51	282	10960	11242	167	7048	7215
11-51	1716	41031	42747	683	44944	45627
<b>female</b>						
11-21	3474	4309	7783	447	3998	4445
31	21	2450	2471	11	4391	4402
41	56	1143	1199	0	56	56
51	101	1816	1917	21	1435	1456
11-51	3652	9718	13370	479	9880	10359

Note: 1: status in employment (code): self-employed - 11, 12, 21, regular wage/ salaried employees - 31, casual labour in other than public work - 51, casual labour in public work - 41.

2: industry groups/ divisions: AGEGC: 012, 014, 015, 02, 05, non-agriculture: 10-99, all: 01-99

Source: NSS Report no. 539 (Informal Sector and Conditions of Employment in India)

6.3 Type of job contract: As mentioned earlier, information on type of job contract was collected for the employees (regular wage/salaried and casual labours). In Table 15, total number of sample employees in the industry groups/divisions 012, 014, 015, 02-99 is presented. It can be seen that for the casual labours very small number of sample workers had written job contract in both rural and urban areas. For the regular wage/ salaried employees, however, sufficient number of sample employees were surveyed who had written job contract.

Table 15: Number of sample employees surveyed with different types of job contract during 2009-10

type of employees	no	Less than 1 year	1 year or more	all-India
				All (incl. n.r.)
(1)	(2)	(3)	(4)	(5)
<b>rural</b>				
regular/wage/salaried	6777	331	6632	13916
casual labours	13979	656	203	15076
<b>urban</b>				
regular/wage/salaried	13813	473	8671	23156
casual labours	8709	100	87	9017

Source: NSS Report no. 539:

(Informal Sector and Conditions of Employment in India)

6.4 Eligibility of social security benefits and paid leave: In Table 16, the number of sample employees (regular wage/ salaried employees and casual labours) who were eligible for social security benefits is presented and in Table 17, the number of sample employees who were eligible for paid leave is presented. It is seen that at the all-India level, sufficient number of employees who were covered under the different social security benefits were surveyed. Similarly, it appears that adequate number of sample employees who were eligible for paid leave was netted in the survey.

Table 16: Number of sample employees eligible for different social security benefits during 2009-10

category of persons	eligible for some of the social security benefits	all-India
		not eligible for social security benefits
(1)	(2)	(3)
rural male	7030	16040
rural female	1316	4188
rural person	8346	20228
urban male	10333	15659
urban female	2218	3642
urban person	12551	19301

Source: NSS Report no. 539 (Informal Sector and Conditions of Employment in India)

Table 17: Number of sample employees eligible for paid leave during 2009-10

category of persons	eligible for paid leave	all-India
		not eligible for paid leave
(1)	(2)	(3)
rural male	7559	15485
rural female	1599	3903
rural person	9158	19388
urban male	11274	14699
urban female	2669	3186
urban person	13943	17885

*Source: NSS Report no. 539 (Informal Sector and Conditions of Employment in India)*

## 7. Reliability of the Estimates of Broad Indicators of Employment and Unemployment

7.1 The RSEs of the estimate of WPR obtained from NSS 66<sup>th</sup> round data for all-India/state/ut have been presented in Table 18 according to usual status (ps+ss) and current weekly status (cws). It is seen that RSEs of the estimates of WPR for rural male according to usual status (ps+ss) and cws are within 5 % for all the states except Goa, Uttarakhand, Dadra and Nagar Haveli, Daman & Diu, Lakshadweep and Puducherry. For rural female, RSEs of the estimates of WPR in both the approaches exceeded 5% for some of the major states<sup>2</sup> also. The RSEs of the estimates of WPR according to usual status and cws for urban males were within 5% for all the states except Assam, Meghalaya, Sikkim and Lakshadweep. For urban females in both the approaches of measurement, RSEs are larger than 5% for most of the major states.

<sup>2</sup> The major states are those with population one crore or more as per population census 2001 in respect of rural or urban sector separately. As per this criterion, there are 20 major states in the rural areas and 21 major states in the urban areas. The major states are: Andhra Pradesh, Assam, Bihar, Chhattisgarh, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, Uttarakhand, West Bengal and urban Delhi.

Table 18: WPR (per 1000 of persons) and the Relative Standard Errors (RSEs) of WPR according to different approaches for each state/u.t.

<b>rural male NSS 66<sup>th</sup> round</b>				
state/u.t.	WPR		RSE of WPR	
	PS+SS	CWS	PS+SS	CWS
(1)	(2)	(3)	(4)	(5)
Andhra Pradesh	598	577	2.19	2.2
Arunachal Pradesh	499	489	3.90	4.67
Assam	553	545	1.62	1.76
Bihar	481	474	2.05	2.08
Chhattisgarh	511	493	2.57	2.56
Delhi	601	601	1.16	1.16
Goa	526	526	7.48	7.48
Gujarat	585	568	1.94	2.32
Haryana	522	500	1.56	1.71
Himachal Pradesh	556	537	1.73	2.19
Jammu & Kashmir	563	530	1.90	1.55
Jharkhand	491	486	2.75	2.76
Karnataka	624	615	1.77	1.84
Kerala	564	539	1.23	1.18
Madhya Pradesh	556	544	2.10	2.14
Maharashtra	576	560	1.38	1.44
Manipur	499	497	2.39	2.31
Meghalaya	580	573	1.77	1.90
Mizoram	598	596	2.36	2.31
Nagaland	500	480	3.19	3.83
Odisha	578	554	1.24	1.41
Punjab	531	523	2.33	2.32
Rajasthan	510	498	1.20	1.27
Sikkim	556	557	3.36	3.33
Tamil Nadu	603	596	1.97	1.96
Tripura	583	576	1.62	1.77
Uttarakhand	461	441	12.25	11.05
Uttar Pradesh	504	473	1.07	1.13
West Bengal	608	600	1.15	1.14
A & N Islands	583	571	2.44	2.37
Chandigarh	522	522	1.12	1.12
Dadra & Nagar Haveli	556	556	5.15	5.15
Daman & Diu	574	574	6.18	6.18
Lakshadweep	658	623	9.99	9.59
Puducherry	631	567	5.35	11.22
<b>all-India</b>	547	531	0.38	0.39

Table 18: WPR (per 1000 of persons) and the Relative Standard Errors (RSEs) of WPR according to different approaches for each state/u.t.

<b>rural female NSS 66<sup>th</sup> round</b>				
state/u.t.	WPR		RSE of WPR	
	PS+SS	CWS	PS+SS	CWS
(1)	(2)	(3)	(4)	(5)
Andhra Pradesh	443	396	2.34	2.54
Arunachal Pradesh	293	281	8.07	8.03
Assam	158	134	6.66	7.20
Bihar	65	53	7.29	8.33
Chhattisgarh	371	323	4.07	4.43
Delhi	28	28	27.31	27.31
Goa	127	127	29.18	29.18
Gujarat	320	289	5.03	5.39
Haryana	250	213	4.10	5.06
Himachal Pradesh	468	415	3.27	2.81
Jammu & Kashmir	292	230	8.02	7.81
Jharkhand	159	138	9.09	8.95
Karnataka	370	340	3.05	4.34
Kerala	218	191	4.06	3.63
Madhya Pradesh	282	255	5.43	6.18
Maharashtra	396	349	2.82	3.18
Manipur	212	191	7.31	8.57
Meghalaya	371	341	6.91	7.68
Mizoram	404	371	9.57	9.16
Nagaland	319	269	7.24	8.16
Odisha	243	185	3.62	4.41
Punjab	240	234	5.65	5.95
Rajasthan	357	268	3.01	3.91
Sikkim	309	293	6.25	5.76
Tamil Nadu	405	382	2.79	2.89
Tripura	188	126	7.71	7.78
Uttarakhand	399	352	4.37	5.30
Uttar Pradesh	174	123	3.67	4.03
West Bengal	152	137	5.36	5.40
A & N Islands	199	173	16.88	17.16
Chandigarh	93	93	90.39	90.39
Dadra & Nagar Haveli	42	42	21.54	21.54
Daman & Diu	198	193	14.16	14.17
Lakshadweep	245	132	49.19	43.73
Puducherry	349	296	3.82	8.30
<b>all-India</b>	261	223	0.93	1.05

Table 18: WPR (per 1000 of persons) and the Relative Standard Errors (RSEs) of WPR according to different approaches for each state/u.t.

<b>urban male NSS 66<sup>th</sup> round</b>					
state/u.t.	WPR		RSE of WPR		
	PS+SS	CWS	PS+SS	CWS	
(1)	(2)	(3)	(4)	(5)	
Andhra Pradesh	542	534	2.06	1.9	
Arunachal Pradesh	438	432	2.58	2.40	
<b>Assam</b>	528	521	<b>5.11</b>	<b>5.56</b>	
Bihar	431	427	3.67	3.66	
Chhattisgarh	478	471	3.21	3.74	
Delhi	535	532	2.30	2.48	
Goa	576	574	4.79	4.52	
Gujarat	563	560	1.55	1.55	
Haryana	557	546	3.89	4.15	
Himachal Pradesh	559	553	2.64	2.57	
Jammu & Kashmir	542	536	2.73	2.55	
Jharkhand	486	481	3.27	3.09	
Karnataka	576	570	3.15	3.30	
Kerala	547	526	2.43	2.72	
Madhya Pradesh	503	494	1.77	1.89	
Maharashtra	575	567	1.49	1.36	
Manipur	472	471	2.09	2.06	
<b>Meghalaya</b>	468	468	<b>7.05</b>	<b>7.05</b>	
Mizoram	521	519	0.98	0.80	
Nagaland	436	429	3.99	4.26	
Odisha	568	563	1.71	1.62	
Punjab	568	561	1.41	1.68	
Rajasthan	510	498	2.19	2.38	
<b>Sikkim</b>	601	601	<b>8.25</b>	<b>8.25</b>	
Tamil Nadu	569	566	1.53	1.53	
Tripura	556	552	2.89	3.24	
Uttarakhand	530	525	4.04	3.96	
Uttar Pradesh	501	495	1.62	1.67	
West Bengal	584	578	1.15	1.22	
A & N Islands	574	569	0.26	0.45	
Chandigarh	555	555	2.88	2.88	
Dadra & Nagar Haveli	569	569	3.60	3.60	
Daman & Diu	548	548	0.41	0.41	
<b>Lakshadweep</b>	485	469	<b>6.97</b>	<b>7.51</b>	
Puducherry	566	561	3.45	3.61	
<b>all-India</b>	543	536	2.06	0.47	

Table 18: WPR (per 1000 of persons) and the Relative Standard Errors (RSEs) of WPR according to different approaches for each state/u.t.

<b>urban female NSS 66<sup>th</sup> round</b>				
state/u.t.	WPR		RSE of WPR	
	PS+SS	CWS	PS+SS	CWS
(1)	(2)	(3)	(4)	(5)
Andhra Pradesh	176	167	7.46	7.8
Arunachal Pradesh	148	143	10.16	9.87
Assam	93	84	14.75	10.42
Bihar	47	36	23.25	12.25
Chhattisgarh	140	138	7.28	7.66
Delhi	58	62	20.28	15.84
Goa	100	100	12.96	12.96
Gujarat	143	140	7.84	7.85
Haryana	130	122	11.46	11.84
Himachal Pradesh	159	159	10.60	10.69
Jammu & Kashmir	138	129	17.35	15.96
Jharkhand	85	77	13.55	18.65
Karnataka	170	169	9.80	10.95
Kerala	194	179	4.27	4.57
Madhya Pradesh	131	121	9.22	7.47
Maharashtra	159	148	6.56	6.61
Manipur	146	146	7.27	6.31
Meghalaya	214	213	11.31	11.51
Mizoram	288	283	6.68	6.17
Nagaland	132	107	13.44	7.36
Odisha	119	108	9.57	9.39
Punjab	124	121	6.54	6.81
Rajasthan	120	112	9.30	9.66
Sikkim	150	150	8.48	8.48
Tamil Nadu	191	183	4.22	4.31
Tripura	108	106	25.92	23.80
Uttarakhand	113	108	9.06	8.44
Uttar Pradesh	80	75	7.62	8.25
West Bengal	141	131	4.74	5.58
A & N Islands	191	187	2.91	2.77
Chandigarh	135	135	20.92	20.92
Dadra & Nagar Haveli	6	6	88.19	88.19
Daman & Diu	86	86	12.56	12.56
Lakshadweep	271	224	20.71	18.15
Puducherry	203	197	5.80	5.13
<b>all-India</b>	138	130	1.99	1.90

References:

1. *Instructions to Field Staff, Volume I & II, NSS 66<sup>th</sup> round (July 2009- June 2010)*
2. *NSS Report No. 458: Employment and Unemployment Situation in India, 1999-2000.*
3. *NSS Report No. 515: Employment and Unemployment Situation in India, 2004-2005.*
4. *NSS Report No. 537: Employment and Unemployment Situation in India, 2009-2010.*
5. *NSS Report No. 539: Informal Sector and Conditions of Employment in India.*

# **Work participation and engagement in public works in rural areas – a study based on NSS**

**P C Mohanan**

## **Abstract**

The latest round of the quinquennial employment-unemployment survey of NSSO shows a reduction in the WPR which is a reversal of the trend seen in the earlier surveys. It also shows a reduced employment growth for women and in key sectors like agriculture. A notable feature of the employment scenario in the rural sector during the recent years has been the National Rural Employment Guarantee Scheme (MNREGS) providing assured employment to those seeking it. The NSS survey shows very interesting results on the participation of rural persons in the MNREGA. The paper analyses the nature of persons seeking public work as offers some explanations for the reduced usual status WPR reported in the survey in the backdrop of MNREGS.

Results show a decreased usual status WPR for women. It also shows a reduced percentage of self-employed among the employed. Certain anomalies in the reporting of the public works under the NREGS is noticed in the results as the increased days in casual labor are not reflected in the usual status WPR. However the daily status WPR is found to provide a more accurate picture of the employment situation keeping in mind the rural employment programme. The decrease in the usual status WPR is found to be related to the improved employment days due to the public works provided under the new programme. A significant percentage of those who availed public works belonged to the unpaid family worker and those who reported domestic activities as principal status. The results indicate an increase in the number of days worked by the rural employed though the number of workers have decreased. Tables on the educational and age profiles of those taking up MNREGS work are also presented.

## **1. Introduction**

The findings of the 2009-10 round of the National Sample Survey (NSS) on employment shows some disturbing trend on the work participation rates, especially in the case of women. In the backdrop of the higher growth path of the economy during the period between the last two surveys, such a decline needs investigation to understand the proximate causes. A major intervention in the employment market in rural areas in recent years has been the introduction of the employment guarantee act providing for work as a statutory right to those demanding it. This paper examines in a statistical sense, the WPR and the reported participation in public works among the people. Specifically the paper examines, the employment in persons-days estimated from the daily status data and further investigates the employment in 'public works' and participants in these 'public works' and certain measurement issues likely to have a bearing on the overall usual status participation rates.

In the section following, a brief discussion on the trends in WPR for males and females in both rural and urban sectors is provided using the results from the quinquennial surveys on employment and unemployment. After this Section, the work days reported under casual work categories are discussed using the estimates provided by the NSS employment surveys. As the National Rural Employment Guarantee Scheme (NREGS) under the Act applies to rural area only at present, the ensuing discussions are only on the rural workforce. The issue of the increased work days reported under NREGS not getting reflected under the usual status rates is discussed along with a more detailed discussion on women's participation in the public works.

## 2. Trends in work participation rates and industrial distribution of workers

WPR provides a broad indicator of the people's engagement in work related activities. The NSS provides estimates of WPR following different approaches and reference periods. Broadly these involve the classification and aggregation of the activities pursued by the individuals during the reference period into one of many specified categories. The most commonly used measure is the usual status employment where persons engaged in any economic activities for a pre defined minimum period during a reference period are classified as usually employed. Such engagement could be in a principal capacity or in a subsidiary capacity. The other measure is in terms of person-days or person-weeks, where engagement in any economic activity each day (week) is aggregated to provide a measure in terms of person-days (weeks) employed. The WPR for any group is then expressed as a percentage of persons(person-days) engaged in work related activities to the total population in that group. The WPR is a crude measure in the sense that it is expressed as a percentage to the total population, disregarding the changing age composition of the workforce.

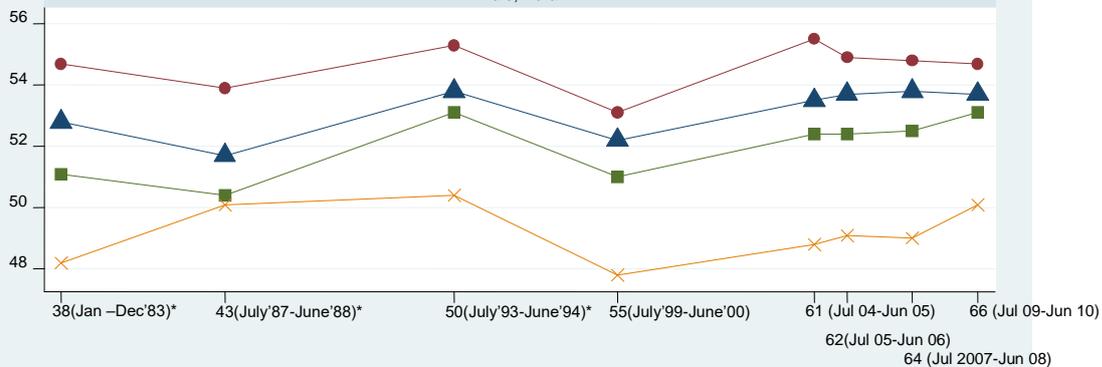
The overall WPR for males in 66th round (2009-10) is almost at the same level as in the 61st round (2004-05). This basically implies a substantial rise in the number of employed males considering the addition to the working age population. However for females, the WPR has decreased in both rural and urban areas. The decrease is seen in both principal status and subsidiary status. Since a large number of women used to work in subsidiary status, this is a matter of some concern as it implies a stationary or even decreasing female workforce in an otherwise growing economy.

The results relating to the WPR based on the different measures adopted in the NSS from quinquennial rounds and the immediately preceding rounds to the current rounds are given in Chart 1-4. Between the last quinquennial round of 61<sup>st</sup> and the present 66<sup>th</sup> round, there were two rounds (viz 62 and 64<sup>th</sup> rounds) where employment-unemployment was a subject of enquiry. Among the three measures, the usual status measure expressed in terms of persons is widely used compared to the weekly and daily statuses which strictly are not in terms of persons but in terms of person-weeks or person-days. The notable aspect of the WPR is the decrease in estimated usual status WPR for women in the NSS 66<sup>th</sup> round. Though changes in the WPR for women have been observed in the past also, the rates now reported by NSSO is the lowest found in the quinquennial surveys. The trends in WPR since the 61st round survey as seen through the results of the two intervening years would suggest that for women, the WPR has steadily decreased since the 61st round. We also need to note that the National Rural Employment Guarantee Scheme (NREGS) has been providing employment in rural areas to both men and women in substantial numbers in recent years. This is also expected to show as a positive contributor to employment growth in the country. The employment guarantee program runs in the rural areas and provides equal participation opportunities for women. While one observe a decrease in the usual status participation for women, the WPR in terms of person-days as estimated from the daily status data shows a much lesser decline. This participation is further examined in this paper.

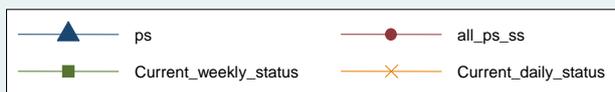
WPR (number of persons/person-days worked per 100 persons/ person-days)

all-India

Male, Rural



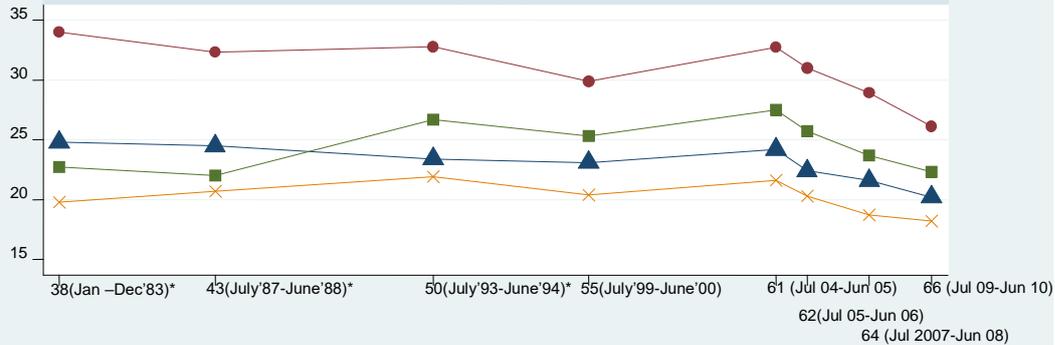
Round



WPR (number of persons/person-days worked per 100 persons/ person-days)

all-India

Female, Rural



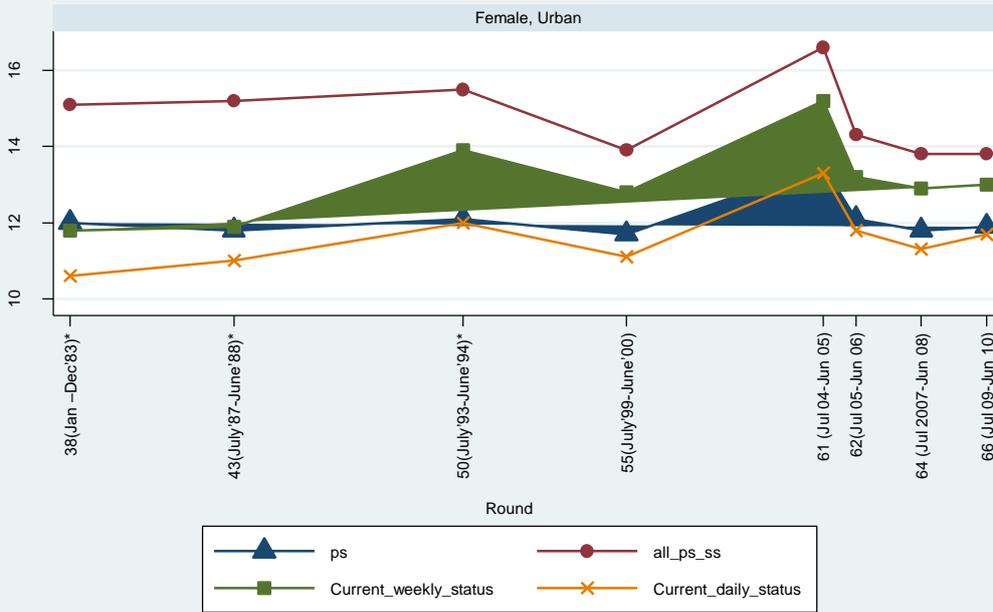
Round



WPR (number of persons/person-days worked per 100 persons/ person-days)

all-India

Female, Urban

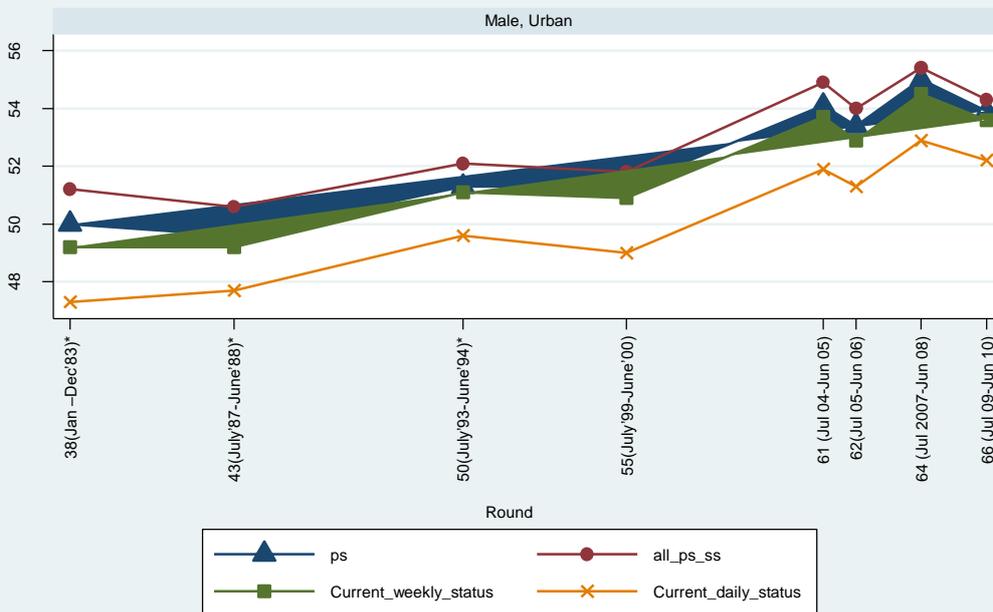


Graphs by Gender and Sector

WPR (number of persons/person-days worked per 100 persons/ person-days)

all-India

Male, Urban



Graphs by Gender and Sector

Another notable feature is the distribution of the employed by broad industry groups which shows that the share of women engaged in agriculture related activities show a decline of almost 4 percentage points. This is indeed a steep decline when we note that this share had declined only by 5 percentage points during the thirty year period 1977-78 to 1999-2000 for rural women. This has been considered as a real shift of labour force away from agriculture (Jayan Thomas, 2012). The other major shift we note is the increase in the share of urban women in 'other services'.

Broad industry division	2004-05				2009 -10			
	Rural		Urban		Rural		Urban	
	Male	Female	Male	Female	Male	Female	Male	Female
Agriculture	66.5	83.3	6.1	18.1	62.8	79.4	6.0	13.9
Mining & quarrying	.6	.3	.9	.2	.8	.3	.7	.3
Manufacturing	7.9	8.4	23.5	28.2	7.0	7.5	21.8	27.9
Electricity, Water etc	.2	0	.8	.2	.2	.0	.7	.4
Construction	6.8	1.5	9.2	3.8	11.3	5.2	11.4	4.7
Trade, Hotel, Restaurant	8.3	2.5	28.0	12.2	8.1	2.8	27.0	12.2
Transport Storage& Communications	3.8	.2	10.7	1.4	4.1	.2	10.4	1.4
Other services	5.9	3.9	20.8	35.9	5.6	4.7	21.9	39.4
Total	100	100	100	100	100.0	100.0	100.0	100.0

Sector	( 2004-05 to 2009-10)				1999-00 to 2004-05			
	Rural		Urban		Rural		Urban	
	Male	Female	Male	Female	Male	Female	Male	Female
Agriculture, forestry etc	4.05	-1.48	5.73	-4.81	0.47	2.73	2.53	6.20
Fishing	4.35	-3.62	1.26	-27.94	2.70	6.74	-0.51	6.06
Mining	7.86	-1.98	-2.58	5.33	2.71	4.10	4.82	-6.32
Manufacturing	0.53	-3.56	0.88	-1.02	3.61	6.74	4.80	10.00
Electricity	-1.12	21.75	-0.10	10.98	1.00	10.11	2.62	6.17
Construction	20.14	42.72	7.26	4.05	10.84	11.03	4.42	1.12
Trade	2.61	0.39	1.89	-0.55	6.16	8.67	2.37	-1.93
Hotels & Rest	4.39	-1.38	1.13	-2.53	5.77	7.37	5.14	8.63
Transport, Storage & Communication	5.60	5.64	2.06	-1.36	5.66	23.65	4.15	-0.68
Financial Services	5.44	8.48	6.85	5.54	6.64	11.35	6.35	9.90

Real Estate, renting etc	4.82	7.09	6.98	6.96	9.81	16.23	12.77	16.40
Public Admin	2.84	10.19	1.74	3.53	-5.04	-5.05	-2.70	0.41
Education	0.98	1.17	3.13	1.41	2.96	12.18	7.03	6.76
Health & social work	-4.87	2.21	3.15	1.78	6.24	7.23	4.16	6.02
other Community services	1.69	-0.11	1.48	9.88	-2.60	-9.35	2.30	-7.95
Private household services	5.18	-6.44	3.62	-8.79	38.35	36.43	9.95	23.02
All	5.12	-0.01	2.76	-0.78	1.90	3.37	3.65	6.20

The growth rates computed for the number of employed according to usual status for the three years (Table 1a) reveals that during the period 2004-05 to 2009-10, employment has declined for several categories. For females notable decline in the employment is found in sectors like household services, which had shown commendable increase during the previous five years. Among sectors that employ significantly large numbers of males and females, construction sectors alone show growth. In the primary and secondary sector, employment of women show substantial decline.

### 3. Employment in public works

In the NSS, the activity status of casual work is generally provided under two categories- casual work in public works (status code 41) and casual work in other works (status code 51). In the past, it was usually seen that most of the casual work was being reported under 'casual work in other works', which will include working in a casual capacity for private individuals, farms and establishments<sup>1</sup>. NSS has provided now a separate category for those who worked under the NREGS (status code 42). This was also done in the 64<sup>th</sup> round. The data was collected against this category only for the daily status for the seven days of the reference week. However for the principal and subsidiary status there were only two statuses viz. casual labor in public works and casual labor in other works, as in the past. Presumably this was done because the employment under NREGS was expected to be for a short period and was not expected to be reflected in the usual status.

We now look at the data on the casual work category more closely to examine the results with the new category in place. In the current daily status, the NSSO collect data for seven days of the reference week, each day further divided into two parts of half intensity each. Thus, for each individual there would be a maximum of seven days in a week under any status category. The estimated number of person-days is derived from these seven days, and, this when multiplied by 52 weeks would provide the estimate for the whole year. The estimated person-days under the different categories of casual labor and the employment in the usual status are presented below.

<sup>1</sup> In the NSS 61<sup>st</sup> round (corresponding to 2004-05), the person-days estimated under public works amounted to a paltry 4.23 million days during the reference week in the rural sector. The total number of man-days under all casual work being 489.8 million

<b>Table 2 : Estimated Rural person/person-days worked as casual labor (in millions)</b>									
<b>Type of casual labour</b>	<b>total person-days of employment</b>								
	<b>66<sup>th</sup> round</b>			<b>64<sup>th</sup> round</b>			<b>62<sup>nd</sup> round</b>		
	<b>Person</b>	<b>male</b>	<b>female</b>	<b>Person</b>	<b>male</b>	<b>female</b>	<b>Person</b>	<b>male</b>	<b>female</b>
<b>Public works</b>	21.07	12.25	8.82	8.81	6.22	2.59	10.22	6.92	3.29
<b>NREGS</b>	13.13	6.41	6.73	9.21	4.94	4.27	NA		NA
<b>Total Public works</b>	34.20	18.66	15.55	18.02	11.16	6.86	10.22		3.29
<b>Other works</b>	595.54	440.82	154.72	542.17	386.16	156.01	502.22	350.59	151.63
<b>All casual work</b>	629.74	459.47	170.27	560.18	397.32	162.87	512.44	357.52	154.92

Source: Tables P5 and P7 of 66<sup>th</sup> round; Tables 6 and 8 of 64<sup>th</sup> round report, T (12) of Report 522. The figures correspond to a week consisting of seven days

In the 62<sup>nd</sup> round there was no separate category for NREGS employment, though the scheme had started operating. NREGS figures are available from the 64<sup>th</sup> round. For these two rounds, the first thing we notice is that the employment in public works both in the usual status as also the subsidiary status has slowed down from the 62<sup>nd</sup> round (table 3), while the person-days in public works has increased (table 2), the addition almost due to the NREGS. However there is an increase in the reported usual status casual employment, other than in public works, from 106.3 million to 112.7 million. The overall subsidiary status employment in casual work has remained more or less at the same level.

In the 66<sup>th</sup> round also we have the NREGS status separately reported. Between the 64<sup>th</sup> round and 66<sup>th</sup> round we find the NREGS has taken off increasing the person-days from 9.2 million to 13 million days during the reference week. The total usual status employment in casual work other than public works has remained at the same level of 112 million. The person-days in casual work other than NREGS have increased from 8.8 million to 21 million. Over all the person days in casual work has increased from 578 million to 630 million (about 9 percent) during 2007-8 to 2009-10. The increase in person-days in public works is quite substantial increasing from 10 million person-days to 34 million during the period 2005-06 to 2009-10. The increase under the NREGS is well understood as its coverage was extended to the whole of rural India.

The number of women engaged in all kinds of casual work in the usual status has actually decreased. From 39.5 million in the 64<sup>th</sup> round, the figure in 66<sup>th</sup> round is 37.5 million. The casual women workers engaged in public works have increased by 2 million during this period.

The increase in the person-days for public works (other than NREGS) from 8.8 million to 21.07 million is somewhat unexplained. Since there was no major program providing public works to the population other than NREGS, there could be a likelihood of some misclassification of NAREGA employment in to status code 41. Out of the 13.13 million person-days in casual labor under NREGS in the rural sector, 6.41 million days are for men and 6.73 million for women. The same figures for status code 41 are 12.25 million and 8.82 million. In the first case there is a near equal participation of men and women, while in the second case it is roughly 3:2.

As per the report of the Rural Development Ministry (data from the website of the Ministry) 2835.96 million person days of employment were provided in 2009-10 while it was 1436.80 million person days in 2007-08. The reference period here is the April-March of the year. These are way above the estimates from NSSO corresponding to status code 42. However if we consider the entire status of public works (i.e. 41 and 42) then the man-days of employment from NSS for the whole year (July to June) comes to 1778.45 million days for 2009-10 and 936.87 million for 2007-09. These are still half of the official figures,

though the growth during the two years is almost identical in both. [The total number of man-days of NREGS work received by the household gathered on the basis of household information is somewhat lower at 1471 million man-days. The lower estimate to some extent can be attributed to the difference in the reference point.]

Certain amount of over reporting in the official figures is not unlikely, in view of the need to meet the targets and other reasons. The under estimate found in status code 42, as noted above, leads one to suspect that the reporting of public works under the two separate statuses might perhaps have been mixed up during the data collection.

<b>Table 3: Estimated number of persons and women in rural areas engaged in casual work of different kinds</b>				
	<b>Estimated Rural persons in subsidiary status</b>	<b>Estimated Rural persons in usual status</b>	<b>Estimated Rural Women in subsidiary status</b>	<b>Estimated Rural Women in usual status</b>
<b>66<sup>th</sup> round</b>				
<b>Total public works</b>	1.6179	3.8871	1.528	2.284
<b>Casual lab in other works</b>	4.362	112.8334	3.74	35.253
<b>All casual work</b>	5.9799	116.7205	5.269	37.538
<b>64<sup>th</sup> round</b>				
<b>Total public works</b>	0.1795	0.7954	0.1594	0.3134
<b>Casual lab in other works</b>	5.4717	112.6976	4.9158	39.1858
<b>All casual work</b>	5.6512	113.493	5.0751	39.4991
<b>62<sup>nd</sup> round</b>				
<b>Total public works</b>	0.3355	0.9877	0.1672	0.433
<b>Casual lab in other works</b>	5.8128	106.3014	5.1317	37.4702
<b>All casual work</b>	6.1483	107.2891	5.2989	37.9032

#### **4. Why increased casual work days not reflected in usual status workforce?**

The question that comes to mind is why the increase in casual work in terms of person-days reported in the current daily status is not translated to an increase in the usual status workforce. By definition, the usual status measures certain enduring status during the reference period, while the persons-days is a reflection of the activity status during the reference week. The person-days of casual work reported by persons are also not reflected in the reported subsidiary status employment. Specifically for example, if 13.13 million person-days of work were done during the reference week under NREGS, in the entire year 682.76 million person days would have been there under this status. Supposing that 50 days of casual work was done by an individual, this would then translate to an employment for 13.66 million persons. As against this we have only 1.62 million persons reporting employment in the subsidiary status. The total persons reporting casual work in usual status public works is only 3.89 million. Clearly the person-days in the public works are not reflected in the usual status.

One possibility, though difficult to verify from data is the omission of status code 42 while identifying usual status. As the status code 42 is for current daily status only, has the investigators excluded this category while recording usual status? This is difficult to verify if the number of days worked under NREGS is less than 30 days, the minimum number of days required for reporting subsidiary status employment.

One argument would be that the public works is done by persons who are usually working i.e. those who already have employment either in the principal status or subsidiary status and the public work program has helped in increasing the work days. The cons of this argument is that the number of persons reported working in the subsidiary status has actually come down indicating that the total persons reporting to be in the workforce has not increased substantially for the casual work category. As regular workers are not expected to be getting work under NREGS, the other possibility is that self-employed persons are perhaps seeking work under NREGS and getting it, though this does not explain the near stationary workforce in the casual labor category, we will presently examine this. The estimated numbers, with all its limitations, indicate that the numbers reporting employment under self-employment category in the rural sector has been steadily decreasing over the years (columns 2 & 3 of table 4).

Table 4 : Estimated persons under self employment category ( in millions)			Estimated person days in work during the week ( in millions)		No of days worked by per worker per year	
NSS round	Rural male	Rural female	Rural male	Rural female	Rural male	Rural female
66	111.43	52.38	1337.53	458.59	333.7	253.5
64	115.48	61.17	1306.02	475.60	325.7	235.6
62	118.15	69.67	1304.91	511.75	325.7	237.7
61	117.25	73.96	1261.86	537.38	325.4	240.6

Source: Survey estimates from reports. The last two columns are derived by multiplying the first two columns by 52 in th year and dividing by the estimated number of workers

The average number of days the household got work in MGNREG is 37<sup>2</sup> days for household. This varied from 32 days for agricultural labor household to 43 days for other labor households. For self employed in agriculture this was 42 days and 34 days for other self employed households. The variation in the number of days they got work among different types of households that got job is rather less than expected, though the agricultural labor households has the highest average. This is explained by the fact that the actual employment provided is not demand driven but supply specific.

It would be illustrative to look at the principal usual status of persons who are reporting engagement in public works. Principal usual status by definition provides the broad activity status of a person considering the whole year as a reference period. Thus a person could be a self-employed in her principal status, but unemployed during the reference week or employed in public works. Certain amount of correlation between the usual status and the daily status is to be expected. Table 4 below provides the distribution of total person-days employed in public works according to the person's usual principal status.

<sup>2</sup> Compiled from unit level data

Table 5: Distribution of person-days in public works according to the principal usual status - Rural										
category	own account worker	Employer	unpaid family worker	regular salaried	casual labor in public works	casual labor in other types of work	Unemployed	Attending educational institution	Doing domestic duties only	Doing domestic duties and was also engaged in free collection
Male in public works (code 41)	9.69	0.02	6.35	0.00	57.77	25.32	0.01	0.82	0.01	
Male in NREGS (code 42)	21.18	0.90	13.44	0.01	8.36	52.63	1.56	1.09		0.17
<b>All public works - Male</b>	<b>13.6</b>	<b>.3</b>	<b>8.8</b>	<b>.0</b>	<b>40.8</b>	<b>34.7</b>	<b>.5</b>	<b>.9</b>	<b>.0</b>	<b>.1</b>
Female in public works (Code 41)	3.97	0.36	10.16		33.62	39.64	0.32	0.00	3.05	8.87
Female in NREGS (Code 42)	11.45	3.30	20.47	0.00	7.77	41.20	0.28	0.01	6.55	8.80
<b>All public works - Female</b>	<b>7.21</b>	<b>1.63</b>	<b>14.62</b>	<b>0.00</b>	<b>22.44</b>	<b>40.32</b>	<b>0.30</b>	<b>0.01</b>	<b>4.56</b>	<b>8.84</b>

Note: The difference from 100 of the row total is due to the omission of other statuses in the table

Source: Tabulated from unit level data

Of the number of days reported under public works by rural males, almost 75 percent of the days in public works were provided by persons whose usual status is casual labor. For females this percentage is close to 63 percent. One would have expected this percentage to be still higher; by virtue of their usual status being casual labor, they would be the persons most likely to report for public works. The remaining days in public works for rural males are reported by self employed (23 percent), a point that was suggested earlier. The percentage of days worked by unemployed is about 2 percent.

In the case of rural females, the reported days in public works are shared by the self employed (22 percent), those engaged in household chores (13 percent) besides the casual labor. Thus in the case of females about 28 percent of the work days are availed by women who are otherwise engaged in domestic duties or work as unpaid family workers.

The participation of persons who are otherwise engaged in domestic work in the NREGS would not add to the WPR as defined by the usual status measure. That a significant share of NREGS work is undertaken by women reporting unpaid family work as their principal status would also suggest that, such participation would also lead to their withdrawal from being in the usual status workforce. This then would lead to the reduction in the WPR, in particular for women

Somewhat supporting this is the evidence that the public works is availed by older women as can be seen in the table below (table 6). The percentage of men availing public works in higher age groups is less than the percentage of women working in public works. This is also an indicator that the public works now being offered is attractive to women who is otherwise unlikely to take up casual work.

<b>Table 6: Distribution days worked in 'public works' by age group of persons reporting such works</b>				
Male	<b>Male</b>		<b>Female</b>	
	Public works other than NREGA	Public work in NREGA %	Public works other than NREGA	Public work in NREGA %
10-14	1.1	.0	.0	.2
15-19	6.9	10.8	3.7	3.7
20-24	13.2	16.5	15.9	7.3
24-29	16.4	15.7	14.0	8.6
30-34	13.2	10.7	15.1	10.1
35-39	15.2	9.6	9.8	20.1
40-44	9.2	6.1	12.5	11.6
45-49	9.0	12.0	9.7	15.0
50-54	6.2	4.9	5.9	7.4
55-59	3.6	5.2	6.1	7.0
60-64	3.1	5.9	5.4	3.6
65-69	1.4	2.5	1.5	4.9
70-74	1.4	.0	.2	.5
75-79	.0	.0	.2	.0
All ages	100	100	100	100

Table 7 also indicates that substantial number of those availing the employment under the NREGS are illiterate or with a only a minimum of schooling not exceeding the primary level. (Table 7)

<b>Table 7 : Distribution of days employed under NREGS by education level of those reporting such employment</b>		
Education level	Male	Female
Not literate	44.15	70.96
Below Primary	10.63	13.85
Primary	16.00	10.15
Middle	14.78	3.74
Secondary	10.68	1.15
Higher secondary & above	3.77	0.05
All	100.0	100.0

## 5. Has the person-days in work increased?

While the proportion of persons in employment may not have increased, it would be possible for the same set of persons to work more days as persons with informal employment and agricultural employment in substantial numbers would have a lot of unused days for work. Second the persons-days would also be increased with social programs like right to work and the provision of employment in rural areas. In table 4 we find that the persons-days worked have shown a consistent increase for rural males while the person-days for women have been decreasing over the recent years. Generally this is consistent with the decrease in female workforce participation discussed earlier. However the decrease in the person-days worked is much less than the decrease in the workers in self-employment category (30 percent versus 15 percent). If we convert the estimated persons days from the weekly to the yearly figure

by multiplying by 52 and dividing by the estimated number of workers we can get an approximate number of days worked as presented in the last columns of Table 4. These numbers indicate that the number of days worked per worker has significantly improved from 61<sup>st</sup> round to 66<sup>th</sup> round.

This implies that though there are fewer rural female workers now than five years ago, the actual days worked by them are more. The same is true for rural male workers. This with improved wage rates may lead to a situation where withdrawal of women in workforce would not adversely impact household earnings but rather may be a result of it.

Measures like the usual status and daily status are expected to provide picture of the employment in terms of persons in the workforce and the volume of employment in terms of persons-days actually in the workforce on any given day. The differences between usual status and daily status will thus give an idea of the magnitude of underemployment as this reflects the underemployment situation. The results from the recent rounds indicate that this difference is considerably reduced in the 66<sup>th</sup> round; possibly indicating reduced underemployment of those in the workforce.

Table 8: Differences in the Usual status WPR and daily status WPR over different rounds						
round	Rural male			Rural female		
	Ps+ss	Cds	diff	Ps+ss	Cds	diff
66 (Jul 09-Jun 10)*	547	501	46	261	182	79
64 (Jul 07-Jun 08)	548	490	58	289	187	102
62(Jul 05-Jun 06)	549	491	58	310	203	107
61 (Jul 04-Jun 05)*	555	488	67	327	216	111
55(July'99- June'00)*	531	478	53	299	204	95
50(July'93- June'94)*	553	504	49	328	219	109
43(July'87- June'88)*	539	501	38	323	207	116
38(Jan -Dec'83)*	547	482	55	340	198	142

Ps stands for principal status and ss fro subsidiary status. Cds is the current daily status  
 '\*' Quinquennial rounds of NSS

## 6. Age specific WPR under different categories for women

WPR has decreased in all age groups for rural women. While the lower WPR in the ages 5 to 19 or even up to 24 would be desirable as these could be due to increased participation in educational activities. This is indeed so as seen from the increasing percentage of women reporting status code 91, meant to record students.

The fall in WPR is seen in all categories of workers except in the casual workers category. In the casual worker category, the increase in those reporting 'public works', perhaps due to the NREGS, has helped arrest the decrease (Table 7).

The category for which the WPR has decreased substantially is the category of unpaid family worker (status code 21). While 15.58 percent of women in rural areas were reported as unpaid family workers in 2004-05, this percentage is now only 10.31. As we have seen in table 4, about 15 percent of the days in public works of rural women have been provided by unpaid family workers. Besides this factor, increased work days for would also mean that they are no more required to assist the family enterprise either due to improved income or because the family gets jobs other than in their enterprises.

Table 9: WPR under different work categories for age-groups for women															
age group	61 <sup>st</sup> round							66 <sup>th</sup> round							
	female rural							female rural							
	11	12	21	31	41	51	All categories	11	12	21	31	41	51	All categories	
5-9	0.03		0.18	0.00		0.05	0.27	5-9	0.00		0.39			0.00	0.40
10-14	0.52		4.48	0.14	0.01	2.26	7.42	10-14	0.21		2.17	0.08	0.00	1.06	3.53
15-19	2.83	0.00	16.92	0.95	0.06	11.17	31.93	15-19	1.43	0.00	8.58	0.59	0.23	7.73	18.55
20-24	4.47	0.03	21.19	1.73	0.07	13.54	41.02	20-24	3.05	0.02	13.72	1.90	0.61	10.23	29.53
25-29	6.71	0.08	24.76	2.25	0.08	17.47	51.35	25-29	5.60	0.09	15.12	2.29	1.07	14.94	39.10
30-34	9.21	0.30	25.99	2.28	0.11	20.54	58.43	30-34	5.97	0.25	17.09	2.21	1.36	16.15	43.03
35-39	11.70	0.36	27.51	2.91	0.12	21.29	63.88	35-39	8.67	0.17	17.27	2.28	1.46	19.76	49.61
40-44	11.13	0.41	28.70	2.29	0.05	20.00	62.58	40-44	9.28	0.27	18.15	2.03	1.24	18.82	49.79
45-49	11.45	0.42	28.02	2.21	0.12	19.39	61.61	45-49	8.94	0.42	17.62	2.19	1.24	18.75	49.17
50-54	9.91	0.34	26.69	2.12	0.05	17.01	56.12	50-54	8.58	0.48	17.35	1.71	1.08	19.28	48.49
55-59	8.99	0.39	25.59	1.42	0.09	14.40	50.89	55-59	7.25	0.36	17.95	1.22	0.85	13.43	41.06
60-64	7.58	0.45	19.02	0.51	0.12	10.38	38.06	60-64	6.33	0.34	12.54	0.50	0.68	11.96	32.35
65-69	5.95	0.72	12.47	0.48	0.11	7.02	26.77	65-69	5.42	0.23	9.62	0.38	0.49	7.84	23.99
70-74	4.82	1.13	4.52	0.41		1.55	12.45	70-74	4.51	0.64	5.03	0.08	0.12	2.54	12.92
75-79	3.00	0.59	3.25	0.14		0.95	7.93	75-79	0.45	0.89	3.01		0.10	1.12	5.58
80-84	1.55	0.14	2.08	0.37			4.13	80-84	0.25		1.94			0.01	2.20
85-89	1.92	1.41	1.61				4.94	85-89	1.33		0.16				1.48
90+	0.22	0.24	0.26				0.72	90+			0.13				0.13
Total	5.08	0.18	15.58	1.21	0.06	10.62	32.73	Total	4.07	0.14	10.31	1.15	0.63	9.77	26.08
age group	61 <sup>st</sup> round							66 <sup>th</sup> round							
	female urban							female urban							
	11	12	21	31	41	51	All categories	11	12	21	31	41	51	All categories	
5-9	0.01		0.25	0.04		0.00	0.30	5-9	0.01		0.03	0.00		0.03	0.07
10-14	0.39		1.77	0.63		0.50	3.28	10-14	0.15		0.67	0.09		0.29	1.19
15-19	2.41	0.00	4.38	3.55	0.00	2.43	12.77	15-19	1.27		2.40	2.12	0.01	1.78	7.58
20-24	4.13	0.07	5.07	8.06	0.00	2.81	20.14	20-24	2.60	0.06	2.73	8.16	0.13	2.33	16.01
25-29	5.12	0.13	5.37	9.03	0.01	3.15	22.81	25-29	4.22	0.16	2.62	9.29	0.03	3.28	19.60
30-34	7.41	0.10	5.94	10.31	0.00	5.26	29.02	30-34	6.09	0.16	3.16	8.91	0.11	4.70	23.12
35-39	8.94	0.32	6.71	11.33	0.07	5.48	32.85	35-39	7.17	0.07	4.41	9.86	0.11	5.67	27.29
40-44	7.80	0.24	5.12	12.28	0.02	5.71	31.16	40-44	6.16	0.24	3.58	10.10	0.12	5.15	25.34

45-49	6.87	0.25	5.44	9.62	0.06	4.49	26.73	45-49	6.39	0.14	2.99	9.76	0.12	3.55	22.94
50-54	4.61	0.34	6.09	10.27	0.01	4.58	25.89	50-54	5.96	0.19	4.08	8.08	0.09	4.27	22.67
55-59	4.44	0.16	4.98	8.61	0.02	3.59	21.80	55-59	4.82	0.09	2.72	6.96		4.48	19.07
60-64	4.59	0.29	3.33	3.59		2.80	14.60	60-64	3.14	0.03	2.74	2.48	0.04	2.60	11.03
65-69	4.04	0.33	2.43	1.71		2.10	10.61	65-69	2.47	0.12	1.45	1.16	0.00	2.11	7.32
70-74	3.72	0.11	1.79	0.80		0.93	7.34	70-74	1.35	0.10	1.06	0.22		0.96	3.69
75-79	0.92	0.74	1.07	0.18		0.80	3.71	75-79	1.16		0.04	0.01		0.25	1.46
80-84	0.62	0.67	0.71	0.16		0.25	2.40	80-84	0.46		0.01	0.34		0.02	0.82
85-89	0.01					0.17	0.18	85-89							0.00
90+							0.00	90+			0.98				0.98
Total	3.94	0.12	3.85	5.91	0.01	2.77	16.60	Total	3.30	0.08	2.27	5.42	0.06	2.65	13.77

## 7. Conclusions

The NSS 66<sup>th</sup> round is the first quinquennial survey on employment after the introduction of the employment guarantee scheme in the rural areas. The NSS has also made an attempt to capture the man-days of employment generated through this scheme by providing a separate category for the daily status. This paper has attempted to analyze the findings on some of these aspects. Results show a decreased usual status WPR for women. It also shows a reduced percentage of self-employed among the employed. Certain anomalies in the reporting of the public works under the NREGS is noticed in the results as the increased days in casual labor are not reflected in the usual status WPR. However the daily status WPR is found to provide a more accurate picture of the employment situation keeping in mind the rural employment programme.

The decrease in the usual status WPR is found to be related to the improved employment days due to the public works provided under the new programme. A significant percentage of those who availed public works belonged to the unpaid family worker and those who reported domestic activities as principal status. Thus even though there are a fewer women in the rural workforce now, the actual work days provided by them has increased.

The reduction in the self employed rural workers observed in recent NSS also appears to be as a result of them moving away from marginal attachment with self-employed activities to wage paid rural employment under the new public employment program. The considerable decreased differences in the usual status and daily status WPR also points to a decreased underemployment of those in the workforce.

The age profile of the persons in public works shows a larger share in the higher age groups and much lower educational attainments among the workers. Results also point towards a possible misclassification of status code 41 and 42 in reporting as seen from the unusual spurt in public works other than NREGS which needs operational improvements in the survey.

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## How do Self-employed Workers in India Perceive about their Earnings?

*Partha Pratim Sahu and Rajeev Kumar\**

### **Abstract**

Using unit record data of employment and unemployment (66<sup>th</sup> and 61<sup>st</sup> round), this paper attempts to analyse the trends, patterns and prevalence of self-employment in India and the perceptions of self-employed workers towards their present earnings. A recurring question is the notion of ‘remuneration’ among self-employed workers: to what extent is self-employment properly remunerative (i.e. suitably and sufficiently financially rewarded), and at what level might self-employed Indians begin thinking of their work in this light. Based on state level information, the paper also attempts to explain the possible determinants of the variations in the rate of self-employment at sub-national level.

**Key Words:** Self-employment, remuneration, National Sample Survey Organization (NSSO), India.

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## **1. Introduction**

In India and many other developing countries, the phenomenon of self-employment has traditionally been viewed as a temporary alternative to wage-paid work and popular opinion has generally predicted that as the economy grows, levels of self-employment in society will correspondingly shrink. In reality, in contrast to such view, recent evidence from national statistics indicates that self-employment may be a longer-lasting and indeed more permanent feature of many developing economies such as India, where economic structural changes appear if anything to be increasing the levels of self-employment in the working population. According to the latest available estimates, in India, 51 percent of the working population was self-employed during 2009–10 (Government of India, 2011). However, despite this high percentage, hardly any comprehensive empirical studies have focused on the earnings of self-employed workers and as such, even basic issues about the status and economic conditions of these workers remain unexplored. An incisive and elaborate understanding of this category of workers is thus essential to comprehend India's labour market especially from the point of view of income generation and poverty reduction.

In this context, based on employment and unemployment data compiled by the National Sample Survey Organization (NSSO), Government of India, this present paper provides some initial analysis of the trends and scale of self-employment and perceptions of self-employed workers towards their work. A particular question is the notion of 'remuneration' among self-employed workers: to what extent is self-employment properly remunerative (i.e. suitably and sufficiently financially rewarded), and at what income level (rupees per month) might self-employed Indians begin thinking of their work in this light? The paper also attempts to explain the variations in the rate of self-employment at sub-national level.

## **2. Data sources, concepts and definitions**

In Indian statistical system, the NSSO is one of the important agencies responsible for compiling statistics relating to labour and employment. The NSSO surveys, based on large samples, provide estimates for employed persons in terms of three different employment statuses: self-employed (SE), regular salaried employees (RSE) jobs, and casual employment (CE).

People who operate their own farm or nonfarm enterprises or are independently engaged in a profession on their own account or under a partnership are categorized as self-employed. Self-employed persons were further categorized as follows:

(i) *Own-account workers*: those self-employed persons who operated their enterprises on their own account or with one or a few partners and who, during the reference period, by and large, ran their enterprise without hiring any labour. They could, however, have had unpaid helpers to assist them in the activity of the enterprise;

(ii) *Employers*: those self-employed persons who worked on their own account or with one or a few partners and, who, by and large, ran their enterprise by hiring labour; and

(iii) *Helpers in household enterprise*: those self-employed persons (mostly family members) who were engaged in their household enterprises, working full- or part-time and did not receive any regular salary or wages in return for the work performed. They did not run the household enterprise on their own but assisted the related person living in the same household in running the household enterprise.

Employees working on others' farms or at nonfarm enterprises on a regular basis (i.e., not on the basis of daily or periodic renewal of a work contract) are defined as "regular salaried workers." Finally, those who are casually engaged on others' farms or at nonfarm enterprises and earn wages according to the terms of a daily or periodic work contract are classified as "casual labourers." All our analysis in this paper is based on the usual principal and subsidiary status (UPSS)<sup>1</sup> employment estimates alone (Government of India, 2011).

### **3. Issues under discussion**

Self-employment workers are highly heterogeneous segment in terms of different characteristics and are comprising of small and marginal farmers, small manufacturers and traders, hawkers, street vendors, forest produce gatherers, rickshaw pullers and small traders in towns and cities and so on. Government has regarded it as a panacea for unemployment and poverty and as an effort to reduce poverty and

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<sup>1</sup> The status of activity on which a person spends relatively longer time of the preceding 365 days from the date of survey is considered as the principal usual status activity of the person. A person categorised as a non-worker who pursued some economic activity in a subsidiary capacity is called a 'subsidiary status worker'. These two groups, namely, principal status workers and subsidiary status workers together constitute 'all workers' according to the usual (principal + subsidiary) status classification. For other two measures such as Current Weekly Status (CWS) and Current Daily Status (CDS) see Government of India, 2006, Pp. 13–15.

unemployment, several initiatives (such as Training of Rural Youth for Self-Employment (TRYSEM) and Self-Employment Scheme for Educated Unemployed Youth (SEEUY) have been taken. Under many of these programmes and schemes, government provides training and income support and transfer payments to the unemployed to start their own business activities. Financial intermediaries also play crucial role in encouraging self-employment activities. In recent years, micro finance institutions (MFIs), self-help groups (SHGs) have also been formed to support and promote self-employment ventures

An important question in this discussion is whether self-employment is distress-driven or demand-led expansion? Factors causing individuals to become and/or inclined to become self-employed may be social, economic, cultural, and psychological and so on, which can broadly be categorized as pull and push factors. Inadequate availability of wage-paid work, lack of education and skills to get a wage-paid job, seasonality of principal economic activity, lack of economic mobility, social and cultural factors (i.e. ancestral or inherited family business) are examples of push factors. Autonomy, flexibility, independent functioning, role of financial intermediaries and government programmes and schemes operate as pull factors (Le, 1999; Lofstrom, 2009).

Somewhat linked to the above, another crucial issue is whether earnings from self-employment activities are remunerative? In the absence of a direct employer and reported wages and salaries it is not only difficult to assess and ensure remunerative levels of earnings and decent working condition but also difficult to devise policy framework to improve levels of earnings and work conditions and to mobilize these worker (Chandrasekhar and Ghosh, 2006 and 2007). In such a scenario the issue of remuneration in self-employment is of immense importance. Motivating factors to undertake self-employed activities and to switch from a self-employed to wage paid job need thus to be understood in greater detail to analyse whether it is distress-driven or demand-led.

Comparing earnings of self-employed and wage-paid workers is a complex issue to be dealt with, which is beyond the scope of this paper<sup>2</sup>. However, an important issue to consider when comparing earnings between self-employed and wage/salary workers is the fact that earnings from self-employment do not only

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<sup>2</sup> In our earlier work a preliminary attempt has been made to estimate the magnitude of earning difference between self-employed and regular salaried and casual workers (Sahu, 2011).

represent returns to human capital, but also returns to financial capital invested in the business. Since self-employment does not entail social security, self-employed earnings should be expected to be higher in order to take care of risks otherwise covered by social security. While one thesis might suggest self-employed workers to accept lower earnings in return for the autonomy, flexibility and independence that self-employment offers; on the other hand, self-employed workers are more likely to experience intermittent and uncertain income, unregulated work environments and (as a consequence), poor and unhealthy working conditions. Furthermore, wage employment and self-employment may differ in working hours, degree of work-based risk and degree of independence. Past studies towards explaining the earnings differential between different categories of workers have offered arguments such as the segmented and/or dualistic nature of labour market, low levels of human capital, inadequate access to formal institutions, inefficient labour regulations and so on.

Is self-employment an essential and accepted component of the workforce? From the workers' point of view, it is argued that increasingly workers and employees prefer this mode of employment as it takes care of their autonomy and freedom in terms of time allocation. The increasing proportion of self-employed workers is not necessarily disadvantageous if their earnings ensure an adequate level of living. Thus, the problem of self-employment is to be carefully studied in the context of direction and magnitude of changes in the wages and earnings for different occupations and activities as well as the working condition and the satisfaction or the level of utilization of skills of the workers.

### **3. Magnitude and pattern of self-employment**

The preponderance of self-employment is visible in all broad sectors of the economy, although incidence of self-employment is higher in tertiary sector in comparison to primary and secondary sectors (**Table 1**). We looked at the five-digit industry groups covered by the NSSO surveys and identified the number of economic activities where the proportion of self-employment is equal to (or more than) 50 per cent. In about 60 per cent of five-digit economic activities the incidence of self-employment was 50 per cent and more in 2004–05, which declined to 35 per cent in 2009–10. The decline was, though, witnessed across the board, in tertiary sector activities marked drops were observed. It is evident that self-employment seems to have declined across broad sectors. However, such macro aggregates does not fully

reflect the dynamics of self-employed workers across gender, caste, education levels, and many other household and individual attributes, which we have dealt in our paper.

Sector	Total number of <b>sample</b> economic activities		Number of <b>sample</b> economic activities with <b>&gt;= 50% of self-employment</b>	
	2004–05	2009–10	2004–05	2009–10
1	2	3	4	5
Primary	76	84	43 (56.6)	33 (39.3)
Secondary	537	610	259 (48.2)	165 (27.0)
Tertiary	313	341	255 (81.5)	160 (46.9)
<b>All Sectors</b>	926	1035	557 (60.2)	358 (34.6)

Note: 1. Figures in the parentheses are per cent share to total in each sector in respective year.  
2. 2004–05 and 2009–10 surveys are based on NIC 1998 and 2004 respectively.  
Source: Authors' own estimates based on NSS unit level data, 2004–05 and 2009–10.

Since 1972–73, while the share of self-employment (SE) has consistently declined and that of casual employment (CE) has increased; during 2004–2005 the reverse has happened and it again declined during 2009–10. Since there has been hardly any change in regular (salaried) employment, there has only been movement between SE and CE and vice-versa (**Table 2**).

NSS Year	% of total worker				% point change over previous period		
	SE	Wage paid	Of which		SE	RSE	CE
			RSE	CE			
1	2	3 = (4+5)	4	5	7	8	9
1972-73	61.4	38.6	15.4	23.3			
1977-78	58.9	41.1	13.9	27.2	-2.5	-1.4	3.9
1983	57.3	42.7	13.8	28.9	-1.6	-0.1	1.7
1987-88	56.0	44.0	14.4	29.6	-1.3	0.6	0.7
1993-94	54.7	45.3	13.5	31.8	-1.3	-0.9	2.2
1999-00	52.6	47.4	14.6	32.7	-2.1	1.1	1.0
2004-05	56.4	43.6	15.3	28.3	3.8	0.7	-4.5
2009-10	50.6	49.4	16.6	32.8	-5.8	1.3	4.5
Average of whole period	56.0	44.0	14.7	29.3			

Source: Authors' own estimates based on NSS reports on employment and unemployment (various rounds).

The proportional changes in self-employment and casual employment also corroborates the fact that, over these years the share of regular employment has

remained almost stagnant. Thus decline (increase) in self-employment and corresponding increase (decline) in casual employment, with no change in regular employment suggests that even most casual employments are also non-remunerative, besides being insecure and irregular. During 2005–10 casual employment increased almost by 5 per cent points, which can be attributed to the largest employment programme in operation, i.e. Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA). However, it is interesting to that during this period the share of regular employment also increased by 1.3 per cent points.

Indian economy has witnessed an increasing economic growth since 1972–73. It has grown from nearly 4 per cent till mid-80s to 6 per cent in 90s and then to 9 per cent during 2004–05/200–10. However, employment has not performed in similar fashion. Over the years, employment growth has declined consistently and more markedly during the post reform years (**Table 3**). Thus there is huge disconnect between the income and employment growth as faster economic growth has failed to generate adequate employment opportunities, more so, at a rising levels of productivity. A differential and interesting employment growth pattern was observed when it is analysed across type of employment. Except, during 1999–00/2004–05, casual employment has always grown at a positive rate, but the growth rates have declined over the years. Similarly, except during 2004–05/2009–10 self-employment has also always grown at a varying but positive rate. Highest self-employment growth was recorded during 1999–00/2004–05. Researchers have explained this unprecedented rise in self-employment as distress-driven as the agricultural performance was severely bad in this period (Unni and Raveendran, 2007).

Period	Growth of UPSS employment				Growth of GDP (at constant 99-00 prices) in	
	SE	RSE	CE	Total	Agriculture	Total
1	2	3	4	5	6	7
1972-73/77-78	1.77	0.62	5.86	2.61	4.34	4.60
1977-78/1983	1.69	2.04	3.32	2.19	2.47	3.92
1983/87-88	1.00	2.52	2.09	1.53	-0.03	3.99
1987-88/93-94	2.00	1.29	3.62	2.39	4.67	5.65
1993-94/99-00	0.39	2.39	1.55	1.04	3.31	6.51
1999-00/04-05	4.25	3.77	-0.16	2.81	1.56	5.98
2004-05/09-10	-1.94	1.84	3.23	0.22	3.10	9.08

Source: Authors' own estimates based on NSS reports on employment and unemployment (various rounds) and National Accounts Statistics, various years.

Regular salaried jobs have also grown, slower than that of casual and self-employment, but it is a little disturbing to see that, over time, their shares have not changed. The trend and pattern of self-employment is often correlated with the performance of agricultural growth. But we did not find any systematic relationship between the two. However, the agricultural share to GDP has consistently declined over the years and so is the rate of self-employment.

Both self-employed and casual job opportunities are largely concentrated in rural areas. In 1972–73, nearly 90 per cent of self-employed and casual jobs were located in rural areas (**Table 4**). However, these shares have declined over the years and in 2009–10, these shares stood at 78 and 85 per cent respectively. But rural areas has suffered significant decline in the share of regular salaried jobs; it has declined from 50 per cent in 1972–73 to 32 per cent in 2009–10. Urban areas are also offering more and more employment of casual and/or self-employment types.

NSS Year	% share of rural areas			% share of female		
	SE	RSE	CE	SE	RSE	CE
1	2	3	4	5	6	7
1972-73	89.0	50.3	91.0	33.7	13.5	43.3
1977-78	87.0	45.7	89.5	34.6	12.8	42.0
1983	85.8	43.8	87.8	35.5	13.5	40.5
1987-88	84.2	42.5	88.2	34.8	15.6	38.1
1993-94	83.0	36.6	87.4	33.7	15.5	37.8
1999-00	81.1	35.6	87.3	32.9	16.0	35.1
2004-05	79.5	34.4	86.4	35.1	19.3	34.3
2009-10	77.6	31.5	85.3	29.1	18.3	30.6

Source: Authors' own estimates based on NSS reports on employment and unemployment (various rounds) and National Accounts Statistics, various years.

The gender-wise divide of different types of employment opportunities also throw some interesting features. The female shares in both self-employed and casual employment categories have consistently declined over the years. While females have lost a small share in self-employed category, their share declined almost by 13 per cent point in casual employment category during 1972–73/2009–10 (**Table 4**). But it is heartening to see that in good quality/regular salaried jobs, share of female has increased from 13.5 per cent to 18.3 per cent during the same period. The employability of female, in terms of education and skill, seem to have improved significantly over the years.

#### 4. Composition of self-employed workers

The NSSO has broadly categorized self-employed workers into three broad groups, i.e. own account worker (61.3%), employer (2.3%) and helpers in household enterprises (36.3%). In most of the broad sectors, the share of own account worker is very high; in transport-storage-communication more than 90 percent of self-employed workers were own account workers, while in agriculture, nearly half of the self-employed were helpers (**Col 5, Table 5**). Thus, in all broad sectors the owner (employer) also serves as worker. In India, this pattern is quite prevalent, because the shares of marginal and small farmers who not only work in their own farm but also work as agricultural/casual wage-paid workers. The preponderance of own account workers is also visible in other sectors such as construction, manufacturing and tertiary sector activities. While in agriculture and manufacturing the share of both own account worker and helper in household enterprises are quite high, in all other sectors own account workers accounted for more than 70 percent of total self-employed workers.

Sectors	% of total worker			Of which (% share of SE)			Sectoral distribution of total SE workers
	RSE	CE	SE	Own account worker	Employer	Helper in Household Enterprises	
1	2	3	4	5	6	7	8
Agriculture & Allied	0.9	39.1	60.1	51.9	1.9	46.2	62.7
Mining & Quarrying	37.7	53.0	9.4	58.3	6.5	35.1	0.1
Manufacturing	32.2	19.2	48.6	70.6	3.2	26.1	10.5
Utilities	87.1	8.1	4.9	68.1	17.6	14.3	0.0
Construction	4.3	84.4	11.3	86.8	4.1	9.2	2.1
Trade, Hotelling etc.	17.6	6.1	76.3	75.2	2.8	22.0	16.2
Transport, Storage & Communication etc.	40.5	18.6	40.9	93.8	1.7	4.5	3.5
Financing, Insurance, Real estate & business services	61.1	2.7	36.1	87.4	6.2	6.5	1.5
Community, social and personal services	71.2	7.2	21.5	80.6	2.8	16.6	3.4
Total	16.6	32.8	50.6	61.3	2.3	36.3	100.0

Source: Authors' own estimates based on NSS unit level data, 2009-10.

There are, however, significant variations so far as the sectoral incidence and distribution of self-employed workers is concerned. It is interesting to note that the share of self-employment is the highest in trade and hotelling (76%), followed by agriculture (60%) and manufacturing (48.6%). The rate of self-employment is of low

order in mining & quarrying, utilities and construction (**Col. 4, Table 5**). Sectoral distribution of self-employment is highly skewed, since agriculture accounted for nearly 63 percent of all self-employed workers. In non-agricultural activities, such as manufacturing and trade-related activities, 11 and 16 percent of self-employed workers were engaged respectively (**Col. 8, Table 5**).

## 5. Earnings from self-employment: Is it remunerative?

Since 2004–05 NSSO gives some very interesting insights on whether self-employed workers perceive their activities as remunerative. In this section, we analyse whether self-employed workers perceive their present earnings from activities performed in self-employment capacity to be remunerative, and if this is not the case, then what level of earning (Rupees per month) *would* be considered remunerative<sup>3</sup>? Responses to these two questions were analyzed across broad production sectors, levels of education, caste (social groups) and in all major Indian states. *But the NSSO surveys are based on a very loose definition of “remuneration” and the available information on earnings of self-employed workers is grossly inadequate.* Notwithstanding these data limitations, our analysis did throw some concerns for self-employed workers.

At aggregate level, about 49 percent of total self-employed workers perceive their present earnings as non-remunerative (rural = 51; urban = 42): in other words, more self-employed workers in rural India perceive their earnings as non-remunerative when compared to their urban counterparts.

Table 6: Perception regarding their earnings by type of self-employment: 2009-10				
	% share to total SE workers			Total
	Own account worker	Employer	Helper in Household Enterprises	
1	2	3	4	5
Total	61.3	2.3	36.3	100.0
Rural	58.3	1.7	40.0	100.0
Urban	73.7	4.9	21.4	100.0
% of SE worker reporting their present earnings as <b>non-remunerative</b>				

<sup>3</sup> The remuneration of the self-employed consists of a non-separable combination of two parts: a reward for their labour and profit of their enterprise. The combined remuneration is wholly determined by the revenue from sales after netting out value of purchased inputs used in production. If the actual earnings from the self-employment activities were short of the desired level, the employment was considered as non-remunerative (Government of India, 2011).

Total	49.2	27.1	50.4	49.1
Rural	50.9	33.5	51.5	50.8
Urban	43.5	18.3	42.0	42.0
If <b>non-remunerative</b> , what amount (Rs.) per month would you regard as remunerative?				
< or = 1000	2.0	3.1	4.5	2.9
1001 to 1500	3.6	6.2	6.2	4.6
1501 to 2000	5.6	3.8	8.3	6.6
2001 to 2500	4.9	1.8	7.3	5.8
2501 to 3000	8.5	8.3	9.1	8.7
< = 3000	24.6	23.3	35.4	28.6
> 3000	75.4	76.7	64.6	71.4
Source: Authors' own estimates based on NSS unit level data, 2009-10.				

Among self-employed workers, nearly 49 percent of own account workers and 50 per cent of helper in household enterprises reported their earnings to be non-remunerative, with significant rural-urban variations (**Table 6**). Such figures are despite very low expectations of reasonable returns – more than 75 percent of own account workers, 65 percent of helper in household enterprises and 77 percent of employers reported that they would regard 3000 Indian Rupees (INR) per month or less to be. This suggests that a large proportion of self-employment is of a distress-driven nature, due to non-availability of gainful or remunerative wage-paid employment. Most self-employed activities are subsistence-based in nature and more an outcome of the search for survival strategies than a demand-led expansion of productive income opportunities.

The higher the rate of self-employment is, the higher the share of workers who consider their present earnings to be non-remunerative. This proportion (i.e. of self-employed workers considering their work to be non-remunerative) is highest in manufacturing (about 53 per cent in 2009–10). Interestingly, during 2004–05, in sectors where the proportion of self-employed workers rating their work as non-remunerative is high, the proportion of people reporting very low expectations for desired income is correspondingly large: As an example, in agriculture and manufacturing, about 72 and 77 percent of self-employed people reported that a monthly earnings of Rs. 3000/- or less would be satisfying and remunerative. These percentages were significantly lower in service sector activities such as financing, insurance, real estate & business services and so on (**Table 7**). But in 2009–10, situation has completely changed, even though, the proportion of self-employed

workers reporting their present earning as non-remunerative has marginally increased. Across all sectors, more than 70 per cent of self-employed workers reported that a monthly earnings of anything more than Rs. 3000/- would be satisfying and remunerative. Because during 2005–10, the overall economic and business environment was gloomy, partly due to global economic slowdown, employment opportunities declined substantially, inflation rate was very high and either due to lack of earning or inability to start a new self-employment venture, a large proportion of self-employed workers moved to casual employment opportunities. Recent independent research studies have also found that during the recent crisis period, especially in case of Indian adults that nearly one-third of them rate their lives poorly enough to be considered “suffering,” The poorest and least educated Indians are the most likely to be suffering, but suffering has increased among Indians across all income and education levels.<sup>4</sup>

Table 7: Perception regarding their earnings (those self employed who reported their present earnings as non-remunerative): 2004–05/2009–10										
Sectors	% of SE		% of SE worker reporting their present earnings as non-remunerative		What amount (Rs.) per month would you regard as remunerative?					
	04-05	09-10	04-05	09-10	2004-05			2009-10		
					< 1500	1501 to 3000	> 3000	< 1500	1501 to 3000	> 3000
1	2	3	4	5	6	7	8	9	10	11
Agriculture & Allied	64.2	60.1	47.4	50.6	27.7	43.7	28.0	8.0	21.6	70.4
Mining & Quarrying	8.4	9.4	47.2	47.5	34.0	43.0	23.0	1.0	28.4	70.7
Manufacturing	53.2	48.6	51.6	53.2	34.8	41.4	23.0	13.9	27.2	58.9
Utilities	2.8	4.9	37.7	37.9	5.9	37.8	56.0	0.0	8.9	91.1
Construction	17.8	11.3	42.6	42.7	5.1	36.7	58.0	1.7	12.3	86.0
Trade, Hotelling etc.	76.2	76.3	42.3	42.7	14.4	38.7	46.0	3.2	17.0	79.8
Transport, Storage & Communication etc.	43.6	40.9	48.8	49.5	7.8	44.2	47.0	2.3	14.6	83.1
Financing, Insurance, Real estate & business services	40.6	36.1	31.2	33.3	4.6	24.3	70.0	4.3	8.3	87.4
Community, social and personal services	25.5	21.5	48.5	50.3	26.1	37.8	36.0	4.6	22.3	73.1
Total	56.4	50.6	47.0	49.1	25.8	42.3	32.0	7.5	21.1	71.4

Source: Authors' own estimates based on NSS unit level data, 2004–05 and 2009-10.

<sup>4</sup> Nearly a third of Indians say they are ‘suffering’, The Hindu Business Line, 30<sup>th</sup> April, 2012.

## 5.1 Returns to education

Educational attainments play a crucial role in determining an individual's propensity to switch from wage/salary employment into self-employment. While little variation can be observed between the absolute incidence rates of self-employment between different educational groups (which is high at all levels), the context of self-employment between these populations differs significantly. Given a perfect market and conditions of full employment, it can be presumed that all self-employed individuals would prefer to switch to wage-paid work. However, despite market (and population) growth, availability of wage-paid jobs in India - especially regular salaried jobs - has remained stagnant. In such context, individuals must realistically select from the options of *unemployment*, self-employed or casual employment. Casual work among the educated population is traditionally low. Generally, educated workers refrain from casual labour as it is considered below their status. Such workers appear better at believing that full time or permanent jobs will come their way and are therefore more able to wait for better long-term options (Sahu, 2002). Transient unemployment rates and levels of self-employed activity thus rise among these populations while permanent jobs are sought (a trend no doubt made possible due to the correlation between educational achievement and higher socioeconomic status – i.e. more educated people typically come from better off households). For individuals with higher levels of education, again, access to formal institutions in terms of credit and other assistance to start a self-employment venture also becomes easier; again a higher incidence of self-employment appear. In populations with lower levels of education, incidence of self-employment is also high. In all populations there is transition periods in seeking work, however, for those with lower levels of education, securing regular wage-paid job becomes even harder. Since waiting to find regular paid employment is less sustainable for people with lower educational backgrounds than those with better education and resources, predictably, individuals will therefore become self-employed or will work as casual workers (subject to availability). At lower educational attainments the incidence of self-employment is therefore similar to the high levels seen among the educated; however, as seen here, the nature of motivating factors at different levels of education differs enormously.

How do the self-employed value their educational attainment? An inverse relationship was demonstrated between educational level and the proportion of self-employed workers reporting their present earnings as non-remunerative (**Table 8**).

Furthermore, at higher levels of education, a higher proportion of workers (among those who reported their present earnings as non-remunerative) reported that they would consider a monthly income of Rs. 3000/- and more as remunerative. During 2009–10 at all levels of education the share of self-employed workers reporting their earning as non-remunerative has increased. In contrast to 2004–05, a much higher proportion of these workers reported that they would regard a higher income (more than Rs 3000/-) as remunerative.

Table 8: Perception regarding their earnings (those self employed who reported their present earnings as non-remunerative): 2004–05/2009–10										
Levels of education	% of SE		% of SE worker reporting their present earnings as non-remunerative		What amount (Rs.) per month would you regard as remunerative?					
					2004-05			2009-10		
	04-05	09-10	04-05	09-10	< 1500	1501 to 3000	> 3000	< 1500	1501 to 3000	> 3000
1	2	3	4	5	6	7	8	9	10	11
Illiterate	56.1	49.1	49.3	53.5	32.6	44.8	22.6	9.2	24.5	66.3
Below Primary	56.0	48.4	48.8	51.1	24.9	46.1	29.0	7.8	23.7	68.6
Primary	58.9	52.4	47.9	52.5	25.3	44.4	30.3	8.8	21.0	70.2
Middle	60.4	54.4	47.0	49.4	21.5	39.7	38.9	6.2	21.4	72.5
Secondary	62.3	57.8	43.5	43.4	15.3	36.9	47.9	5.0	16.1	78.9
Higher Secondary	54.8	54.9	40.8	41.6	14.7	35.1	50.4	5.9	13.4	80.7
Graduate and Above	43.9	37.5	33.9	35.2	8.6	25.9	65.5	3.6	12.9	83.5
Total	56.4	50.6	47.0	49.1	25.8	42.3	32.0	7.5	21.1	71.4

Source: Authors' own estimates based on NSS unit level data, 2004–05 and 2009-10.

## 5.2 Role of social group identity

The effect of caste (race) on the propensity to be self-employed differs across different social groups. Different social groups have different educational opportunities and report different degrees of social and other discrimination, both of which affect employment decisions. In the Indian context, scheduled tribe (ST), scheduled caste (SC), other backward class (OBC) are mostly viewed as socially and economically under-privileged group and are subject to all kinds of discrimination in the labour market. While analyzing the incidence of self-employment and perceptions about present remuneration across workers' social groups, we found that the rate of self-employment was highest in OBC and other groups and lowest among schedule caste (SC). But the rates of self-employment for SCs and STs were lower as compared

Table 9: Perception regarding their earnings (those self employed who reported their present earnings as non-remunerative): 2004–05/2009–10										
Social groups	% of SE		% of SE worker reporting their present earnings as <b>non-remunerative</b>		What amount (Rs.) per month would you regard as remunerative?					
					2004-05			2009-10		
	04-05	09-10	04-05	09-10	< 1500	1501 to 3000	> 3000	< 1500	1501 to 3000	> 3000
1	2	3	4	5	6	7	8	9	10	11
ST	53.9	49.2	49.1	53.0	37.3	42.7	20.1	11.0	24.6	64.4
SC	40.1	34.4	53.3	57.2	28.6	44.2	27.2	9.6	23.6	66.8
OBC	61.6	54.7	46.7	47.6	25.0	43.5	31.4	7.4	21.8	70.8
others	62.9	58.1	43.8	46.5	21.4	39.3	39.4	5.6	17.4	77.1
Total	56.4	50.6	47.0	49.1	25.8	42.3	32.0	7.5	21.1	71.4

Source: Authors' own estimates based on NSS unit level data, 2004–05 and 2009-10.

to OBCs and other higher castes, which could possibly due to lack of land and other productive assets among them in general (Neetha, 2010). As seen above, in the absence of regular employment opportunities, even workers of higher caste groups engaged in self-employed activities. However, the perception of present earnings varies greatly between castes (**Table 9**).

A larger proportion of higher caste workers regard higher levels of earnings as remunerative as compared to STs and SCs, presumably because the current earnings are low among STs and SCs. But in addition to caste and education, household net income, parental entrepreneurship and inter-generational self-employment links appear to determine the pattern, rate of self-employment and their perception about the earnings.

### 5.3 A regional analysis

Based on state level information, we attempt to explain why there are significant state-level variations both in the rate of self-employment and perception regarding their earnings (**Table 10**). The incidence of self-employment declined during 2005–10 across each state at varying degrees. Except Gujarat all other states witnessed decline in the rate of self-employment. Chattisgarh experienced a decline of more than 13 per cent points. In Haryana, Jharkhand, Rajasthan, Tamil Nadu this proportion declined by nearly 8-9 percent points. But the proportion of these workers

reporting their earnings as non-remunerative increased in as many as 10 states. This feature was visible in many laggard states such as Jharkhand, Madhya Pradesh, Odisha, Uttar Pradesh, West Bengal and so on. In Bihar, on the contrary, this proportion has declined, may be due to its excellent growth performance during 2005–10.

Table 10: Perception regarding their earnings (those self employed who reported their present earnings as non-remunerative): 2004–05/2009–10										
State	% of SE		% of SE worker reporting their present earnings as <b>non-remunerative</b>		What amount (Rs.) per month would you regard as remunerative?					
					2004-05			2009-10		
	04-05	09-10	04-05	09-10	< 1500	1501 to 3000	> 3000	< 1500	1501 to 3000	> 3000
1	2	3	4	5	6	7	8	9	10	11
Andhra Pradesh	47.2	39.9	52.8	45.0	36.7	48.0	15.3	5.5	31.4	63.0
Assam	68.6	68.5	48.8	40.1	9.0	30.0	61.1	5.8	17.1	77.1
Bihar	60.2	52.5	70.8	55.7	8.6	38.2	53.2	2.4	14.9	82.7
Chhattisgarh	51.9	38.3	50.6	43.8	62.3	31.0	6.8	43.5	25.7	30.7
Gujarat	50.4	51.0	22.3	32.0	40.0	31.5	28.5	5.6	26.4	68.1
Haryana	63.6	53.9	47.6	39.4	5.6	33.9	60.5	1.5	11.2	87.3
Himachal Pradesh	73.2	68.9	55.0	58.9	26.3	55.7	18.1	11.4	38.1	50.5
Jammu & Kashmir	73.4	68.1	64.5	57.3	15.0	33.7	51.4	2.8	18.8	78.4
Jharkhand	67.5	59.4	61.5	73.0	13.2	43.7	43.1	2.9	15.6	81.5
Karnataka	47.5	43.9	37.9	41.0	36.2	42.8	21.0	6.9	22.2	70.9
Kerala	44.5	38.4	54.2	35.5	25.6	34.5	39.9	16.0	15.3	68.7
Maharashtra	46.8	43.2	33.0	40.6	27.2	46.1	26.7	5.9	15.7	78.4
Madhya Pradesh	58.5	52.0	45.7	48.6	35.9	44.7	19.4	3.3	10.9	85.8
Odisha	57.0	54.0	67.2	68.6	30.7	45.1	24.2	11.7	25.9	62.5
Punjab	58.8	52.7	42.5	41.5	12.5	30.6	57.0	2.2	7.9	89.9
Rajasthan	73.3	65.3	45.6	42.7	17.6	45.7	36.7	3.2	17.9	78.9
Tamil Nadu	41.7	33.0	37.5	33.1	39.1	41.2	19.7	12.1	44.8	43.1
Uttar Pradesh	73.5	66.5	40.3	56.7	23.9	47.6	28.4	9.3	21.3	69.4
Uttaranchal	75.1	68.9	53.5	62.2	48.3	23.9	27.7	1.8	14.5	83.8
West Bengal	52.9	46.7	68.6	72.0	24.2	42.8	33.0	11.2	25.5	63.3
All India	56.4	50.6	47.0	49.1	25.8	42.3	32.0	7.5	21.1	71.4

Source: Authors' own estimates based on NSS unit level data, 2004–05 and 2009-10.

The proportion of self-employed workers reporting that they would regard a monthly earning of more than Rs 3000/- as remunerative has significantly increased in

each and every state during 2009-10. The proportion of self-employed workers those reported in 2004–05, that they would regard a monthly earning of Rs 1501 to 3000 have mostly moved to a higher earning slab, i.e. more than Rs 3000/-. It is evident that during 2005–10, economic well-being of self-employed workers worsened considerably.

Based on state level information on select indicators<sup>5</sup>, we attempt to explain why there are significant state-level variations both in the rate of self-employment and perception regarding their earnings. To meet this objective, we produced a correlation matrix using a select list of indicators. A number of expected trends and statistically significant correlation coefficients for a number of indicators were produced; in summary: 1. Higher rates of self-employment are associated with higher proportion of self-employed workers regarding their present earnings as non-remunerative; 2. Higher levels of poverty, unemployment and higher levels of agricultural growth are associated with higher self-employment levels; 3. Higher levels of economic growth (per capital income), urbanization and development of non-farm sector are associated with lower rates of self-employment.

## **6. Major findings**

This paper has demonstrated that while the incidence of self-employment is very high across the Indian population as a whole, significant variation between occupational sectors, levels of education, castes and regions can be observed. Nearly half of the workers in India are self-employed. Nearly half of them consider their present earnings to be non-remunerative (i.e. not offering suitable financial recompense). About 70 percent of these workers reported that they would regard a monthly earning of Rs. 3000/- (or less) as remunerative in 2004–05. From this it is evident that the current monthly earnings may be much lower than Rs. 3000/-. But this situation further worsened during 2009–10 as this share declined to only 30 per cent. In other words, in 2009–10, 70 per cent of self-employed (those reporting their present earnings as non-remunerative) reported that they would regard a monthly earning of more than Rs. 3000/- as remunerative. During 2005–10, the overall

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<sup>5</sup> Incidence of poverty (POV), Per capita state income (PCI), % of self employed worker (SE), % of self-employed worker reporting their present earnings as non-remunerative (NONRE), Share of agricultural Gross state domestic product (GSDP) to total GSDP (AGR), Share of non-agricultural GDP to total GSDP (NONAGR), Urbanization (URB), Per worker productivity in rural industrial sector (RIP), % share of rural non-farm employment (RNF)

economic environment was not so business friendly, although in terms of economic growth Indian economy was faring better. Because, employment grew at a slowest rate since 1972–73; inflation was very high; both global and domestic demand was slump; input and raw material prices were very high and so on making the overall economic situation turbulent and gloomy. Educational attainments, castes, production sectors, location of work place and so on are important determinants of variations in the rate and pattern of self-employment.

The all-India pattern of self-employment broadly holds true at sub-national/state level as well. Analysis at state level brought out some interesting causal relationships between the incidence of self-employment and per capita income, rate of agricultural growth, poverty rates, urbanization, rate of unemployment, share of rural non-farm employment as well as additional factors not here discussed.

It is high time that the government should take initiatives not only to generate full time (regular/salaried) employment opportunities, but also design a universal and inclusive livelihood mechanism for all self-employed workers and provide them with better health, education and training facilities. This will give them opportunity to compete with highly educated and skilled workers in this tougher and tighter labour market.

## **7. Issues that need new data and further probe**

The existing data sets, however, can not address these and several other aspects that need to be probed for a well-informed and fact-based policy for self-employed workers. Therefore, several categories of information need to be either included in the existing data sources or new comprehensive data bases need to be developed. Following are few relevant issues to understand and analyse the well-being of self-employed workers.

- i) More information on economic data: sales/revenue, profit, investment and so on.
- iii) To understand the motivating factors (or determinants) of self-employment phenomenon across gender, caste, different levels of education and other household and individual attributes.
- iii) To analyse the causes and process labour transition across different employment types.

- iv) Nature and type of technologies in use and their impact on worker productivity. How have self-employed workers responded to technology-intensive industrialization and growth during the globalized regime? How did they fare during recent global economic slowdown and what were their coping strategies?
- v) Issues related to earnings, productivity, wages, quality of employment, working conditions, and occupational safety.
- vi) Access to different formal institutions: credit, technology, market, skill and training; use of ICTs.
- vii) Type and intensity of various constraints faced by self-employed workers while starting a new venture or running the existing unit.
- viii) Critical appraisal of policies and initiatives (by the Central Ministries, the State Governments and NGOs) for the self-employed workers.
- ix) How to situate self-employed workers in the whole labour regulation debate?
- x) How to design a universal social security and livelihood system for the self-employed workers?

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# Small Area Improved Estimates of Unemployment Rate amongst Youths in India

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## Abstract

Survey estimates of unemployment rate for the youths based on NSS survey has large coefficients of variation for smaller States/UTs owing to small sample size. Unemployment rates for disaggregated domain of rural-urban and uneducated-educated youths, even for the large States have unacceptable large coefficient of variation. Small area models improve the estimates provided strongly related exogenous variable are available. Spatial models under the setup of linear mixed model has advantage as it uses the relationship between small areas through common autocorrelation coefficient. Improved small area estimates for the estimates of unemployment rate for different domain of youths have been obtained.

## 1. Introduction

Unemployment amongst youths in India is major socio political and economic issue affecting the cherished goal of social equity and planned growth in the country. Unemployment of the people in their most productive age restricts the GDP besides creating social unrest and disbelief in the governance. Due to youth unemployment, the country faces psychological and health problems and mental disorders of its young generation. The youth unemployment has significant regional variation and it widely differs with respect to rural-urban divide and for educated and uneducated groups of youths. It reflects the faulty educational planning and mismatch between the training and opportunities. The Government and policy planners require reliable and adequate data on unemployment for various regions and disaggregated groups of rural/urban and educated/non educated youths for framing/ reorienting its educational and labor policies and for initiating schemes of self employment at appropriate places for the target unemployed population. In the case of rural unemployed uneducated youths, it may formulate schemes of providing manual jobs in the rural area itself in the vicinity of the home place of youths so as not to burden the cities and towns with the migration of such people. Likewise for the educated unemployed youths, opening of the new and alternate employment opportunities including self-employment schemes would be essential step for tackling the problem. On the line of the western countries, some of the State Governments have also started the schemes of unemployment doles to the unemployed youths. They need reliable data on the magnitude of such people so as to know in prior the burden on exchequer for such unproductive schemes and the appropriate interventions for the target groups.

In this paper, we have utilized the data sets released by the National Sample Survey Office (NSSO) for its 66<sup>th</sup> round (2009-10) on employment and unemployment, analyzed it and have provided better and improved estimates of unemployment rates at State/UT level for rural urban and uneducated and educated categories of youths separately with the help of small area models under the framework of linear mixed models. Section 2 of the paper discusses the characteristics of NSS data and the need of smoothing survey estimates. Section 3 describes the small area linear mixed models use here and the exogenous variable selected for building the model. Section 4 discusses the utility of small area spatial model and the various expressions for finding out the estimates and the mean squared error of the estimates. The expressions have been taken from the original paper viz. Singh, Shukla and Kundu (2005). Section 5 deals with data analysis and section 6 with conclusions and summary of findings.

## 2. NSS Data and Survey Estimates

National Sample Survey Office (NSSO) under the Ministry of Statistics and Programme Implementation carries out quinquennial employment and unemployment surveys normally every five years with the objectives to generate estimates for level parameters of various employment and unemployment characteristics at national and State levels. The latest surveys carried out by the NSSO pertain to 61<sup>st</sup> round (2004-05) and 66<sup>th</sup> rounds (2009-10). Between these two quinquennial rounds, annual round of surveys have also been conducted on the subject Employment and unemployment and Migration during 64<sup>th</sup> round (2007-08).

NSSO adopts a stratified multi-stage sampling design for its surveys, the first stage units (FSU) being census villages in case of rural sector and urban frame survey blocks in urban sector. The ultimate stage units are the households in both the sector. In the 66<sup>th</sup> round, at all-India level a total number of 12784 sample persons have been used in the central sample (State Governments conducts surveys on state samples) and their allocation to the States/ UTs have been done in proportion to the population subject to availability of investigators and ensuring certain minimum sample allocation to each State/UT. The State/UT level sample size was allocated between two sectors in proportion to population as per census 2001 with double weightage to urban sector subject to restriction that urban sample size for bigger states like Maharashtra and Tamil Nadu, etc. do not exceed the rural sample size. A minimum of 16 FSUs (to the extent possible) was allocated to each State/UT separately for rural and urban sector.

Survey results at all India level and for major States are reliable, however, for small States and UTs, the coefficients of variation, an indicator of reliability of the estimates are too high to be considered as reliable. The main reason for increasingly unreliable survey estimates is basically the small sample size in the small States and UTs. These States/UTs are plenty starting from North Eastern States to small States and UTs like Jammu & Kashmir,

Chandigarh, Himachal Pradesh, Goa, Daman & Diu, Dadra & Nagar Havel, Pondicherry, Andaman & Nicobar Islands, Lakshadweep etc. This renders the use of NSS estimates for planning and implementation of the schemes for unemployment reduction and self employment as questionable for this category of States. Disaggregated domain of uneducated and educated, rural and urban youths have further low sample size even for the large States, where otherwise relatively large sample size have been taken for the survey. Thus the problems of estimating unemployment rate for individual domains of rural-uneducated, rural-educated, urban-uneducated and urban-educated may be regarded as the small area problems. Added to these, the unemployment rate being of small magnitude and some times zero pose other problems for its estimation. NSS reports cautions for use of unemployment data for smaller States and UTs. State/UT wise sample size of the persons in two sub samples for the domains of the youths have been given in Annexure 1 to Annexure 4.

Here the unemployment rate is defined as number of persons unemployed per 100 persons in labor force which includes both the employed and unemployed persons. The usual status (adjusted) based on the principal as well subsidiary status has been considered for the employment and unemployment. The unemployment rates for small States/UTs have been studied for youths uneducated as well educated and for rural and urban areas separately. Youths are the persons between the age group of 20 years to 34 years and educated are basically the one having passed higher secondary and above. They also include degree/ diploma/ certificate holders and graduates/ post graduates. Uneducated persons are not necessarily illiterate and include the persons having qualifications of middle class and below.

The surveys carried out by the NSSO use the concept of two independent sub samples {interpenetrating samples} at strata level and here too the survey results are based on these sub samples. The State level estimates of unemployment rate as judged by the coefficient of variation, particularly for the small States/UTs are volatile and in a few cases, the unemployment rate is zero basically due to small sample at the disaggregated level of educated and uneducated categories in rural and urban sector, rural uneducated posing serious problems. This requires smoothing of the coefficient of variation and the related variance of the survey estimates. It may be mentioned that at all India level, the survey results for unemployment rate for rural uneducated, and educated, urban uneducated and educated are much reliable. In order to smoothen the coefficients of variation at State/UT level, similar unemployment rate and their coefficients of variation for the NSS 61<sup>st</sup> and NSS 64<sup>th</sup> rounds were also used for each domain of youths. Minimum of the average coefficient of variation based on three rounds and the 66<sup>th</sup> round coefficient of variation has been used as the smoothed coefficient of variation and the resultant standard errors, as smoothed standard error in the model. Further the unemployment rate has been found as zero for the States/UTs viz. Delhi, Karnataka and Chandigarh in Rural Uneducated category; Bihar and Jharkhand in Urban Uneducated domain; and Daman and Diu in Urban Educated domain. Data sets for all these States/UTs for all the three rounds of 61, 64 and 66 have been studied and found only

marginal differences in the estimates of earlier rounds. Therefore for the sake of analysis, the average of unemployment rate has been considered for these States/UTs.

### 3. Small Area Linear Mixed Model and Exogenous Variables

The techniques of small area estimation need strengthening of direct survey estimates through the supplementary data such as census counts and administrative data from similar areas so as to increase the effective sample size of the small areas and thus to increase their precision. Obviously the method adopted depends on the availability of appropriate kind of auxiliary information and on our knowledge of the relationships between the alternate sources of data.

We have utilized two stage area specific linear mixed model as suggested by Fay and Herriot (1979) as base model for improving the survey estimates of State wise unemployment rate. We have taken States/UTs as small areas for the purpose. The model improves the direct survey estimates through a common regression coefficient. In this model our parameters of interest  $\theta_i$  are unemployment rate which has been assumed to be related to  $X_i$  the auxiliary data which are available. The model is

$$y_i = \theta_i + \varepsilon_i, \quad E(\varepsilon_i | \theta_i) = 0, \quad \text{Var}(\varepsilon_i | \theta_i) = R_i, \quad 3.1$$

$$\theta_i = X_i^T \beta + v_i z_i, \quad E(v_i) = 0, \quad \text{Var}(v_i) = \sigma_v^2, \quad i = 1, 2, \dots, m \quad 3.2$$

where  $y_i$ 's are direct survey estimates of  $\theta_i$ 's the unemployment rate.  $X_i = [X_{i1}, X_{i2}, \dots, X_{ip}]^T$  are exogenous variables closely related to  $\theta_i$ 's,  $z_i$ 's are known constants and  $\beta (p \times 1)$  is the vector of unknown regression coefficients and  $m$  is the number of small areas under consideration. The first equation in the model is the design one while the second is the linking model. The  $\varepsilon_i$ 's are random errors (also known as sampling errors) and  $v_i$ 's are random effects, also known as model errors, specific to small areas. The sampling errors are design unbiased. Further  $\varepsilon_i$ 's and  $v_i$ 's are assumed to be identically and independently distributed.  $R_i$ 's are known sampling variances or their design based estimates. Normality of the random errors has also been assumed. The combined two stage model become

$$y_i = X_i^T \beta + v_i z_i + \varepsilon_i. \quad 3.3$$

Maximum likelihood estimation (MLE) have been used for obtaining estimates of various components. As far as the estimation of the small area parameters are concerned, empirical best linear unbiased predictors (EBULP) and their mean squared errors (MSE) have been obtained on the line of Fay and Herriot (1979) and Datta and Lahiri (2000).

Regarding exogenous variables, we have tried many variables taken from the population census 2001 and 2011 for which results are available; economic census 2006, data on

agriculture production and factory employment. However based on the multiple correlation coefficient  $R^2$ , the following variables have been found adequate as exogenous variables. The following table provides the exogenous variable and the value of  $R^2$  for different domain of youths considered here.

Table 1

Sr.	Domain of youth	Exogenous Variable	$R^2$
1.	Rural Uneducated	Census 2011 Unemployment Rate for the population 15-59 Years age in Rural area.	0.55
2.	Rural Educated	Census 2011 Unemployment Rate for the population 15-59 Years age in rural area.	0.25
3.	Urban Uneducated	Economic Census 2006, Non Agricultural Enterprises in Rural Area.	0.43
4.	Urban Educated	Census 2011 Unemployment Rate for the population 15-59 Years age in urban area.	0.30

#### 4. Small Area Spatial Models

The success of small area models depend on the availability of small area wise auxiliary variables having strong correlation with the response variable. In the Indian set up there is lack of related administrative and civil data related to the response variable. We could not get auxiliary variables having multiple correlation  $R^2$  more than 0.50 for three categories of youths. The spatial models use relationship between small areas through one or more unknown parameters explicitly, within the mixed model framework. It explains a portion of the random error, unaccounted for and left over by explanatory variables and thus improves the direct survey estimates simultaneously for all the small areas together. Cressie (1990) used conditional spatial dependence of Besag (1974) among random effects, in the context of adjustments for census undercounts. Singh, Shukla and Kundu (2005) used simultaneous spatial dependence (Whittle; 1954, Cliff and Ord; 1981) among the random effects which has certain advantage over conditional dependence (Ripley; 1981). This model has been used here for strengthening the small area estimates. Spatial model is a three stage area specific model.

$$y = \theta + \varepsilon, \quad \varepsilon \sim N_m(0, R), \quad (4.1)$$

$$\theta = X\beta + u \quad (4.2)$$

$$u = \rho Wu + v, \quad v \sim N_m(0, \sigma_v^2 I) \quad (4.3)$$

where  $\theta$  is a m-component vector (corresponding to the number of small areas) for the characteristic under study and  $y$  is its direct survey estimate obtained through small sample data. In the above model, the first equation represents the design (sampling) model, the second

equation shows the regression model and the third equation shows the spatial model on the residuals, the later two are linked in the first equation. The integrated model has been expressed as

$$y = X\beta + Zv + \varepsilon, \quad Z = (I - \rho W)^{-1} \quad (4.4)$$

Here  $X(m \times p)$  is a design matrix with full column rank  $p$ ,  $\beta(p \times 1)$  is a column vector of regression parameters which includes intercepts and  $Z(m \times m)$  represents coefficients of random effects  $v$ .  $W(m \times m)$  is a known spatial weight matrix which shows the amount of interaction between any pair of small areas. The elements of  $W \equiv W_{ij}$  with  $W_{ii} = 0 \forall i$  may depend on distance between the centers of small areas or on the length of common boundary between them. As a simple alternative, it may have binary values,  $W_{ij} = 1$  (un-scaled) if  $j^{\text{th}}$  area is physically contiguous to  $i^{\text{th}}$  and  $W_{ii} = 0$  otherwise. The matrix is standardized so as

to satisfy  $\sum_{j=1}^m W_{ij} = 1$  for  $i = 1, 2, \dots, m$ . The constant  $\rho$  with  $|\rho| < 1$  is a measure of overall level of spatial autocorrelation and its magnitude reflects the suitability of  $W$  for given  $y$  and  $X$ . Sampling errors  $\varepsilon$  and the random effects  $v$  are assumed to be independently distributed. Further,  $v$  and  $\varepsilon$  are assumed to be uncorrelated. For the estimation of parameters, further assumptions are made as  $v \sim N_m[0, \sigma^2 I]$  and  $\varepsilon \sim N_m[0, R]$ .  $R$  is a diagonal matrix of order  $m$  and which may be expressed as  $R = \text{diag}(\sigma_1^2, \sigma_2^2, \dots, \sigma_m^2)$  where  $\sigma_i^2$ 's are known sampling variances relating to  $i^{\text{th}}$  small area.. The parameter vector  $\psi = [\rho, \sigma_v^2]^T$  has two elements. Also the assumptions are that matrices  $R$  and  $W$  are such that the parameter vector is identifiable.

In this model, strength is borrowed from the similar areas through two common parameters viz. regression parameter  $\beta$  and autocorrelation parameter  $\rho$ . The simple linear mixed model [Fay and Herriot; 1979]  $y_i = X_i^T \beta + v_i z_i + \varepsilon_i$  can be obtained from the model by taking  $\rho = 0$ .

#### 4.1 Small Area Estimates and its MSE

In the model  $y = X\beta + Zv + \varepsilon$ ,  $\theta = X\beta + Zv$  is the true value of the characteristic of interest and its best linear unbiased predictor (BLUP) and the MSE of the BLUP has been obtained by using linear mixed model approach [Henderson; 1975]. This has also been discussed on the line of the best linear unbiased estimator (BLUE). The BLUP estimator of  $\theta$  is

$$\hat{\theta}(\psi) = X\hat{\beta}(\psi) + \Lambda(\psi)[y - X\hat{\beta}(\psi)] = \sigma_v^2 A^{-1}(\psi)\Sigma^{-1}(\psi)y + R\Sigma^{-1}(\psi)X\hat{\beta}(\psi) \quad (4.5)$$

$$\Lambda(\psi) = \sigma^2 A^{-1}(\psi)\Sigma^{-1}(\psi) = R - R\Sigma^{-1}(\psi)R \quad \text{and} \quad A(\psi) = (I - \rho W)^T(I - \rho W) \quad (4.6)$$

Here  $\hat{\beta}$ ,  $\Sigma$ ,  $A$  all are the functions of  $\psi$  and have been expressed as  $\hat{\beta}(\psi)$ ,  $\Sigma(\psi)$ ,  $A(\psi)$  respectively. It may be seen that BLUP is a weighted average of direct survey estimator  $y$  and the spatial regression synthetic estimator  $X\hat{\beta}$ . The  $\Lambda(\psi)$  measures the uncertainty in modeling  $\theta$ , namely,  $\sigma^2 A^{-1}$  relative to the total variance  $\sigma^2 A^{-1} + R$ . The BLUP estimator takes proper account of between relative area variation, through the random small area effects and due to spatial interaction between different areas. It is design consistent in the sense that as sampling variance  $R \rightarrow \mathbf{0}$  (the null matrix) the  $\Lambda \rightarrow I$ . The BLUP estimator, in case of simple linear mixed models, have been obtained as

$$\hat{\theta}_i = \gamma_i y_i + (1 - \gamma_i) X_i^T \hat{\beta} \quad \text{where} \quad \hat{\beta} = \left[ \sum_{i=1}^m \frac{X_i X_i^T}{\sigma_v^2 + R_i} \right]^{-1} \left[ \sum_{i=1}^m \frac{X_i y_i}{\sigma_v^2 + R_i} \right] \quad \text{and} \quad \gamma_i = \frac{\sigma_v^2}{\sigma_v^2 + R_i} \quad (4.7)$$

By using the dispersion matrix of  $\hat{\beta}$  and  $\hat{v}$ , the mean squared error (MSE) of the BLUP may be obtained as

$$MSE[\hat{\theta}(\psi)] = E[(\hat{\theta}(\psi) - \theta)(\hat{\theta}(\psi) - \theta)^T] = g_1(\psi) + g_2(\psi) \quad (4.8)$$

$$g_1(\psi) = A(\psi)R = R\Sigma^{-1}(\psi)R \quad (4.9)$$

$$\text{and} \quad g_2(\psi) = R\Sigma^{-1}(\psi)X[X^T\Sigma^{-1}(\psi)X]^{-1} X^T\Sigma^{-1}(\psi)R \quad (4.10)$$

The first term, in the expression for  $MSE$ ,  $g_1(\psi)$  is of order  $O(1)$  and the second term  $g_2(\psi)$ , due to estimating  $\hat{\beta}$  is of order  $O(m^{-1})$ . In case of simple linear mixed model, the BLUP of  $\theta_i$  and their  $MSE$  are

$$MSE[\hat{\theta}_i(\psi)] = E(\hat{\theta}_i(\psi) - \theta_i)^2 = g_{1i}(\psi) + g_{2i}(\psi) \quad (4.11)$$

$$g_{1i}(\psi) = \frac{\sigma_v^2 R_i}{\sigma_v^2 + R_i} = \gamma_i R_i \quad \text{and} \quad g_{2i}(\psi) = (1 - \gamma_i)^2 X_i^T \sum_{i=1}^m \frac{X_i X_i^T}{\sigma_v^2 + R_i} X_i \quad (4.12)$$

#### 4.2 EBLUP and Estimator of its MSE

The BLUP estimator depends on the parameter  $\psi$  and in practice they are not known and need to be estimated from data. The maximum likelihood method has been used for obtaining

the parameter estimates by minimizing the negative log likelihood function of  $\psi$  , given by the following

$$\ell = \frac{m}{2} \log(2\pi) + \frac{1}{2} \log[|\Sigma(\psi)|] + \frac{1}{2} [y - X\hat{\beta}(\psi)]^T \Sigma^{-1}(\psi) [y - X\hat{\beta}(\psi)] \quad (4.13)$$

with respect to parameters  $\psi$  .

$$\begin{aligned} \ell = \frac{m-p}{2} \log(2\pi) - \frac{1}{2} \log[|X^T X|] + \frac{1}{2} \log[|\Sigma(\psi)|] \\ + \frac{1}{2} \log[|X^T \Sigma^{-1}(\psi) X|] + \frac{1}{2} [y - X\hat{\beta}(\psi)]^T \Sigma^{-1}(\psi) [y - X\hat{\beta}(\psi)] \end{aligned} \quad (4.14)$$

This yield asymptotically consistent estimators under realistic regulatory conditions. Here  $\hat{\beta}(\psi) = [X^T \Sigma^{-1}(\psi) X]^{-1} X^T \Sigma^{-1}(\psi) y$ . Substitution of  $\psi$  by their estimates  $\hat{\psi}$  in the expression for  $\hat{\theta}(\psi)$  provides the empirical best linear unbiased predictor (EBLUP) of  $\theta$  . However, the MSE of the EBLUP severely underestimates the true value of the MSE as the variability in the parameter  $\psi$  , due to their estimation through data have been ignored. The second order approximation to the  $MSE[\hat{\theta}(\hat{\psi})]$  where  $\hat{\psi}$  may be the ML or REML estimator of  $\psi$  , with the assumption of large m and neglecting all the terms of order  $o(m^{-1})$  , under certain regularity conditions can be obtained along the lines of Datta and Lahiri (2000). The second order approximation to the MSE of the EBLUP may be shown as

$$MSE[\hat{\theta}(\hat{\psi})] = E[(\hat{\theta}(\hat{\psi}) - \theta)(\hat{\theta}(\hat{\psi}) - \theta)^T] = g_1(\psi) + g_2(\psi) + g_3(\psi) + o(m^{-1}) \quad (4.15)$$

The term  $g_1(\psi)$  is due to the variability of  $\hat{\theta}(\psi)$  when all the parameters are known, the second term  $g_2(\psi)$  is due to estimating the fixed effects  $\beta$  and the third term  $g_3(\psi)$  comes from estimating the components of the variance from sample data and it is of the same order  $O(m^{-1})$  as that of  $g_2(\psi)$ .

$$g_1(\psi) = L^T(\psi) [I_{\psi}^{-1}(\psi) \otimes \Sigma(\psi)] L(\psi) \quad (4.16)$$

$$\text{Where } L(\psi) = \begin{matrix} \text{Col} \\ 1 \leq d \leq 2 \end{matrix} [L_d(\psi)] = [L_\rho(\psi), L_{\sigma_v^2}(\psi)]^2 \quad (4.17)$$

$$L_d(\psi) = \frac{\partial \Lambda(\psi)}{\partial \psi_d}, d = 1, 2, I_\psi(\psi) = E \left[ -\frac{\partial^2 \ell}{\partial \psi \partial \psi^T} \right] \quad (4.18)$$

And finally the estimate of this MSE is

$$mse[\hat{\theta}(\hat{\psi})] = g_1(\hat{\psi}) + g_2(\hat{\psi}) + 2g_3(\hat{\psi}) - g_4(\hat{\psi}) - g_5(\hat{\psi}) + o(m^{-1}) \quad (4.19)$$

$$\text{Where } E[mse(\hat{\theta}(\hat{\psi}))] = MSE[\hat{\theta}(\hat{\psi})] + o(m^{-1}) \quad (4.20)$$

$$g_4(\psi) = \left[ b_{\hat{\psi}}^T(\psi) \otimes I_m \right] \frac{\partial g_1(\psi)}{\partial \psi} \quad (4.21)$$

$$b_{\hat{\psi}}(\psi) = \frac{1}{2} I_{\psi}^{-1}(\psi)_{1 \leq d \leq 2} \left[ \text{Trace} \left[ I_{\beta}^{-1}(\psi) \frac{\partial I_{\beta}(\psi)}{\partial \psi_d} \right] \right] \quad (4.22)$$

$$g_5(\psi) = \frac{1}{2} \text{Trace}_m \left[ I_{2 \otimes (R \Sigma^{-1}(\psi))} \right] \frac{\partial^2 \Sigma(\psi)}{\partial \psi \partial \psi^T} \left[ I_{\psi}^{-1}(\psi) \otimes (\Sigma^{-1}(\psi) R) \right] \quad (4.23)$$

Here the additional terms  $g_3(\hat{\psi})$ ,  $g_4(\hat{\psi})$ ,  $g_5(\hat{\psi})$  are the contributions due to estimation of parameter  $\psi$  by  $\hat{\psi}$ . In case of simple model without the spatial autocorrelation, the term  $g_5(\hat{\psi})$  becomes zero. Equation 2.17 gives the matrix of the estimator of the MSE of EBLUP, and the MSE of the individual small area estimators has been obtained as the respective diagonal element of the matrix.

### 4.3 Likelihood Ratio Test for Testing Spatial Auto Correlation

In case of spatial model, an additional autocorrelation parameter  $\rho$  is used. This along with a fixed known weight matrix  $W$  represents non linear small area effect. Usual tests for selection between a simple non spatial linear effects model and the spatial model is through likelihood ratio test for nested models, in the sense that we can get the simple linear mixed models from the spatial model by just putting  $\rho = \mathbf{0}$  or taking  $W$  as a null matrix showing no interaction between the unit. Test hypothesis may be written as

$$H_0: \rho = \mathbf{0} \quad \text{against} \quad H_1: \rho \neq \mathbf{0}$$

$$\lambda = -2 \log \ell \sim \chi_k^2 \quad \text{under } H_0$$

Where  $\ell$  is the ratio of the maximum likelihoods at the hypothesized value of parameters under two models and  $k$  is the difference between the number of parameters in the two models.

## 5. Data Analysis

Data for the 66<sup>th</sup> round (2009-10) of NSSO has been used for providing the improved estimates of unemployment rate at the level of States/UTs. In the NSS survey, two subsamples in the form of interpenetrating samples are used and independent estimates are made available. The average of the two estimates have been taken as  $y$  and the variance obtained through the two sub samples and subsequently smoothed as diagonal elements of  $R$  in the equation for the two models. If  $\hat{y}_{1i}$  and  $\hat{y}_{2i}$  for  $i = 1, 2, \dots, m$  are the estimates based on sub sample 1 and 2 respectively, then pooled mean  $y_i = \frac{1}{2} (\hat{y}_{1i} + \hat{y}_{2i})$  and  $R_i = \frac{1}{4} (\hat{y}_{1i} - \hat{y}_{2i})^2$  has been taken as smoothed known variance of the small area estimates. Further the exogenous variable as considered for the model for the unemployment rate in four categories of youths has been given in Table 1. It may be emphasized that in case we take two or more exogenous variables in the model, which results in marginal improvement in multiple correlation coefficients may not improve the survey estimates at all as there is increase in the MSE due to the variability caused by replacing extra number of parameters by their estimates.

In case of spatial model, binary weights matrix based on the neighborhood approach and by standardizing them (making row sum of the weight matrix as one) have been considered for the analysis. For the UTs of Andaman & Nicobar Islands and Lakshdweep, the States in the inland from where the transportation are carried out has been taken as neighbors. In the whole exercise, minimization of log likelihood function and the estimation of parameters have been carried out by using the Nelder and Mead Simplex Method on the software MATLAB.

Table 2 presents estimates of the parameters for the linear mixed and spatial models regarding four categories of youth unemployment rate viz. for uneducated rural youths, educated rural youths, uneducated urban youths and the educated urban youths. Value of multiple correlation coefficients between the unemployment rate and the exogenous variable and the estimates of model variance in case of both the models and autocorrelation coefficient in case of spatial model have been shown here. Values of multiple correlation coefficient show the intensity of relation between the unemployment rate and the exogenous variable on the basis of which the rate has been modeled in linear mixed case. Lower correlation coefficient in case of unemployment rate for educated rural and educated urban youths reflect unavailability of suitable variables on the basis of which the estimates for these categories of youths could be strengthened. Similarly the small value of autocorrelation coefficient of the unemployment rate for the educated rural and uneducated urban youths show the difficulties in finding out appropriate weight matrix which could model the inter relationship between different States/UTs based on their neighborhood. Not with standing this, it may be seen that the estimates of model variance in case of spatial model is lower than those in case of linear mixed model. Likelihood ratio test statistics  $\lambda$  has been calculated for each of the categories

of the youths and the autocorrelation coefficient  $\rho$  have been found significant at 1% level of significance for the uneducated rural youths and at 5% level of significance for educated urban youths, while for other categories, it has not been found significant. Thus there is question mark on using the spatial model for the rest of two categories of youths.

Table 2  
Estimates of Parameters for Employment Rate (%)  
under Linear Mixed and Spatial Models

Categories/ Models	Multiple $R^2$	Linear Mixed $\sigma^2$	Spatial		LRT $\lambda$
			$\rho$	$\sigma^2$	
Uneducated Rural Youths	0.55	2.08	-0.52	1.49	11.36
Educated Rural Youths	0.25	175.85	0.12	160.33	2.36
Uneducated Urban Youths	0.43	3.35	0.04	2.96	3.12
Educated Urban Youths	0.30	28.31	0.24	25.13	4.66

$\lambda$  compare linear mixed model and spatial model.  $\chi^2_{1,01} = 6.635$  and  $\chi^2_{1,05} = 3.841$

Table 3 presents the average direct survey estimates of unemployment rates and the estimates based on linear mixed and spatial models (averaged over all the States and UTs) for all the four domains of youths. Average standard errors and average coefficient of variation (%) for the respective estimates have also been presented therein. The first three numerical columns show the results for all the States/UTs together and the last three columns for small States/UTs taken together.

Table 3  
Average EBLUP for Employment Rate (%), their Estimated SE and CV  
under Survey, Linear Mixed and Spatial Models

Categories/ Models	All States/UTs			Small States/UTs		
	Survey	LM	Spatial	Survey	LM	Spatial
Average Unemployment Rate Estimates						
Uneducated Rural Youths	3.06	1.92	1.89	4.91	2.62	2.54
Educated Rural Youths	13.25	12.72	12.67	18.43	17.47	17.37
Uneducated Urban Youths	3.24	2.79	2.76	4.09	3.18	3.12
Educated Urban Youths	12.69	10.52	25.56	14.51	11.90	11.92
Average Standard Errors (SE)						
Uneducated Rural Youths	3.14	0.75	0.73	4.48	0.97	0.93
Educated Rural Youths	3.93	3.3	3.29	5.24	4.29	4.27
Uneducated Urban Youths	1.26	0.93	0.92	1.39	0.99	0.98
Educated Urban Youths	3.24	2.47	2.43	3.95	2.82	2.77

Average Coefficient of Variation (CV) (%)						
Uneducated Rural Youths	102.63	39.24	38.48	91.15	36.90	36.54
Educated Rural Youths	29.64	25.98	25.97	28.44	24.58	24.58
Uneducated Urban Youths	38.86	33.28	33.42	33.94	31.21	31.36
Educated Urban Youths	25.56	21.93	21.66	27.24	23.69	23.27

A simple analysis of standard errors and coefficient of variation for survey estimates and the estimates under linear mixed model reveal the large reduction in the standard errors as well the coefficient of variation resulting the improved small area estimates under the linear mixed model. It may also be seen that more the value of  $R^2$  meaning more strong relation between the study variable and the exogenous variable, results more improved estimates. Further, if we compare the coefficient of variation of the estimates under the spatial model vis-à-vis under the linear mixed model, we find significant reduction in coefficient of variation of the estimates under spatial model for uneducated rural youths and educated urban youths, while in case of uneducated urban youths there is improvement in reverse direction i.e. linear mixed model is better than that of spatial model. The results are in inconformity with the value of autocorrelation coefficient and significance of value of LRT statistics. Spatial model uses one more variable which is estimated from the data and therefore there may be increase in the MSE due to the variability caused by replacing it by its estimate. The last three columns of the table presents the case for small states and UTs taken together and we find similar results as for all the States/UTs taken together. The estimates of unemployment rate and their standard errors and coefficient of variation for individual states/UTs under each of the models including survey direct estimates for all the categories of youths have been presented in four tables of the Annexure 5 to Annexure 8.

Table 4 is frequency table depicting number of states/UTs in various ranges of coefficient of variation for the direct survey estimates and the estimates under linear mixed and spatial models separately. It clearly indicates that the estimates for some of the states/UTs have been strengthened.

Table 4

Frequency Table for the small Areas (States/UTs) in ranges of CVs

Domain	Models	<10%	10-25%	25%-40%	40%-60%	>=60%
Uneducated Rural Youths	Survey	1	6	9	11	8
	LM	1	9	7	13	5
	Spatial	1	8	11	10	5
Educated Rural Youths	Survey	4	14	9	6	2
	LM	4	14	10	7	0
	Spatial	4	14	10	7	0
Uneducated Urban Youths	Survey	0	10	8	12	5
	LM	0	10	10	13	1
	Spatial	0	11	11	12	1
Educated Urban Youths	Survey	5	19	7	4	0
	LM	5	21	6	2	1
	Spatial	5	21	6	2	1

Sample size of the persons in each domain of the youths and for each of the States/UTs, here taken as small areas have been shown in Annexure 1 to Annexure 4. It may be seen that even large States in terms of population, have small sample size in specific categories of youths and therefore the problems of estimating unemployment rate is not limited only to the small states and UTs. Four graphs, one each for specific domain of the youths presents state wise coefficient of variation of the estimates of unemployment rate as ordered by sample size. The numbers written beneath the graph presents the serial number of the States/UTs shown in the tables in Annexure 1 to Annexure 8.

Chart 1

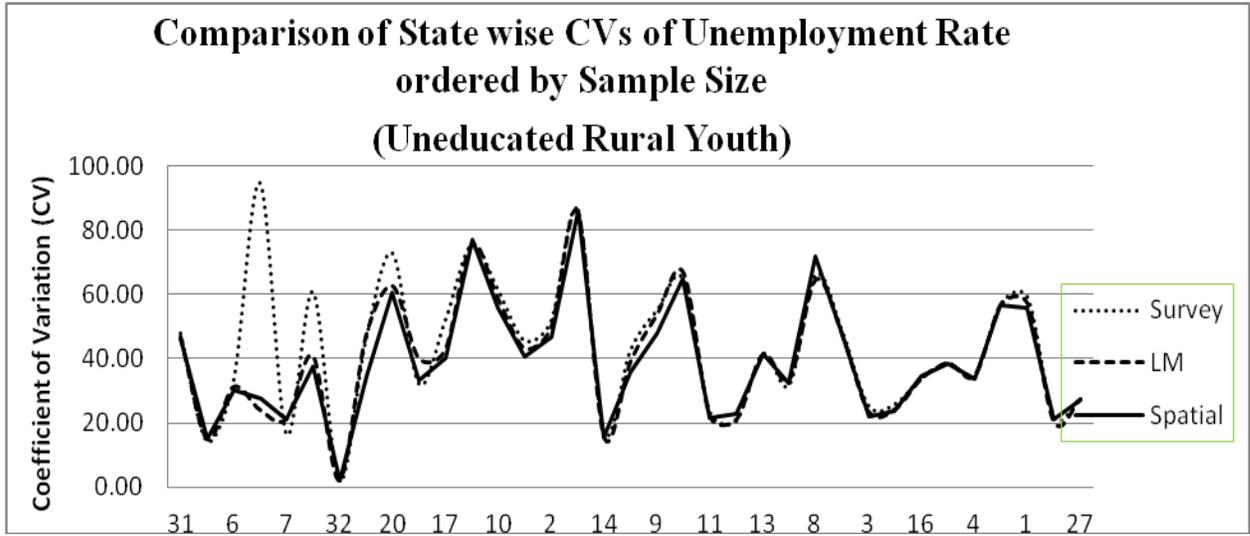


Chart 2

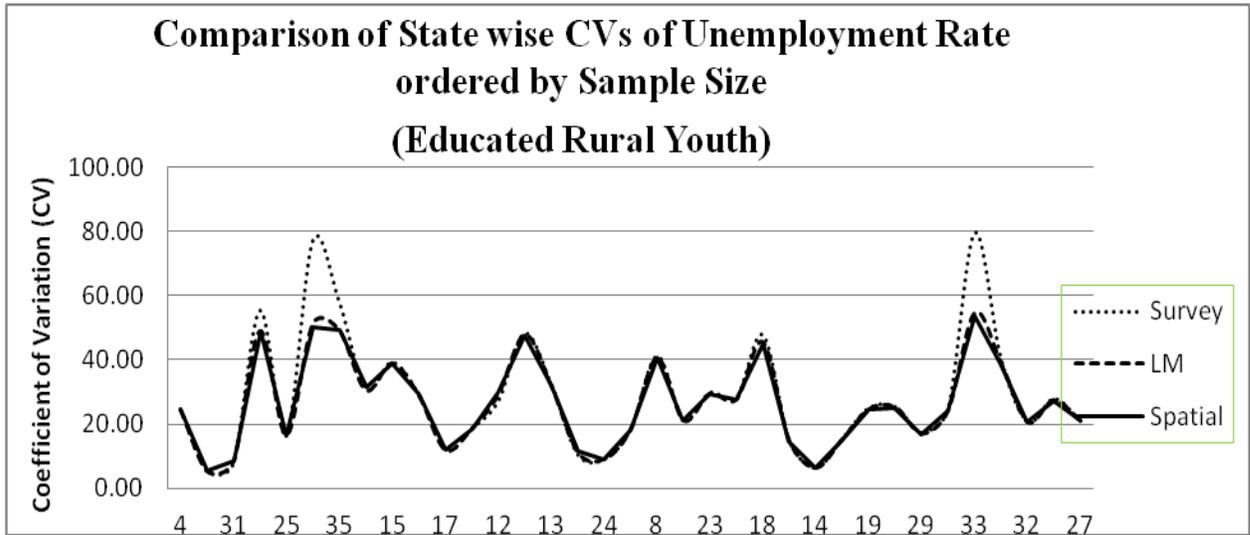


Chart 3

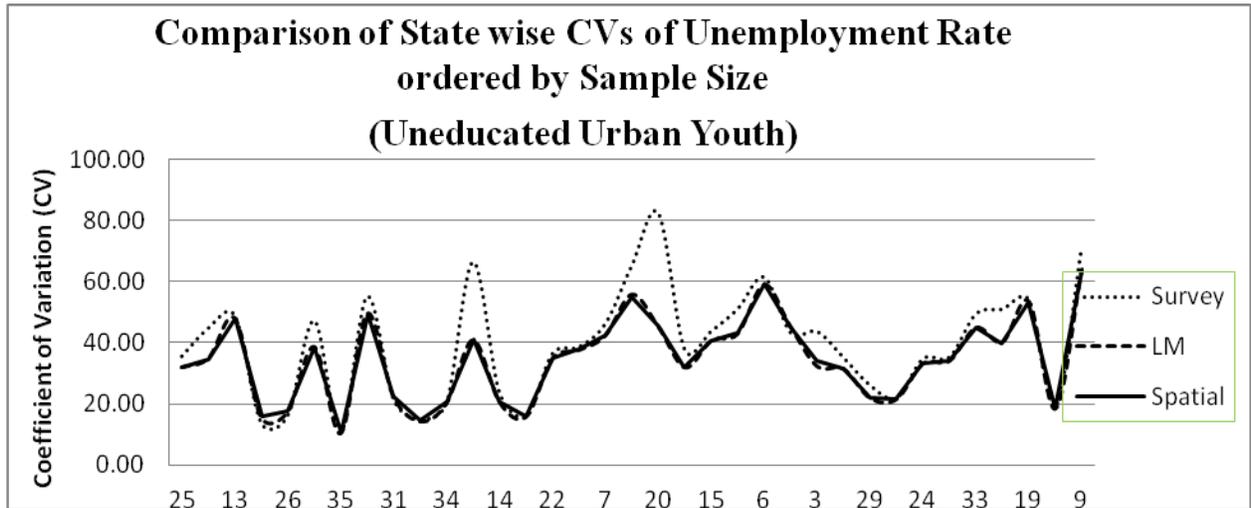
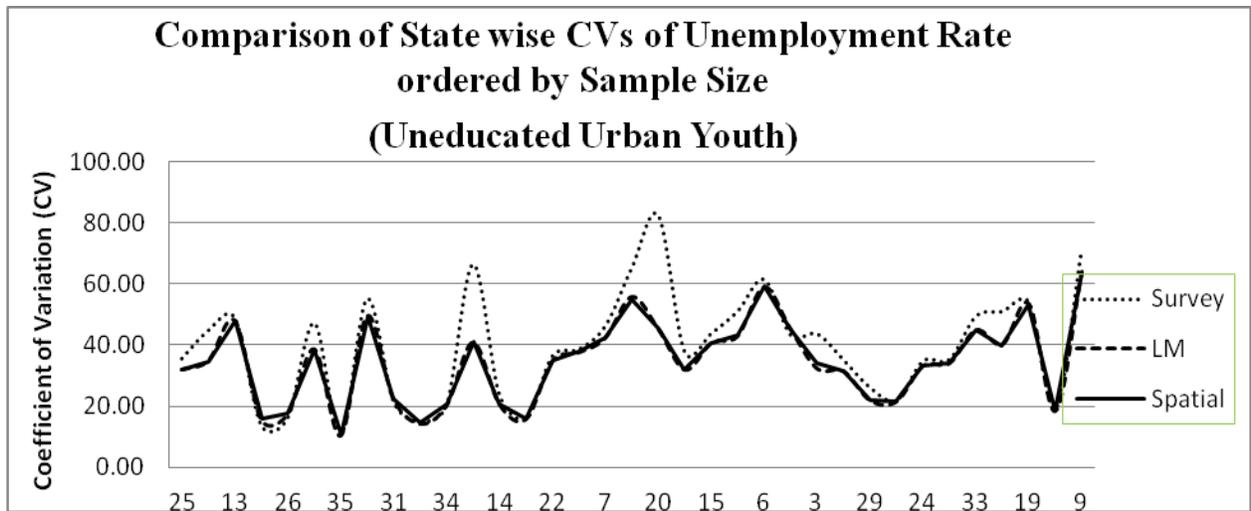


Chart 4



6. Conclusions and summary of findings

The estimates of unemployment rate even for large states disaggregated to the domain of educated and uneducated urban and rural youths based on the NSSO data have large coefficient of variation and thus are not reliable, sample size for the domain of youths being meager particularly for educated rural youths and uneducated urban youths and thus the States/UTs for the individual domains of youths may be regarded as small areas or small domains. Unemployment rates have small values and the sample size for some of the States may be smaller and therefore data for the specific States must be studied carefully. Averaging

of the coefficient of variation for the present and past data may ease out the problems of large coefficient of variation and of unstable estimates for the year under study.

In the Indian setup, it is very difficult to get administrative or census data highly correlated with the variable on youth unemployment rate. Even the census data on unemployment rate for the age group 15-59 years do not provide strong relationship with the unemployment rate of youths under various domains. The modeling of unemployment rates for specific domains of youths is a challenge. Never the less linear mixed model improves the survey estimates, depending on the value of multiple correlation coefficients.

Spatial Models further improve the estimates, however, it should be used only when the value of autocorrelation coefficient is found significant. For this simple likelihood ratio test may be adopted. Value of autocorrelation correlation depends much on the type of weight matrix considered and the neighborhood relation between small areas must be clearly understood. In case of rural uneducated and urban educated youths, spatial model has been found very useful. However, we should be careful about the increase in MSE due to the variability caused by replacing the parameters by their estimates.

In the socio economic surveys conducted by NSSO, State Governments separately conducts the survey (state samples) on matching basis. Owing to very small sample size in central or state samples, both the samples may be pooled together and the sample size may be doubled. Small area estimates based on the pooled sample may provide much improved estimates.

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## Annexure - 1

Sample Size of Persons in two Sub Samples SS1 and SS2  
(Uneducated Rural Youths)

Sr.	States/Uts	Total			Employed			Unemployed		
		SS1	SS2	Total	SS1	SS2	Total	SS1	SS2	Total
1	Andhra Pradesh	1241	1293	2534	975	1045	2020	2	1	3
2	Arunachal Pradesh	418	409	827	285	254	539	0	5	5
3	Assam	1001	1017	2018	559	534	1093	15	30	45
4	Bihar	1180	1254	2434	455	524	979	8	7	15
5	Chhattisgarh	483	519	1002	341	395	736	1	1	2
6	Delhi	13	12	25	5	6	11	0	0	0
7	Goa	29	26	55	16	12	28	2	3	5
8	Gujarat	739	757	1496	487	526	1013	2	1	3
9	Haryana	475	504	979	316	311	627	1	3	4
10	Himachal Pradesh	327	277	604	271	237	508	0	5	5
11	Jammu & Kashmir	506	521	1027	325	333	658	7	6	13
12	Jharkhand	725	683	1408	384	355	739	11	9	20
13	Karnataka	658	653	1311	435	453	888	0	0	0
14	Kerala	447	488	935	250	287	537	26	14	40
15	Madhya Pradesh	1247	1274	2521	836	864	1700	5	1	6
16	Maharashtra	1134	1184	2318	812	855	1667	3	3	6
17	Manipur	260	245	505	138	134	272	6	0	6
18	Meghalaya	421	411	832	322	351	673	0	1	1
19	Mizoram	284	227	511	210	152	362	1	1	2
20	Nagaland	139	142	281	99	100	199	1	0	1
21	Orissa	1036	1073	2109	651	655	1306	13	12	25
22	Punjab	474	487	961	310	312	622	3	3	6
23	Rajasthan	1181	1217	2398	884	882	1766	2	2	4
24	Sikkim	227	198	425	165	147	312	10	3	13
25	Tamil Nadu	791	871	1662	559	638	1197	1	2	3
26	Tripura	523	610	1133	288	332	620	24	47	71
27	Uttar Pradesh	2396	2402	4798	1249	1278	2527	7	5	12
28	Uttaranchal	321	325	646	246	252	498	3	5	8
29	West Bengal	1459	1502	2961	816	814	1630	16	13	29
30	A & N Islands	80	81	161	47	46	93	6	3	9
31	Chandigarh	12	3	15	10	1	11	0	0	0
32	D & N Haveli	51	44	95	27	26	53	2	1	3
33	Daman & Diu	15	8	23	8	5	13	1	0	1
34	Lakshadweep	22	23	45	10	14	24	2	0	2
35	Pondicherry	33	36	69	22	23	45	2	0	2

## Annexure - 2

Sample Size of Persons in two Sub Samples SS1 and SS2  
(Educated Rural Youths)

Sr.	States/UTs	Total			Employed			Unemployed		
		SS1	SS2	Total	SS1	SS2	Total	SS1	SS2	Total
1	Andhra Pradesh	497	431	928	276	220	496	22	31	53
2	Arunachal Pradesh	519	621	1140	386	481	867	19	18	37
3	Assam	496	508	1004	259	273	532	20	16	36
4	Bihar	6	10	16	1	5	6	2	0	2
5	Chhattisgarh	253	244	497	172	173	345	8	6	14
6	Delhi	492	494	986	268	295	563	24	12	36
7	Goa	23	21	44	11	10	21	2	1	3
8	Gujarat	356	371	727	225	218	443	8	18	26
9	Haryana	1071	1130	2201	582	625	1207	22	26	48
10	Himachal Pradesh	580	639	1219	269	314	583	8	22	30
11	Jammu & Kashmir	113	123	236	61	73	134	15	14	29
12	Jharkhand	248	214	462	142	83	225	7	8	15
13	Karnataka	268	298	566	108	138	246	90	64	154
14	Kerala	570	491	1061	252	241	493	43	43	86
15	Madhya Pradesh	108	126	234	69	80	149	5	14	19
16	Maharashtra	191	169	360	102	77	179	41	61	102
17	Manipur	181	173	354	107	94	201	4	10	14
18	Meghalaya	528	471	999	266	229	495	49	64	113
19	Mizoram	584	521	1105	298	288	586	34	28	62
20	Nagaland	286	339	625	159	166	325	15	27	42
21	Orissa	652	438	1090	323	216	539	66	43	109
22	Punjab	380	302	682	232	198	430	9	3	12
23	Rajasthan	458	470	928	266	305	571	11	6	17
24	Sikkim	344	314	658	217	213	430	12	3	15
25	Tamil Nadu	29	33	62	13	17	30	6	1	7
26	Tripura	12	19	31	8	9	17	0	2	2
27	Uttar Pradesh	1253	1168	2421	760	712	1472	21	26	47
28	Uttaranchal	677	729	1406	395	438	833	28	40	68
29	West Bengal	590	561	1151	372	347	719	13	8	21
30	A & N Islands	64	72	136	28	39	67	2	3	5
31	Chandigarh	14	21	35	5	15	20	6	0	6
32	D & N Haveli	724	709	1433	326	350	676	126	95	221
33	Daman & Diu	742	623	1365	391	349	740	49	27	76
34	Lakshadweep	32	36	68	16	16	32	0	5	5
35	Pondicherry	62	62	124	36	30	66	8	15	23

## Annexure - 3

Sample Size of Persons in two Sub Samples SS1 and SS2  
(Uneducated Urban Youths)

Sr.	States/UTs	Total			Employed			Unemployed		
		SS1	SS2	Total	SS1	SS2	Total	SS1	SS2	Total
1	Andhra Pradesh	354	339	693	195	172	367	9	7	16
2	Arunachal Pradesh	58	59	117	40	40	80	1	1	2
3	Assam	345	329	674	213	208	421	6	8	14
4	Bihar	62	37	99	38	23	61	0	0	0
5	Chhattisgarh	178	159	337	97	70	167	6	2	8
6	Delhi	332	288	620	181	169	350	4	1	5
7	Goa	190	154	344	96	98	194	1	1	2
8	Gujarat	492	438	930	272	222	494	4	4	8
9	Haryana	983	1012	1995	517	524	1041	11	8	19
10	Himachal Pradesh	289	320	609	114	121	235	3	4	7
11	Jammu & Kashmir	35	39	74	21	23	44	0	1	1
12	Jharkhand	94	116	210	47	50	97	0	0	0
13	Karnataka	33	43	76	20	21	41	1	1	2
14	Kerala	139	150	289	44	60	104	2	4	6
15	Madhya Pradesh	283	276	559	190	179	369	0	2	2
16	Maharashtra	143	148	291	63	61	124	15	18	33
17	Manipur	84	76	160	52	42	94	0	1	1
18	Meghalaya	162	207	369	68	90	158	6	6	12
19	Mizoram	669	632	1301	360	340	700	15	12	27
20	Nagaland	225	213	438	109	98	207	2	4	6
21	Orissa	264	259	523	139	134	273	5	3	8
22	Punjab	150	176	326	81	93	174	7	8	15
23	Rajasthan	548	534	1082	309	267	576	9	7	16
24	Sikkim	473	479	952	265	290	555	10	4	14
25	Tamil Nadu	23	10	33	8	3	11	1	0	1
26	Tripura	54	32	86	43	19	62	1	1	2
27	Uttar Pradesh	813	834	1647	472	479	951	7	11	18
28	Uttaranchal	611	641	1252	362	390	752	5	7	12
29	West Bengal	392	470	862	240	289	529	1	3	4
30	A & N Islands	51	34	85	24	24	48	1	0	1
31	Chandigarh	61	72	133	32	27	59	8	5	13
32	D & N Haveli	310	332	642	164	205	369	12	17	29
33	Daman & Diu	558	630	1188	341	395	736	4	6	10
34	Lakshadweep	101	64	165	49	36	85	1	1	2
35	Pondicherry	67	49	116	43	31	74	3	3	6

## Annexure - 4

Sample Size of Persons in two Sub Samples SS1 and SS2  
(Educated Urban Youths)

Sr.	States/UTs	Total			Employed			Unemployed		
		SS1	SS2	Total	SS1	SS2	Total	SS1	SS2	Total
1	Andhra Pradesh	963	872	1835	457	431	888	47	40	87
2	Arunachal Pradesh	199	154	353	95	68	163	6	5	11
3	Assam	241	221	462	81	92	173	34	17	51
4	Bihar	338	310	648	125	117	242	19	24	43
5	Chhattisgarh	263	278	541	106	124	230	9	10	19
6	Delhi	339	337	676	168	163	331	5	4	9
7	Goa	126	112	238	58	46	104	8	2	10
8	Gujarat	562	498	1060	315	243	558	21	11	32
9	Haryana	449	432	881	220	204	424	15	17	32
10	Himachal Pradesh	110	112	222	49	45	94	11	8	19
11	Jammu & Kashmir	524	512	1036	270	194	464	25	53	78
12	Jharkhand	300	306	606	103	113	216	14	23	37
13	Karnataka	708	629	1337	340	327	667	32	23	55
14	Kerala	536	532	1068	223	225	448	66	85	151
15	Madhya Pradesh	666	616	1282	292	265	557	24	22	46
16	Maharashtra	1596	1486	3082	848	741	1589	51	42	93
17	Manipur	473	476	949	206	210	416	45	25	70
18	Meghalaya	188	177	365	93	84	177	10	17	27
19	Mizoram	191	259	450	93	110	203	15	22	37
20	Nagaland	128	147	275	40	60	100	21	23	44
21	Orissa	296	282	578	123	125	248	31	21	52
22	Punjab	532	599	1131	246	282	528	41	31	72
23	Rajasthan	446	481	927	220	229	449	13	18	31
24	Sikkim	36	44	80	22	30	52	1	0	1
25	Tamil Nadu	852	904	1756	415	430	845	36	51	87
26	Tripura	113	95	208	46	23	69	29	47	76
27	Uttar Pradesh	899	935	1834	361	396	757	46	26	72
28	Uttaranchal	264	231	495	118	126	244	17	5	22
29	West Bengal	639	663	1302	283	286	569	48	48	96
30	A & N Islands	85	100	185	43	59	102	12	11	23
31	Chandigarh	78	104	182	44	46	90	4	4	8
32	D & N Haveli	15	39	54	10	18	28	0	5	5
33	Daman & Diu	19	33	52	13	18	31	0	0	0
34	Lakshadweep	31	34	65	19	19	38	2	3	5
35	Pondicherry	138	151	289	71	83	154	8	9	17

## Annexure – 5

EBLUP and Estimated SE and CV of Employment Rate (%)  
under Survey, Linear Mixed and Spatial Models

Unemployment Rate				Uneducated Rural Youths						
Sr	State/UT	Estimate			SE			CV (%)		
		Survey	LM	Spatial	Survey	LM	Spatial	Survey	LM	Spatial
1	Andhra Pradesh	0.26	0.27	0.27	0.15	0.15	0.15	58.89	57.09	55.64
2	Arunachal Pradesh	1.42	1.35	1.41	0.73	0.67	0.66	51.69	49.75	46.56
3	Assam	4.37	3.95	4.02	1.10	0.92	0.89	25.24	23.28	22.05
4	Bihar	1.60	1.53	1.56	0.56	0.53	0.52	34.99	34.67	33.66
5	Chhattisgarh	0.77	0.71	0.73	0.50	0.48	0.47	64.53	66.77	64.69
6	Delhi	0.68	0.71	0.73	0.22	0.22	0.22	32.94	31.12	30.38
7	Goa	17.94	6.89	6.20	2.99	1.46	1.30	16.67	21.13	20.97
8	Gujarat	0.21	0.21	0.19	0.14	0.14	0.14	66.11	64.63	71.74
9	Haryana	0.51	0.52	0.58	0.28	0.28	0.28	55.03	53.73	48.08
10	Himachal Pradesh	0.36	0.37	0.39	0.22	0.22	0.22	61.14	58.57	55.80
11	Jammu & Kashmir	1.35	1.40	1.44	0.31	0.31	0.31	23.26	21.98	21.42
12	Jharkhand	2.38	2.05	2.07	0.76	0.69	0.67	31.83	33.44	32.48
13	Karnataka	0.13	0.13	0.13	0.05	0.05	0.05	41.48	41.28	41.48
14	Kerala	6.88	6.74	6.59	1.18	1.05	1.01	17.19	15.55	15.33
15	Madhya Pradesh	0.09	0.09	0.09	0.05	0.05	0.05	57.14	56.92	56.61
16	Maharastra	0.10	0.10	0.10	0.03	0.03	0.03	33.87	33.78	34.33
17	Manipur	0.95	1.10	1.17	0.49	0.47	0.47	51.82	42.74	40.14
18	Meghalaya	0.01	0.01	0.01	0.01	0.01	0.01	86.02	85.72	85.88
19	Mizoram	0.11	0.11	0.11	0.08	0.08	0.08	75.27	75.50	76.91
20	Nagaland	0.32	0.37	0.38	0.23	0.23	0.23	72.68	62.69	60.41
21	Orissa	1.51	1.57	1.59	0.39	0.38	0.38	25.91	24.28	23.80
22	Punjab	1.01	1.07	1.16	0.43	0.42	0.42	42.64	38.98	35.82
23	Rajasthan	0.06	0.06	0.06	0.02	0.02	0.02	38.51	38.46	38.29
24	Sikkim	4.52	2.67	3.08	1.46	1.07	1.03	32.21	40.07	33.42
25	Tamil Nadu	0.12	0.12	0.12	0.06	0.06	0.06	48.36	47.38	47.43
26	Tripura	10.08	6.32	5.38	2.08	1.32	1.22	20.62	20.93	22.63
27	Uttar Pradesh	0.44	0.45	0.45	0.12	0.12	0.12	27.78	27.37	27.18
28	Uttaranchal	1.93	1.79	1.86	0.88	0.77	0.75	45.53	43.16	40.47
29	West Bengal	1.34	1.44	1.38	0.29	0.29	0.29	21.96	20.20	20.99
30	A & N Islands	13.90	3.19	3.98	6.35	1.50	1.38	45.70	46.88	34.61
31	Chandigarh	0.19	0.19	0.20	0.09	0.09	0.09	47.81	46.84	46.29
32	D & N Haveli	3.64	3.63	3.63	0.07	0.07	0.07	2.01	2.01	2.01
33	Daman & Diu	3.22	2.98	2.93	0.46	0.44	0.44	14.31	14.90	15.12
34	Lakshadweep	17.14	9.57	8.42	16.19	2.29	2.34	94.47	23.98	27.75
35	Pondicherry	7.71	3.66	3.67	4.68	1.49	1.38	60.68	40.79	37.57

## Annexure – 6

EBLUP and Estimated SE and CV of Employment Rate (%)  
under Survey, Linear Mixed and Spatial Models

Unemployment Rate				Educated Rural Youths						
Sr	State/UT	Estimate			SE			CV (%)		
		Survey	LM	Spatial	Survey	LM	Spatial	Survey	LM	Spatial
1	Andhra Pradesh	8.34	8.43	8.40	1.79	1.78	1.78	21.51	21.12	21.19
2	Arunachal Pradesh	2.82	2.83	2.85	0.71	0.71	0.71	25.34	25.21	25.08
3	Assam	19.72	19.28	19.32	2.89	2.84	2.84	14.65	14.71	14.71
4	Bihar	1.94	1.94	1.94	0.47	0.47	0.47	24.47	24.48	24.48
5	Chhattisgarh	0.88	0.89	0.89	0.42	0.42	0.42	48.08	47.74	47.70
6	Delhi	4.99	5.04	5.05	1.40	1.39	1.39	28.07	27.65	27.63
7	Goa	3.77	4.22	4.23	2.08	2.06	2.06	55.21	48.86	48.74
8	Gujarat	3.13	3.16	3.14	1.29	1.28	1.28	41.08	40.49	40.80
9	Haryana	5.70	5.75	5.79	1.59	1.58	1.58	27.83	27.44	27.23
10	Himachal Pradesh	4.33	4.40	4.40	1.07	1.07	1.07	24.71	24.25	24.23
11	Jammu & Kashmir	10.60	10.46	10.38	3.09	3.02	3.02	29.12	28.89	29.11
12	Jharkhand	19.85	17.42	17.09	5.37	5.07	5.05	27.05	29.08	29.55
13	Karnataka	1.89	1.92	1.91	0.61	0.61	0.61	32.46	32.00	32.06
14	Kerala	24.98	24.98	24.95	1.60	1.59	1.59	6.41	6.38	6.38
15	Madhya Pradesh	5.52	5.52	5.49	2.16	2.14	2.14	39.15	38.77	38.92
16	Maharashtra	2.52	2.53	2.52	0.47	0.47	0.47	18.59	18.51	18.55
17	Manipur	16.17	16.10	16.17	1.95	1.93	1.93	12.04	11.99	11.93
18	Meghalaya	5.49	5.67	5.74	2.62	2.58	2.58	47.65	45.47	44.90
19	Mizoram	14.86	14.62	14.75	3.71	3.60	3.60	24.94	24.60	24.38
20	Nagaland	40.22	36.58	36.26	4.27	4.11	4.11	10.61	11.25	11.34
21	Orissa	16.90	16.90	16.89	2.61	2.58	2.57	15.47	15.24	15.23
22	Punjab	8.08	8.10	8.11	1.48	1.48	1.48	18.37	18.23	18.20
23	Rajasthan	5.19	5.22	5.26	1.54	1.54	1.54	29.75	29.42	29.21
24	Sikkim	17.67	17.53	17.49	1.60	1.59	1.59	9.04	9.06	9.08
25	Tamil Nadu	8.51	8.66	8.67	1.43	1.43	1.43	16.86	16.50	16.48
26	Tripura	33.56	33.34	33.34	1.79	1.78	1.78	5.34	5.34	5.34
27	Uttar Pradesh	4.38	4.37	4.37	0.92	0.92	0.92	20.94	20.93	20.94
28	Uttaranchal	4.98	5.08	5.07	1.99	1.98	1.98	40.04	38.90	38.99
29	West Bengal	7.96	8.08	8.13	1.38	1.38	1.38	17.38	17.06	16.95
30	A & N Islands	26.55	23.47	22.70	8.22	7.16	7.12	30.94	30.52	31.35
31	Chandigarh	94.52	80.74	79.77	7.31	6.75	6.74	7.73	8.36	8.45
32	D & N Haveli	3.65	3.68	3.68	0.76	0.76	0.76	20.80	20.62	20.62
33	Daman & Diu	6.18	8.58	8.72	4.90	4.68	4.68	79.31	54.56	53.61
34	Lakshadweep	19.89	20.59	20.76	15.30	10.54	10.43	76.92	51.20	50.22
35	Pondicherry	8.08	9.07	9.04	4.67	4.46	4.44	57.79	49.11	49.15

## Annexure – 7

EBLUP and Estimated SE and CV of Employment Rate (%)  
under Survey, Linear Mixed and Spatial Models

Unemployment Rate				Educated Rural Youths							
Sr	State/UT	Estimate			SE			CV (%)			
		Survey	LM	Spatial	Survey	LM	Spatial	Survey	LM	Spatial	
1	Andhra Pradesh	1.55	1.66	1.67	0.54	0.53	0.53	34.97	31.58	31.43	
2	Arunachal Pradesh	0.83	0.90	0.90	0.46	0.45	0.45	54.98	49.73	49.23	
3	Assam	4.71	4.49	4.41	2.05	1.46	1.51	43.49	32.42	34.29	
4	Bihar	1.69	1.92	1.93	0.80	0.74	0.74	47.07	38.81	38.42	
5	Chhattisgarh	3.58	3.03	2.97	1.38	1.14	1.13	38.47	37.77	38.07	
6	Delhi	1.12	1.11	1.10	0.69	0.65	0.65	61.26	59.18	59.10	
7	Goa	0.46	0.50	0.50	0.21	0.21	0.21	46.12	42.49	42.12	
8	Gujarat	1.81	1.79	1.79	0.40	0.39	0.39	21.85	21.71	21.72	
9	Haryana	1.67	1.61	1.63	1.19	1.04	1.04	71.38	64.19	63.67	
10	Himachal Pradesh	3.82	3.25	3.20	1.95	1.40	1.38	50.94	43.10	43.07	
11	Jammu & Kashmir	4.59	4.12	4.08	2.05	1.44	1.41	44.63	35.06	34.48	
12	Jharkhand	4.17	3.97	3.86	2.76	1.63	1.59	66.23	41.02	41.19	
13	Karnataka	0.14	0.14	0.14	0.07	0.07	0.07	48.75	48.15	48.12	
14	Kerala	4.47	4.59	4.60	1.05	0.95	0.95	23.46	20.66	20.62	
15	Madhya Pradesh	2.40	2.29	2.29	1.05	0.94	0.93	43.61	40.84	40.64	
16	Maharashtra	3.12	2.99	2.98	0.49	0.48	0.48	15.61	15.88	16.03	
17	Manipur	3.97	3.91	3.90	0.58	0.56	0.56	14.68	14.37	14.39	
18	Meghalaya	0.63	0.72	0.73	0.41	0.40	0.40	65.12	55.94	55.01	
19	Mizoram	0.36	0.36	0.36	0.19	0.19	0.19	53.76	53.59	53.36	
20	Nagaland	2.55	3.22	3.21	2.10	1.46	1.45	82.18	45.35	45.14	
21	Orissa	1.51	1.71	1.72	0.57	0.55	0.55	37.46	32.06	31.71	
22	Punjab	2.78	2.60	2.59	1.01	0.91	0.90	36.28	34.95	34.85	
23	Rajasthan	1.49	1.49	1.49	0.52	0.51	0.51	35.13	34.21	34.11	
24	Sikkim	0.50	0.52	0.52	0.17	0.17	0.17	34.64	33.38	33.33	
25	Tamil Nadu	1.78	1.88	1.90	0.63	0.60	0.61	35.44	32.14	31.87	
26	Tripura	15.21	9.50	9.19	2.44	1.66	1.64	16.01	17.46	17.80	
27	Uttar Pradesh	2.15	2.17	2.17	0.41	0.40	0.40	19.10	18.58	18.60	
28	Uttaranchal	2.35	2.56	2.57	1.19	1.04	1.02	50.84	40.39	39.78	
29	West Bengal	2.43	2.77	2.80	0.63	0.61	0.62	25.94	22.00	22.00	
30	A & N Islands	10.76	7.63	7.34	1.47	1.19	1.18	13.65	15.64	16.09	
31	Chandigarh	4.16	3.65	3.60	0.89	0.82	0.81	21.29	22.39	22.58	
32	D & N Haveli	1.30	1.20	1.20	0.56	0.54	0.54	43.10	45.30	45.47	
33	Daman & Diu	1.99	1.97	1.98	0.98	0.89	0.89	49.30	45.08	44.74	
34	Lakshadweep	14.83	8.98	8.69	2.99	1.83	1.79	20.13	20.36	20.55	
35	Pondicherry	2.50	2.51	2.51	0.27	0.26	0.26	10.63	10.49	10.49	

## Annexure – 8

EBLUP and Estimated SE and CV of Employment Rate (%)  
under Survey, Linear Mixed and Spatial Models

Unemployment Rate				Educated Rural Youths						
Sr	State/UT	Estimate			SE			CV (%)		
		Survey	LM	Spatial	Survey	LM	Spatial	Survey	LM	Spatial
1	Andhra Pradesh	8.76	8.83	8.82	0.84	0.84	0.83	9.62	9.46	9.46
2	Arunachal Pradesh	10.41	10.22	10.52	2.45	2.27	2.26	23.54	22.26	21.53
3	Assam	16.29	16.02	16.84	2.66	2.45	2.44	16.33	15.27	14.48
4	Bihar	21.13	17.08	16.54	4.78	3.71	3.64	22.63	21.74	21.99
5	Chhattisgarh	4.57	4.77	4.80	1.09	1.07	1.07	23.79	22.46	22.28
6	Delhi	6.56	6.58	6.53	1.27	1.25	1.24	19.36	18.92	19.03
7	Goa	9.33	10.27	10.27	3.58	3.07	3.05	38.39	29.92	29.66
8	Gujarat	3.56	3.71	3.70	1.01	1.00	1.00	28.42	26.90	26.97
9	Haryana	3.63	3.74	3.77	0.85	0.84	0.84	23.36	22.47	22.26
10	Himachal Pradesh	17.07	14.27	13.96	5.02	3.81	3.74	29.39	26.72	26.78
11	Jammu & Kashmir	18.39	16.73	16.93	3.84	3.23	3.20	20.86	19.33	18.90
12	Jharkhand	16.32	15.27	15.16	4.58	3.63	3.55	28.05	23.78	23.45
13	Karnataka	7.84	7.83	7.84	2.17	2.05	2.04	27.68	26.17	26.02
14	Kerala	22.65	21.90	21.22	1.99	1.90	1.89	8.78	8.69	8.93
15	Madhya Pradesh	9.07	9.10	8.91	2.30	2.16	2.14	25.41	23.71	24.04
16	Maharastra	6.84	6.86	6.80	0.97	0.96	0.96	14.25	14.04	14.14
17	Manipur	14.73	14.25	14.79	2.89	2.61	2.59	19.63	18.32	17.52
18	Meghalaya	16.25	15.79	15.80	1.57	1.53	1.52	9.69	9.66	9.64
19	Mizoram	15.89	13.83	14.22	2.62	2.43	2.43	16.51	17.56	17.08
20	Nagaland	31.10	19.74	19.53	7.17	4.52	4.40	23.07	22.88	22.53
21	Orissa	18.42	17.35	16.97	2.86	2.59	2.56	15.50	14.91	15.09
22	Punjab	13.79	12.79	12.81	2.87	2.60	2.57	20.83	20.30	20.09
23	Rajasthan	6.55	6.71	6.68	1.82	1.75	1.74	27.83	26.09	26.05
24	Sikkim	0.19	0.19	0.19	0.10	0.10	0.10	52.30	51.33	51.30
25	Tamil Nadu	9.29	9.41	9.46	1.39	1.36	1.36	14.99	14.44	14.33
26	Tripura	49.39	28.55	28.74	8.13	5.00	4.95	16.47	17.50	17.21
27	Uttar Pradesh	7.78	7.98	7.95	1.43	1.39	1.39	18.38	17.46	17.48
28	Uttaranchal	6.63	7.77	7.89	2.79	2.54	2.52	42.14	32.64	31.90
29	West Bengal	14.30	14.51	14.45	1.27	1.25	1.25	8.87	8.60	8.64
30	A & N Islands	16.37	15.02	14.66	3.16	2.80	2.77	19.31	18.63	18.92
31	Chandigarh	8.88	8.88	8.88	0.09	0.09	0.09	1.05	1.05	1.05
32	D & N Haveli	12.74	7.52	7.05	7.52	4.72	4.56	58.99	62.72	64.63
33	Daman & Diu	1.39	1.53	1.53	0.73	0.72	0.72	52.23	47.09	46.98
34	Lakshadweep	9.48	10.21	10.36	1.40	1.37	1.37	14.74	13.46	13.25
35	Pondicherry	8.50	8.62	8.64	0.95	0.94	0.94	11.23	10.95	10.92

**Employment Situation Index:  
Comparison of the Employment Situation across the States**

*Neha Srivastava<sup>1</sup>, Mukesh<sup>2</sup>*

**Abstract**

*This paper is an attempt to study and compare the employment situation across 17 major states of the country, based on the data of NSSO's 66<sup>th</sup> round (2009-2010) quinquennial survey on 'Employment and Unemployment in India'.*

*The parameters used in this study relate to level of employment, growth in employment and quality of employment.*

*The indicators taken to denote the level of employment are the Worker Population Ratio, Unemployment Rate and Underemployment Incidence. The Compounded Annual Growth Rate (CAGR) of the estimated workforce between the 61<sup>st</sup> and 66<sup>th</sup> round has been taken as an indicator of the growth in employment. The proportion of the Workforce in the Regular Wage and Salaried (RWS) segment, which can be considered to approximate the organized employment, has been taken as an indicator of quality of employment.*

*Based on the above mentioned indicators the paper also aims at suggesting a tool for comparison of employment situation across the states.*

*The study reveals that the Eastern and Central parts of the Country are lagging behind from the Western and Southern States. All the Southern States except Kerala are in the top 5 States of the Country.*

**Key Words:** *Labour Force, Work Force, Unemployed, Underemployed, Regular Wage and Salaried, Usual Principal Status (UPS) and Usual Principal and Subsidiary Status (UPSS).*

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**Employment Situation Index:  
Comparison of the Employment Situation across the States**

**1. Introduction:**

Faced with a continuously increasing population India is experiencing a wide range of challenges. Catering to the needs of its labour force is one of them. Ensuring adequate growth in employment opportunities in all the sectors, providing productive and quality employment for the labour force and creating a healthy and safe environment for the work force are a few tasks ahead of the country's welfare government. Any vision of the future can be achieved only if it is rooted in the current reality. It is, therefore, essential to have an understanding of the broad employment picture as it exists today, which would also indicate the directions for improvement in future.

The composition of the Indian workforce is complex in nature. It includes men and women, rural and urban people, people working in the organized and unorganized sectors and also people working in the primary, secondary, tertiary sectors of the economy. The Government needs to have an idea about the employment situation across the states to identify the states where the condition is particularly grim and which need immediate attention in terms of generation of employment opportunities. Hence keeping in view the current relevance, a study of the employment situation across the states is taken up.

The basis of this study is the 66<sup>th</sup> round survey on "Employment and Unemployment in India" conducted by NSSO. Surveys on employment and unemployment are being conducted quinquennially from 27<sup>th</sup> round (October 1972 – September 1973) onwards and up to 2010 eight surveys had been conducted, the last being the 66<sup>th</sup> Round.

The NSSO surveys give the labour force participation rates and the work force participation rates for the different States and Union Territories (UTs) as well as for the country through four different types of measures. These are: Usual Principal Status (UPS), Usual Principal and Subsidiary Status (UPSS), Current weekly Status (CWS), and Current Daily Status (CDS). It has been observed that these alternative measures of employment present a different picture of the employment scenario, but the broad trend is similar in case

of all the measures. For the sake of this study the different rates as per the UPSS have been taken.

## **2. Approach and Methodology:**

This paper is an attempt to study and compare the employment situation across 17 major states of the country, based on the data of NSSO's 66<sup>th</sup> round (2009-10) quinquennial survey on 'Employment and Unemployment in India'.

The following parameters are taken for studying the employment situation across the States.

1. Level of employment;
2. Growth in employment and
3. Quality of employment.

Three indicators have been taken to characterize the level of employment:

1. Worker Population Ratio;
2. Unemployment Rate and
3. Underemployment Incidence.

For the sake of this study, the usually employed persons in the principal status (of age 15 years and above) who sought or were available for additional work were considered to be underemployed.

The Compounded Annual Growth Rate (CAGR) of the estimated workforce between the 61<sup>st</sup> (2004-05) and 66<sup>th</sup> (2000-10) round has been taken as an indicator of the growth in employment. In this paper, the NSS Worker Population Ratios (WPRs) have been applied to projected populations as on 1<sup>st</sup> January, 2005 and 1<sup>st</sup> January, 2010 to arrive at the levels of estimated workforce.

*(The weights being the projected populations as on 1st January, 2005 and 1st January, 2010 derived from the Registrar General of population projections for India and States 2001 – 2026).*

*(The projected populations as on 1st January, 2005 and 1st January, 2010 have been derived from the Registrar General of India (RGI) projections of 1st March 2004/ 2005 and 1st March 2009 / 2010 (Population Projections for India and States 2001 – 2026, reference tables 8 and 9)).*

Some Studies like *Rangarajan et al: Employment Performance of the States, ICRA Bulletin (Money & Finance), November 2008*, have taken the NSS data on RWS workers as an approximation to the organized employment. Hence, the proportion of the Workforce in the Regular Wage and Salaried (RWS) segment has been taken as an indicator of quality of employment.

The correlation between the five sets of indicators, mentioned above, was also studied and none of them exhibited a correlation of more than (+/-) 0.5 with the other. Thus, these five indicators were found to be capable of being considered aggregately.

Next, these sets of indicators were converted into sets of unit range indices. As the indicators of Unemployment Rate and Underemployment Incidence are indicative of a negative employment situation, the indices related to these were subtracted from 1 to make these indicative of a positive employment situation. The positive indices thus obtained are named as Employment Rate and Full Potential Employment. Indicators have been converted into indices to make them free of scale, so that none of them overpowers the other when considered in a combined manner. The basic idea is to reflect the variability across the states for a particular indicator in a set of range 0 to 1. It may be appropriate to mention that this conversion has no impact on the variability within the sets.

The five unit ranged indices were then added up to obtain the composite employment situation index (a score out of 5), corresponding to each of the 17 States. Ranking of the States have been done based upon their scores of employment situation index.

Thus, the entire methodology of the calculation of Employment Situation Index can be divided into five parts.

1. Obtaining the five sets of indicators.
2. Obtaining the Correlation Matrix.

3. Calculation of the five sets of unit ranged indices indicative of positive employment situation.
4. Calculation of the composite Employment Situation Index.
5. Ranking the States according to the composite Employment Situation Index.

### 3. Formulae:

#### 3.1. Obtaining the five sets of indicators:

The indicators related to Worker Population Ratio, Unemployment Rate, Underemployment incidence and proportion of the Workforce in the RWS segment, for the rural and urban population / persons are available directly from the published reports of NSS. The rural and urban rates and ratios pertaining to each State have been combined to obtain the rates and ratios for entire population by taking the weighted average.

*(The weight being the projected population as on 1st January, 2010 derived from the Registrar General of population projections for India and States 2001 – 2026).*

The Compounded Annual Growth Rate (CAGR) of the estimated workforce between the 61<sup>st</sup> and 66<sup>th</sup> round has been obtained by the formula:

$$CAGR = ((\text{current year value} / \text{value of the initial year})^{1/n} - 1) * 100$$

*Where n is the number of years.*

#### 3.2. Calculation of the five sets of unit ranged indices indicative of positive employment situation:

The five sets of indicators obtained as above have been converted into indices lying between 0 and 1 by using the formula:

$$j^{\text{th}} \text{ Index for the } i^{\text{th}} \text{ state } (Y_{ji}) = (X_{ji} - X_{jmin}) / (X_{jmax} - X_{jmin})$$

Where j corresponds to an indicator and i corresponds to a particular State;

j = 1 to 5; i = 1 to 17;

X<sub>ji</sub> is the value of the j<sup>th</sup> indicator corresponding to the i<sup>th</sup> State;

X<sub>jmin</sub> is the minimum value of the j<sup>th</sup> indicator amongst the 17 major States; and

X<sub>jmax</sub> is the maximum value of the j<sup>th</sup> indicator amongst the 17 major States.

The indices of Unemployment Rate and Underemployment Incidence are subtracted from 1 to obtain the positive indices of Employment Rate and Full Potential Employment.

### 3.3. Calculation of the composite Employment Situation Index:

The five indices thus obtained are then added to see how well the employment situation is in these states on a scale of five.

$$\text{Composite Employment Situation Index for the } i^{\text{th}} \text{ State} = \sum Y_{ji} \text{ ; where } j = 1 \text{ to } 5.$$

### 3.4. Ranking the States according to the Composite Employment Situation Index.

The States have been ranked on the basis of their scores of the Composite Employment Situation Index for 66<sup>th</sup> Round.

## 4. Findings and Conclusions:

The Correlation Coefficient Matrix corresponding to 66<sup>th</sup> round is reproduced below:

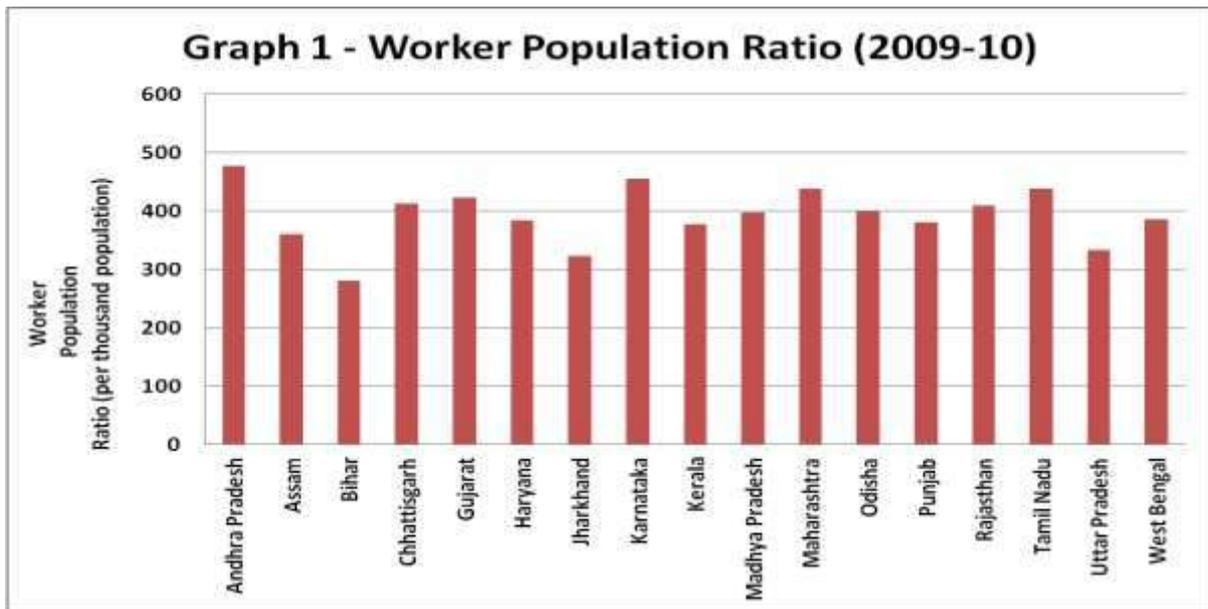
### Correlation Coefficient Matrix: 66<sup>th</sup> Round

Indicators	Worker Population Ratio	Unemployment Rate	Underemployment	Regular Wage /Salaried	Growth in Work Force
Worker Population Ratio	1.00	-0.38	-0.48	0.44	0.22
Unemployment Rate	-0.38	1.00	0.03	0.23	-0.20
Underemployment	-0.48	0.03	1.00	-0.47	-0.13
Regular Wage /Salaried	0.44	0.23	-0.47	1.00	0.31
Growth in Work Force	0.22	-0.20	-0.13	0.31	1.00

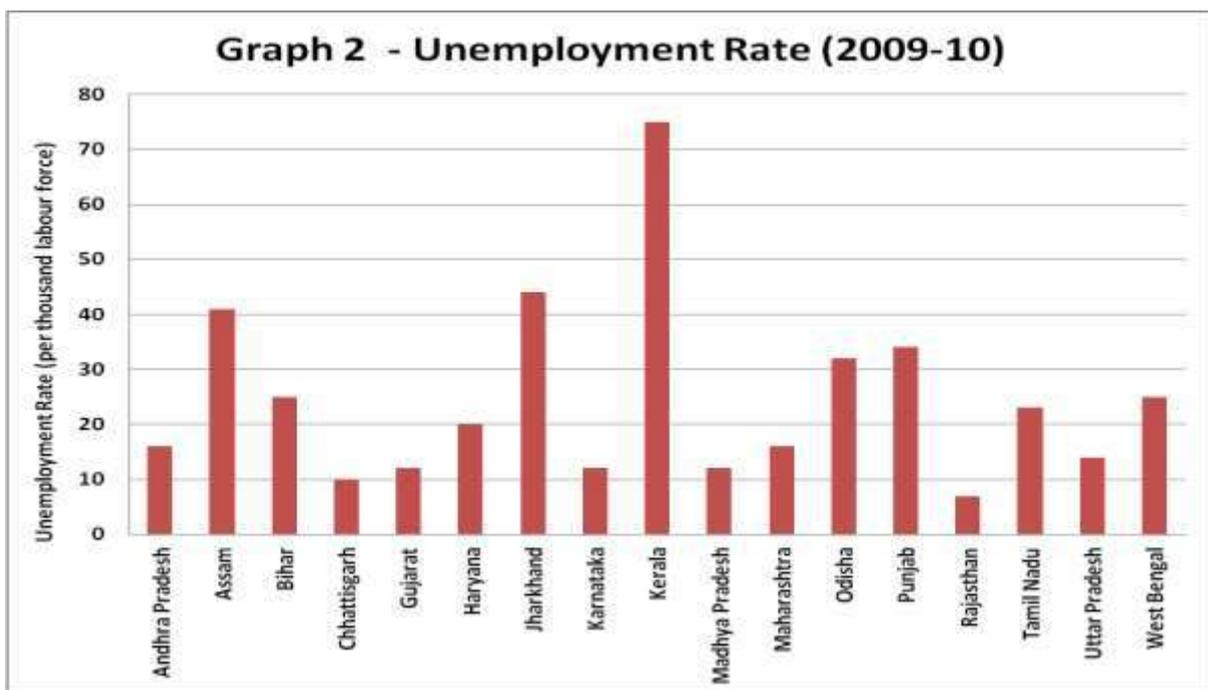
As can be seen from the matrices, corresponding to the 66<sup>th</sup> round none of the pairs of the indicators have a correlation coefficient with modulus value greater than or equal to 0.5. Hence, these indicators may be combined together to obtain a composite employment situation index.

#### 4.1. Worker Population Ratio:

As can be seen from Graph 1, the States which showed the highest WPR, during 2009 – 10 were Andhra Pradesh, followed by Karnataka, Maharashtra and Tamil Nadu. The States which had the lowest overall WPR, during 2009 – 10, were Bihar, Jharkhand and Uttar Pradesh.



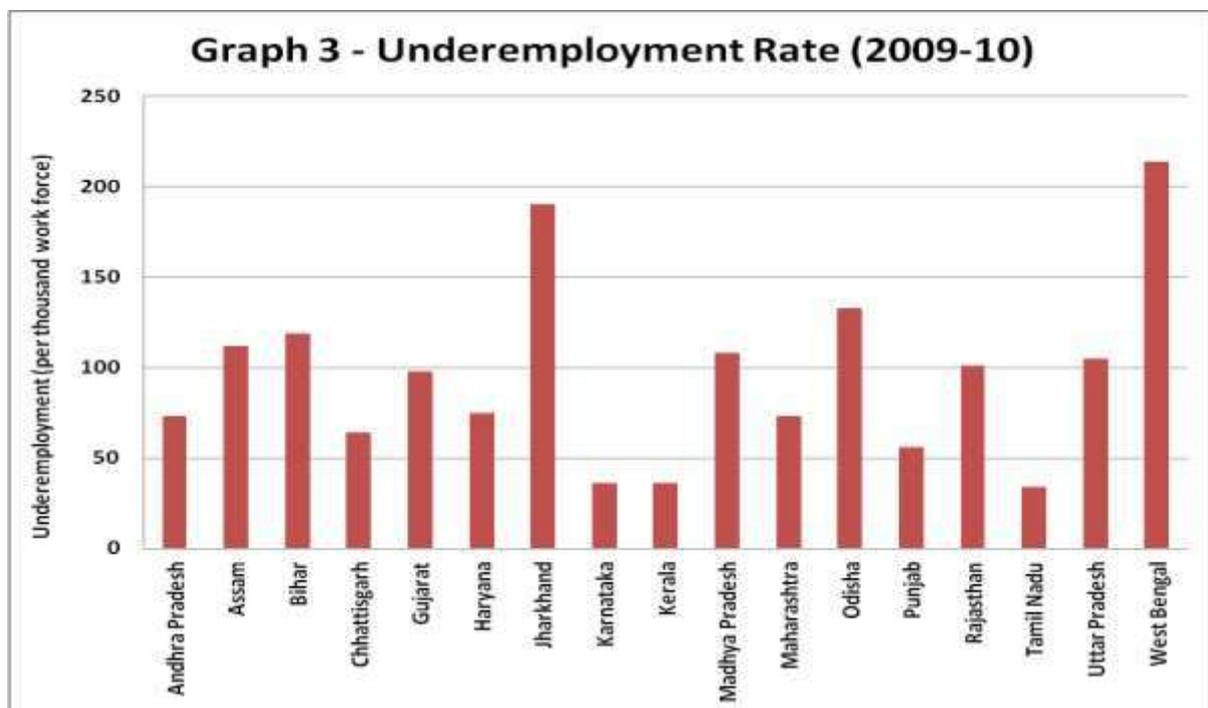
#### 4.2. Unemployment Rate:



Graph 2 gives the Unemployment Rates across the States during 2009-10. The State which had the lowest levels of unemployment, during 2009 – 10 was Rajasthan followed by Chhattisgarh, Gujarat, Karnataka and Madhya Pradesh. The state which exhibited the highest unemployment was that of Kerala. It was followed by Jharkhand and Assam.

It may be noted that for Kerala the Unemployment rate was exceptionally high at about 7.5%, for rest of the states it was well below 5%.

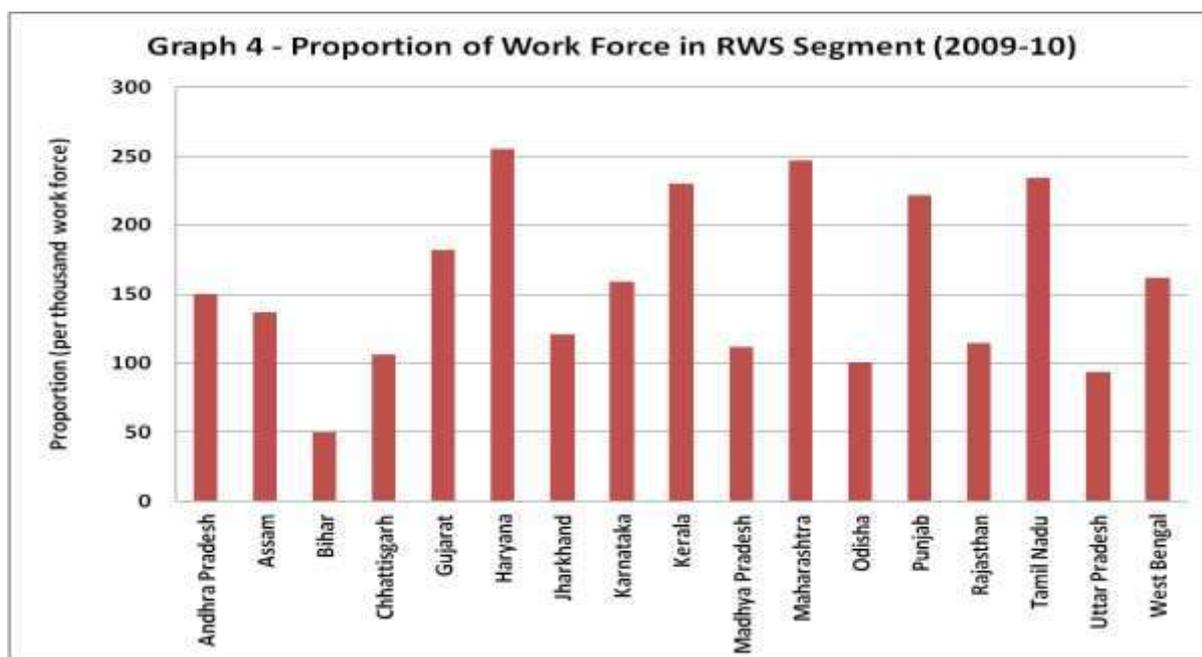
#### 4.3. Underemployment Incidence:



From Graph 3, one can see that, underemployment is low in the Southern States of Tamil Nadu, Karnataka and Kerala. The States which had the highest levels of underemployment were West Bengal and Jharkhand. While Underemployment Rate for West Bengal was more than 20%, for Jharkhand it was close to 20%.

#### 4.4. Proportion of the Workforce in the Regular Wage and Salaried (RWS) segment:

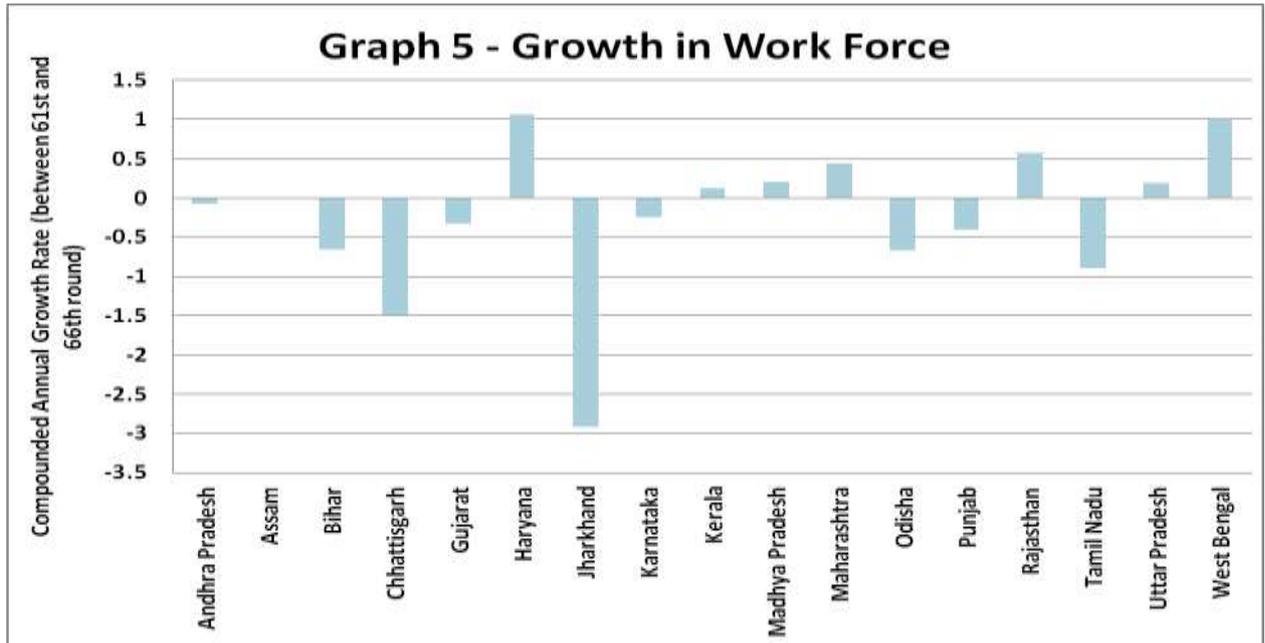
Graph 4 shows that during 66<sup>th</sup> round, the percentage of the workforce in the RWS segment was at low levels of around 10% for the States of Uttar Pradesh, Odisha, Chhattisgarh, Rajasthan, Madhya Pradesh and Jharkhand. For Bihar it was strikingly low at less than 5%.



#### 4.5. Growth in Work Force:

Graph 5 gives a comparative picture of the Growth in the estimated workforces, between the 61<sup>st</sup> and the 66<sup>th</sup> Rounds. Following are the main observations:

The State which had the highest growth in workforce during 2004 – 05 to 2009 – 10 was Haryana; it was followed by West Bengal and Rajasthan. On the other hand the States which exhibited a decline in workforce during the period were Jharkhand, Chhattisgarh, Tamil Nadu, Bihar and Odisha. However, before interpreting that employment opportunities has declined in these States, one must take into account the fact that workforce is a function of the labour force, which in turn depends upon the age structure of the population, amongst other factors. The States with a higher proportion of population in the younger and elderly age groups are likely to have a comparatively smaller proportion of population in the labour force and work force.



### 5.5. Employment Situation Index:

State wise Scores and Ranks, corresponding to the different Indicators, in the 66<sup>th</sup> Round (2009 - 10) are given in Annexure.

The scores and ranks of different States as obtained from the Composite Employment Situation Index for the 66<sup>th</sup> Round (2009 – 10) are given in the following Table:

**Composite Employment Situation Index: 66<sup>th</sup> Round (2009 – 10)**

State	Overall Score	Rank
Maharashtra	4.26	1
Haryana	4.11	2
Karnataka	4.00	3
Tamil Nadu	3.97	4
Andhra Pradesh	3.85	5
Gujarat	3.58	6
Rajasthan	3.47	7
Punjab	3.46	8
Madhya Pradesh	3.19	9
Kerala	3.12	10
Chhattisgarh	3.08	11
West Bengal	2.80	12
Uttar Pradesh	2.79	13
Assam	2.63	14
Odisha	2.50	15
Bihar	1.83	16
Jharkhand	1.15	17

On having a look at the rankings of the States one can clearly see that the Eastern and Central parts of the Country are lagging behind the Western and Southern States. The state which has the highest score for the Composite Employment Index is Maharashtra and is followed by Haryana. It may be noted that both these States have a large manufacturing sector. All the Southern States except Kerala are in the top 5 States of the Country. The States having the least scores for Composite Employment Situation Index are the Eastern States of Jharkhand, Bihar and Odisha. However, while interpreting the relative conditions of the low ranking States, one may take into account the fact that the scores of some pair of States like Karnataka & Tamil Nadu, Rajasthan & Punjab and West Bengal & Uttar Pradesh are very close and if some additional indicators mobility of labour force had also been taken into account their rankings might have changed.

#### **6. Limitations of the Study:**

Other employment indicators like mobility of labour force, etc. if included in the employment situation index may change the position of the states with marginal difference in their scores.

#### **7. Way Forward:**

A similar study can be undertaken with the results of the NSSO's previous rounds on "Employment and Unemployment in India". A study can also be undertaken to see if there is any correlation between the migration of the labour force of the states and the scores of employment situation index.

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4. “Growth and Employment in India: The Regional Dimension” by Dr. K.V. Rama Swamy, IGIDR; Mumbai.
5. “Changing Structure of the Indian Workforce” by Dr. Harcharan Singh, Deputy Director General, Ministry of Labour and Employment, Govt. of India.

State wise Scores and Ranks, corresponding to the different Indicators, in the 66<sup>th</sup> Round (2009 - 10)

State	Indicators					Indices						Rank					
	WPR	UR	UER	RWS	CAGR	WPR	ER	FPE	RWS	CAGR	Overall Score	WPR	ER	FPE	RWS	CAGR	Overall Score
Andhra Pradesh	478	16	73	150	-0.07	1.00	0.87	0.78	0.49	0.71	3.85	1	7	6	9	9	5
Assam	361	41	112	137	-0.01	0.41	0.50	0.56	0.42	0.73	2.63	14	15	13	10	8	14
Bihar	280	25	119	50	-0.66	0.00	0.74	0.53	0.00	0.57	1.83	17	11	14	17	13	16
Chhattisgarh	413	10	65	106	-1.49	0.67	0.96	0.83	0.27	0.36	3.08	6	2	5	14	16	11
Gujarat	423	12	98	182	-0.33	0.72	0.93	0.64	0.64	0.65	3.58	5	3	9	6	11	6
Haryana	384	20	75	255	1.06	0.53	0.81	0.77	1.00	1.00	4.11	11	9	8	1	1	2
Jharkhand	324	44	190	121	-2.91	0.22	0.46	0.13	0.35	0.00	1.15	16	16	16	11	17	17
Karnataka	455	12	36	159	-0.25	0.88	0.93	0.99	0.53	0.67	4.00	2	3	2	8	10	3
Kerala	378	75	36	230	0.12	0.49	0.00	0.99	0.88	0.76	3.12	13	17	2	4	7	10
Madhya Pradesh	398	12	108	112	0.20	0.60	0.93	0.59	0.30	0.78	3.19	9	3	12	13	6	9
Maharashtra	439	16	73	247	0.45	0.80	0.87	0.78	0.96	0.84	4.26	3	7	6	2	4	1
Odisha	400	32	133	101	-0.67	0.61	0.63	0.45	0.25	0.56	2.50	8	13	15	15	14	15
Punjab	381	34	56	222	-0.40	0.51	0.60	0.88	0.84	0.63	3.46	12	14	4	5	12	8
Rajasthan	409	7	101	115	0.57	0.65	1.00	0.63	0.32	0.88	3.47	7	1	10	12	3	7
Tamil Nadu	438	23	34	234	-0.90	0.80	0.76	1.00	0.90	0.51	3.97	4	10	1	3	15	4
Uttar Pradesh	334	14	105	94	0.27	0.27	0.90	0.60	0.21	0.80	2.79	15	6	11	16	5	13
West Bengal	386	25	213	162	0.99	0.54	0.74	0.00	0.55	0.98	2.80	10	11	17	7	2	12
<b>all-India</b>	391	21	93	160	0.06	0.56	0.79	0.67	0.54	0.75	3.31						

WPR	Worker Population Ratio
UR	Unemployment Rate
UER	Underemployment Rate
ER	Employment Rate
FPE	Full Potential Employment
RWS	Regular Wage / Salaried Segment
CAGR	Compounded Annual Growth Rate in Work Force

# Designers Expectation and Enumerators Response in Household based Surveys: A measure of closeness

Sourav Chakraborty and Ajay Baksi<sup>1</sup>

## Abstract

The mismatches in concepts and ideas between design planners and field executors are very common in official surveys and it generally causes a particular type of non-sampling error. Two methods are proposed to measure the closeness of planner's expectations and executor's responses in household based survey using National Sample Survey data of India. 'Canvassing time' of a schedule of enquiry is used to measure the closeness.

Key Words: Non-sampling Error, Design Time, Canvassing Time, Efficiency.

## 1. Introduction

Any survey operation broadly consists of four major steps. At first, designers prepare the schedule of enquiry. Then the interviewers canvass these schedules. Data, thus obtained, are then tabulated after necessary cleaning. At the last stage, the reports are being prepared on basis of these cleaned data. The point of interest is that while the designers prepare the schedule of enquiry, they have a particular set of ideas and objectives on their mind. Let us suppose that 'A' denotes the 'set of ideas and objectives of designers'. In the next stage these ideas and objectives ('A') are shared and explained to the field staffs through training, seminars, etc. It is quite possible that the field staffs may not apprehend the whole ideas and objectives of the designers. Instead of getting 'A', these field staffs (say 'n' numbers) may get sets  $B_1, B_2, \dots, B_n$ . These each  $B_i$  may be a subset of 'A' or a superset of 'A' i.e.  $B_i \subseteq A$  or  $B_i \supseteq A \forall i$ . The less is the gap between A and  $B_i$ , the more efficient will be the survey operation. Here we assume that the survey methodologies (sampling design) used for survey are optimal in a given condition. So the efficiency under consideration, if measurable, can be a measure of non-sampling error in survey operation. The problem lies in the fact that this difference of ideas between field workers and designers are qualitative in

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<sup>1</sup> Both are working in SDRD, NSSO, Kolkata as Director. The views expressed by the authors are of their own and not of the organization they are currently serving.

nature. So quantification of it is of interest and to measure it some proxies has to be used.

Another interesting feature of any household based survey is that whatever data one gets after canvassing the schedule, the data inherits a basic conditionality and this conditionality is two pronged. Firstly, as discussed, the data is conditional on the understanding of the interviewers on the concepts and ideas of the schedule. Secondly, the data is also conditional on the efficiency (or capability) and understanding of the respondents on each of the questions which have been asked to them. Therefore, each observation that one gets in the large scale household based surveys incorporates this conditionality and thus it is very difficult to get an unconditional observation. To get a more measurement free unconditional observation, one need to incorporate the conditionality criterion in a model based framework. However this may leads toward a more complicated post survey analysis of the data because it will be difficult to model these individual behaviours. The other way to get an idea about it is to see whether the schedule of enquiry itself gives some information on these aspects.

For example, in each nation-wide sample surveys conducted by National Sample Survey (NSS) in India; NSS collects data on various facets of the main theme of the survey along with the time taken to canvass the schedule of enquiry and the nature of the respondents. The respondents are generally categorized based on their capability to provide information and cooperation. Some of the categorization is ‘cooperative and capable’, ‘cooperative but not capable’, ‘busy’, ‘reluctant’ etc. Therefore information coming from a household which is ‘cooperative and capable’ should be different from that which is coming from a household which is ‘reluctant’. The second set is supposed to incorporates more non-sampling error than the first set. However, no information is available on the behaviour of the interviewers.

There are very few authors who had studied the behaviour of respondents and their effect in survey results. Saha and Baksi studied the respondent resistance based on NSS 61<sup>st</sup> round (Saha and Baksi, 2007). They discussed the substitution of household by reason and analyse the respondent resistance with the special emphasis on affluent households. In their study they found that the data does not support the common perception that respondent resistance more in affluent section of the population and also they concluded that respondent’s resistance is not much in NSS

system of data collection although there is need to give wide publicity of the survey before canvassing the particular type of schedule. In that analysis, they also considered the time taken to canvass a particular type of schedule and cross classify the household based on their response and stratification. Here also they concluded that affluent household does not give less time to field personnel for data collection. Previously based on NSS 55<sup>th</sup> round data, Mohanan discussed the household characteristics like education, gender, age-group etc. to get an idea about the capability of respondent's to provide information (Mohanan, 1999). However in these analyses the authors considered the conditionality of respondent in more details rather than the conditionality of interviewer.

Although the conditionality of the interviewer is not directly measurable from any schedule of enquiry, one may use the total time taken to canvass a schedule to gauge it. Also the differences in ideas and concepts as planned by the designers and as perceived by the enumerators are a potential source of non-sampling error in any survey operation. Therefore if one can measure the extent of differences, then one may possibly have some idea of the reliability of survey results. If the conditionality of interviewers and that of respondents can be ascertained, then one may adjust the survey results taking in to account the extent of non-sampling errors which may otherwise creep in due to this conditionality.

In this paper we have tried to analyse this difference of ideas using 'time to canvass' a particular type of schedule as variable of interest and some measures are proposed. Section 2 describes the suggested methodology in detail while section 3 discusses the application of the methods based on data. Some remarks are made in section 4.

## **2. Methodology**

Let us suppose that in a given domain (domain may be country, state, region, administrative blocks etc), 'n' number of schedules are canvassed.

Define,  $t_i$  = total time taken in canvassing  $i^{\text{th}}$  schedule

$t^D$  = design time for canvassing the schedule

To gauge the closeness between ideas of designers and enumerators, following measures are proposed:

**Measure 1 [M<sub>1</sub>]:**

One simple method is that we can find out the extent of difference between actual time taken in canvassing the schedule and design time by considering a simple multiplicative framework. In this simple method, the closeness for the i<sup>th</sup> schedule is defined as

$$\begin{aligned}
 E_i &= t_i/t^D \text{ if } t_i < t^D \\
 &= 1 \text{ if } t^D \leq t_i < 2t^D \\
 &= 0 \text{ otherwise}
 \end{aligned}$$

Then for a particular domain, the closeness is measured as,

$$M_1 = \frac{\sum_{i=1}^n E_i}{n}$$

The M<sub>1</sub> has an upward bias because the schedules with canvassing time far off from design time (in positive direction) will be treated equally with the schedule having canvassing time just above the design time. To take an example, for two schedules having canvassing time  $t_i = 2t^D - 1$  and  $t_i = t^D + 1$ , the closeness value (E<sub>i</sub>) will be 1 although in an ideal situation they should differ. M<sub>1</sub> thus suffer from this upward biasness and gives a value which is at higher side than the reality. Therefore a refined method is needed to address this problem. One possible refinement may be to consider the canvassing time as symmetric with respect to design time and place the above two schedules in different perspective while measuring the closeness. Taking the canvassing time as symmetric with design time, we derived a refined measure M<sub>2</sub>.

**Measure 2 [M<sub>2</sub>]:**

In this method we assume that canvassing time is symmetric with design time and define the measure of closeness for the i<sup>th</sup> schedule as follows,

$$E_i = \frac{t^D - |t_i - t^D|}{t^D}$$

Then for a particular domain, the closeness is measured as

$$M_2 = \frac{\sum_{i=1}^n E_i I_{[E_i \geq 0]}}{n}$$

where  $I_{[E_i \geq 0]}$  is an indicator variable.

Although  $M_2$  is essentially an improvement upon  $M_1$  but it also has its own problem. Firstly, the assumption that canvassing time is symmetric with design time is a restrictive one and it may not hold in some cases. Secondly,  $M_2$  inherently assumes that the value of ‘design time’ of a particular schedule is optimum in nature and every canvassing time has to coincide with it. But in practical scenario this assumption does not hold. The exact time taken to canvass a schedule in the field may not always coincide with designer’s expected time but still it may be close enough in all practical purposes. In such cases, the closeness measure should be 1. But neither  $M_1$  nor  $M_2$  guarantees the same. Therefore a further refined measure with more practical assumptions is called for. Taking all of this in to consideration we have derived another measure  $M_3$ .

### **Measure 3 [M<sub>3</sub>]:**

In this method we define the measure of closeness for the  $i^{\text{th}}$  schedule as follows,

$$\begin{aligned} E_i(k) &= t_i / (t^D - k) \text{ if } t_i < (t^D - k) \\ &= (t^D + k) / t_i \text{ if } t_i > (t^D + k) \\ &= 1 \text{ if } (t^D - k) \leq t_i \leq (t^D + k) \end{aligned}$$

for any  $k > 0$ .

Then for a domain the closeness is measured as,

$$M_3(k) = \frac{\sum_{i=1}^n E_i(k)}{n}$$

$M_3$  is an improvement upon  $M_2$  because it depends upon a more practical assumption that a canvassing time which is close enough to the design time is equally

good with the other one which coincides with the design time. This design time neighbourhood based measure also takes in to account the demerits of M1. M3 does not have an upward bias like M1 as very high value of canvassing time will yield a very low value of the closeness. Further on simulation on 'k', one may get the optimum width of the neighbourhood ( i.e. k) for a particular schedule of enquiry in a particular domain. This in turn will help the designers to design the schedules in a more optimal way.

The above measures are suitable for household based surveys. However the design time and canvassing time may vary depending on the size of the canvassed household as the interviewer needs more canvassing time for a bigger household rather than a smaller one and therefore, a more realistic measure should incorporate this factor in to its computation. So in the first step, we propose to compute the closeness for each household size and then combined them to find a combined measure of closeness for all households in a given domain.

### **A Combined Measure:**

Here we propose to find the closeness for each household size and then we propose to find a combined measure by using different weights for different household sizes. An appropriate weight may be the proportion of schedules canvassed for the size class over all schedules. As earlier, let us suppose that 'n' numbers of schedules are canvassed in a typical domain and we have 'm' number of household size classes on that domain. Then the domain level combined measure of closeness is proposed as

$$M = \sum_{i=1}^m w_i M_i$$

where,  $w_i = \frac{n_i}{n}$  for each household size class  $i$ ;  $i= 1,2,\dots,m$ .

$n_i$  = total number of schedules canvassed for the households with household size 'i'

$M_i$  = Measure of closeness corresponding to the schedule with household size 'i'

The advantage of it is that using this combined measure we can compare the relative position among different domains for each household size classes as well as for all households taken together. And the comparison will be valid for same household size classes across different domains. For example, the measure of closeness for domain A with schedule having ‘p’ number of households will be comparable with the schedules in domain B having the household size ‘p’ only.

### **The Choice of Design Time:**

The accuracy of all the discussed measures depends upon the proper choice of ‘design time’. As the canvassing time varies with the household sizes, the design time has to be different for different household sizes if the schedule is such that it captures information for all the household members. For example in Indian context, in the employment-unemployment schedule of NSS (popularly known as Schedule 10), information is collected for each of the household members. Therefore, for this schedule, the design time has to be different for each household sizes. On the other hand in the consumer expenditure schedule of NSS (popularly known as Schedule 1.0), information on consumption is collected for the household as a whole. Therefore for this schedule the design time may be kept same for households with different sizes.

There may be different ways to ascertain the design time for a particular schedule. Firstly, if there are ‘m’ number of designers, then  $t^D$  may be taken as

$$t^D = \frac{1}{m(\sum_{j=1}^m t_j^d)} \text{ where } t_j^d \text{ is the time taken by the } j^{\text{th}} \text{ designer.}$$

In the second option, a pilot may be conducted before launching of the main survey. During the pilot, designers may ascertain the exact time taken in the field to canvass the schedule and accordingly design time may be formulated for different size of households.

Lastly, if no pilot can be conducted or the designers are not able to canvass the schedules in the field and came up with the design time, the design time may be

obtained from the past data. Although this data driven design is less preferred, in absence of any other thing, this may be considered.

Another point of interest is that beside the size of the household, the design time may also depend upon the social group and/or religious groups of the household surveyed. It may also depend upon the educational status of the households and/or capability of the household in replying the survey questions. Therefore, one may think of a vector of design time at household level considering each of these categories. Then using the proposed measures and defining the domain properly, one can find the combined measures of closeness applying suitable domain specific weights.

### **3. An Application**

In India, National Sample Survey Office (NSSO) conducts large scale sample surveys where they collect data from sample households spreading all over the country. As discussed earlier, very few attempts were made to analyse the respondents and interviewers behaviour on such type of large scale household based surveys. In fact nobody had ever attempted to measure the closeness of designer's expectation and enumerator's response in Indian context using NSS data. This is the prime motivation why we intended to study the NSS data to measure the closeness using the methodology described above. The other motivation is that during NSS 66<sup>th</sup> round (July 2009 - June 2010), it was observed that two important indicators of labour force survey viz. 'worker population ratio' (WPR) and 'labour force participation rate' (LFPR) had been markedly lower than that of NSS 61<sup>st</sup> round (which was conducted during July 2004 - June 2005). The fall is much pronounced in case of female WPR or LFPR in both the sectors (i.e. rural and urban). There was much debate over it and many critics had identified different reasons. One possible explanation came up during the debate is that because NSS had used 'contract investigators' during its 66<sup>th</sup> round survey operation; critics had pointed out that these inexperienced contract investigators had missed the real essence of the schedule (employment-unemployment schedule) and thus they probed less to ascertain the ground reality. Thus they could not possibly identify the contribution of persons in labour force or work force properly. And this non-identification is more visible in case of female household members.

The reason of lesser probing, if it was there at all, may be due to two possible causes. Firstly, respondents may be reluctant to provide information due to their time constraint or any other reason. Secondly, there may be lack of conceptual clarity among inexperienced contract investigators in comparison to their experienced colleagues. A quick tabulation (Table 1) on total time taken to canvass the schedule 10 (i.e. employment-unemployment schedule) shows that the total time taken to canvass the schedule in NSS 66<sup>th</sup> round has really been decreased in comparison to NSS 61<sup>st</sup> round and the pattern is same for different respondents codes and second stage stratum.

Table 1: Average time taken to canvass schedule 10 for each second stage stratum and response codes during NSS 61<sup>st</sup> and 66<sup>th</sup> rounds

Second stage strata	Response codes	rural		urban	
		61 <sup>st</sup> round [2004-05]	66 <sup>th</sup> round [2009-10]	61 <sup>st</sup> round [2004-05]	66 <sup>th</sup> round [2009-10]
SSS1	Co-operative and capable	112	100	95	91
	Co-operative but not capable	123	103	101	82
	Busy	143	114	110	93
	Reluctant	122	94	104	87
	Others	123	115	115	92
	all	114	101	96	90
SSS2	Co-operative and capable	106	99	97	92
	Co-operative but not capable	117	100	105	89
	Busy	139	118	116	102
	Reluctant	120	114	101	92
	Others	110	115	106	75
	all	109	99	99	91
SSS3	Co-operative and capable	107	98	99	98
	Co-operative but not capable	117	97	107	98
	Busy	136	113	122	117
	Reluctant	125	95	106	94
	Others	117	110	90	65
	all	110	98	101	99
all	Co-operative and capable	108	99	97	92
	Co-operative but not capable	118	98	105	88
	Busy	139	116	116	99
	Reluctant	122	103	103	90
	Others	115	112	102	80
<b>all</b>	<b>111</b>	<b>99</b>	<b>99</b>	<b>91</b>	

rural: SSS1: relatively affluent households, SSS2: of the remaining, households having principal earning from non-agricultural activity, SSS3: other households.

urban: SSS1: households having MPCE of top 10% of urban population, SSS2: households having MPCE of middle 60% of urban population, SSS3: households having MPCE of bottom 30% of urban population

Source: Saha and Baksi (2007) and Author's calculation based on NSS 66<sup>th</sup> round data

Here the ‘total time taken to canvass the schedule’ means the actual time spent in canvassing the schedule and it will not include the time taken by the investigator/assistant superintending officer to finalise the schedule. The above table also shows that in reality very few households were reluctant to provide data and it was true for all strata of respondents. Therefore the hypothesis that lesser probing was due to respondents reluctance has not been supported by data. This motivated us to look in to the data more carefully and address the problem of lesser conceptual clarity by measuring the closeness between designer’s expectation and enumerator’s response.

### **The Data:**

NSS 66<sup>th</sup> round in India was earmarked for survey on ‘Household Consumer Expenditure’ and ‘Employment and Unemployment’. The survey was held during July 2009 to June 2010. The area coverage of the survey was whole of the Indian Union *except* (i) interior villages of Nagaland situated beyond five kms of the bus route and (ii) villages in Andaman and Nicobar Islands which remain inaccessible throughout the year. A stratified multi-stage design had been adopted in the 66<sup>th</sup> round survey. The first stage units (FSU) were the 2001 census villages (Panchayat wards in case of Kerala) in the rural sector and Urban Frame Survey (UFS) blocks in the urban sector. In addition, two non-UFS towns of Leh and Kargil of Jammu & Kashmir were also treated as FSUs in the urban sector. The ultimate stage units (USU) were households in both the sectors. In case of large FSUs, one intermediate stage of sampling was the selection of two hamlet-groups (hgs)/ sub-blocks (sbs) from each rural/ urban FSU.

Within each district of a State/UT, two basic strata were formed viz. i) rural stratum comprising all rural areas of the district and (ii) urban stratum comprising all urban areas of the district. Each rural stratum was divided into two sub-strata viz. sub-stratum 1: all villages with proportion of child workers ( $p$ )  $>2P$  (where  $P$  is the average proportion of child workers for the State/UT as per Census 2001) and sub-stratum 2: remaining villages. Within each sector of a State/UT, the sample size was allocated to different strata/sub-strata in proportion to population as per Census 2001. Allocations at stratum/sub-stratum level were adjusted to multiples of 4 with a

minimum sample size of 4 and equal-sized samples were allocated to the four sub-rounds.

For the rural sector, from each stratum/sub-stratum, the required numbers of sample villages were selected by probability proportional to size with replacement (PPSWR), size being the population of the village as per Census 2001. Having determined the area(s) to be considered for listing, the next step was to list all the households (including those found through local enquires to be temporarily locked). Households listed in the selected FSU/hamlet-group in rural areas were next stratified into three second stage strata (SSS) as per specific stratification rule (GoI, 2011). From each SSS the sample households for each of the schedules were selected by SRSWOR. The survey period of one year were divided in to four sub-rounds of three months' duration each starting from July 2009 – September 2009. In each of these four sub-rounds, equal number of sample villages/ blocks (FSUs) was allotted for survey with a view to ensure uniform spread of sample FSUs over the entire survey period. During this round, three schedules of enquiry were canvassed by NSSO enumerators. These schedules were (i) Schedule 0.0: list of households, (ii) Schedule 1.0: consumer expenditure and (iii) Schedule 10: employment and unemployment.

In our analysis we have used the data pertaining to Schedule 10. The total time taken to canvass each schedule is obtained from the data. Originally the 'design time' has to be finalised a-priori of the survey operation either through the consensus of all the designers or by a pilot. But since these exercises were not done, we have used the time taken to canvass the schedule 10 for each second stage strata (SSS) during NSS 61<sup>st</sup> round (Saha and Baksi, 2007) as the design time. Thus because of non-availability of a-priori design time or any pilot, we have used the data driven design time in our analysis. The reason behind this choice is that as the SSS formation was similar in two rounds and the nature of survey was also same, we thought that the findings of Saha and Baksi can be a good proxy for the design time for schedule 10 during NSS 66<sup>th</sup> round.

To find the closeness using the proposed methods, we first identified a household (rural/urban) with its 'second stage strata' status irrespective of its size. Then following Table 2 we have used separate design time for each of the schedule

depending upon its second stage strata status. It is to be noted that ideally one should take separate design time for different household sizes. Since there was no a-priori information on design time, we assume that the design time will be same for all schedules belonging to particular second stage strata. Although this assumption is a little restrictive one, but to start with we believe that it will suffices our needs and can clearly demonstrate the proposed methods.

**Table 2: Design time (in minutes) to canvass Schedule 10**

Second stage strata	rural	urban
SSS1	114	96
SSS2	109	99
SSS3	110	101

Source: Saha and Baksi (2007)

### **The Results:**

Using the design time as in Table 2 we have computed all the measures of closeness for different household sizes and then combined them using appropriate weights to arrive at the combined measure of closeness for each States/UTs and all India. The detailed result for all the States/UTs is given in appendix (Table A). Here we will discuss the results of bigger states as well as of all India and compare the results for both the sector. A particular state is considered as bigger if the total number of sampled household is 1500 or more separately in rural and urban areas. The bigger states are then divided in to 5 geographical regions. The states Punjab, Haryana, Himachal Pradesh, Uttaranchal, Jammu and Kashmir will constitute the ‘North region’ while ‘South region’ includes Andhra Pradesh, Karnataka, Kerala, and Tamil Nadu. The ‘East and North-East region’ will cover Assam, Bihar, Jharkhand, West Bengal, Odisha and ‘West region’ includes Gujarat, Rajasthan, and Maharashtra. Finally the ‘Central region’ covers the states like Madhya Pradesh, Chhattisgarh, and Uttar Pradesh.

The closeness has been measured using all the three proposed measures and the results are then compared. In case of  $M_3$ , only one simulation has been done with  $k=10$ . Table 3 shows the measure of closeness for all the bigger states and India in rural and urban sector respectively during 2009-10.

Table 3: Measure of Closeness during 2009-10

State/UTs	rural			urban		
	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub> (k) [k=10]	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub> (k) [k=10]
North region						
Punjab	0.7116	0.6944	0.7592	0.7740	0.7263	0.8097
Haryana	0.7375	0.6914	0.7657	0.7627	0.7006	0.7873
Himachal Pradesh	0.8293	0.7487	0.8324	0.8635	0.7265	0.8447
Uttaranchal	0.8653	0.8207	0.8942	0.8972	0.8125	0.9056
Jammu & Kashmir	0.8204	0.7698	0.8404	0.8847	0.7795	0.8765
Central region						
Madhya Pradesh	0.6903	0.6651	0.7330	0.7603	0.6983	0.7872
Chhattisgarh	0.7584	0.6755	0.7586	0.7995	0.6728	0.7850
Uttar Pradesh	0.7937	0.7246	0.8082	0.8379	0.7171	0.8305
West region						
Gujarat	0.7815	0.6978	0.7837	0.8123	0.6934	0.7999
Rajasthan	0.6319	0.6005	0.6685	0.6854	0.6474	0.7286
Maharashtra	0.6548	0.6179	0.6850	0.6938	0.6378	0.7215
East and North-East region						
Assam	0.9322	0.7044	0.8602	0.9364	0.6342	0.8320
Bihar	0.9108	0.7302	0.8584	0.9225	0.7040	0.8537
Jharkhand	0.8917	0.6386	0.7994	0.8857	0.5720	0.7827
West Bengal	0.9068	0.7581	0.8659	0.9109	0.7253	0.8580
Odisha	0.8726	0.7467	0.8496	0.8853	0.6729	0.8302
South region						
Andhra Pradesh	0.8393	0.7716	0.8526	0.8956	0.7572	0.8681
Karnataka	0.7182	0.6715	0.7430	0.7942	0.7012	0.7935
Kerala	0.8350	0.7569	0.8397	0.8824	0.7287	0.8415
Tamil Nadu	0.8351	0.7541	0.8398	0.8698	0.7607	0.8643
<b>all-India</b>	<b>0.7942</b>	<b>0.7045</b>	<b>0.7948</b>	<b>0.8270</b>	<b>0.7066</b>	<b>0.8174</b>

Source: Author's calculation based on NSS 66<sup>th</sup> round data

The measures show that there exist regional patterns of closeness. The two measures M<sub>1</sub> and M<sub>3</sub> with k=10 gives similar type of values in all most all cases while the measure M<sub>2</sub> is on lower side. This is quite expected as M<sub>1</sub> inherently has some upward bias while M<sub>3</sub> with k=10 can be considered as more practical measure. M<sub>2</sub> on the other hand assumes the symmetric nature of canvassing time. This restrictive assumption, as expected, gives a lower value of the measure in comparison to M<sub>1</sub> and M<sub>3</sub> with k=10.

There exist regional patterns of closeness irrespective of the measures. The result shows that the closeness values for the states of East and North-East region is much higher than that of other regions and they are specially very high if one use the measure M<sub>1</sub>. This result seems to be very interesting. It shows that in both the sectors of this region, the time taken to canvass the schedule in NSS 66<sup>th</sup> round is very close to that of NSS 61<sup>st</sup> round as

compared to other regions. And thus in these states, the effect of contract investigator is perhaps much less as compared to other states. This may be due to better training to the field personnel, lesser number of contract investigators, more cooperative respondents etc. However, it will not be wise to conclude at a final decision based on this single analysis; instead a more detailed level analysis in this regard over different NSS rounds taking in to consideration the socio-economic characteristics, respondent pattern of the households will be very interesting.

#### **4. Some Conclusions**

This paper discusses one of the basic issues which practitioners of statistics faces very often. The mismatches in concepts and ideas between design planners and field executors are very common in official surveys and it generally causes non-sampling error. The measures described here can be used as a measure of closeness of designers' expectation and interviewers' response. Though 'canvassing time' does not always represent the survey efficiency in exact sense, yet it can provide an insight of it. The subjectivity in the design time is captured by average design time. This paper will also help the policy makers to ascertain the field performances across different regions in terms of designers' expectation and mandate. It also indicates that there does actually exist a huge opportunity for survey researchers to do some interesting analysis using and modifying the idea discussed in this paper.

The paper shows that in India, there exists considerable variation in degree of closeness among different geographical regions. A detailed level analysis in this regard over different NSS rounds taking in to consideration the socio-economic characteristics, respondent pattern of the households will be very interesting. Again beside household size and respondent's behaviour, the design time may also depend upon various socio-economic characteristics of the household like its social status, its religion, its educational status etc. Analysis on these characteristics and their impact on the measurement may be very interesting. Another possible study is that the time taken to canvass the schedule does also depend upon the exact time when the schedule is actually canvassed. The impact of exact time of canvassing may also be explored. Lastly the data driven design time may be obtained by using simulations over  $k$  until the measure gets stabilized.

References:

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2. Saha T.K and Baksi A. (2007): “A Study on Respondent Resistance in NSS 61<sup>st</sup> round”, National Seminar on NSS 61<sup>st</sup> round, NSSO, New Delhi

**Appendix:**

Table A: Measure of Closeness during 2009-10

State/UTs	rural			urban		
	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub> (k) [k=10]	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub> (k) [k=10]
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Chandigarh	0.5644	0.5470	0.6207	0.6816	0.6803	0.7551
Uttaranchal	0.8653	0.8207	0.8942	0.8972	0.8125	0.9056
Haryana	0.7375	0.6914	0.7657	0.7627	0.7006	0.7873
Delhi	0.4625	0.4658	0.5061	0.6001	0.5552	0.6264
Rajasthan	0.6319	0.6005	0.6685	0.6854	0.6474	0.7286
Uttar Pradesh	0.7937	0.7246	0.8082	0.8379	0.7171	0.8305
Bihar	0.9108	0.7302	0.8584	0.9225	0.7040	0.8537
Sikkim	0.7451	0.7258	0.7925	0.9522	0.6494	0.8212
Arunachal Pradesh	0.5316	0.4590	0.5500	0.5411	0.4824	0.5626
Nagaland	0.7806	0.6896	0.7738	0.8090	0.6939	0.7976
Manipur	0.6086	0.5904	0.6508	0.6708	0.6415	0.7137
Mizoram	0.7083	0.6347	0.7147	0.6895	0.6486	0.7255
Tripura	0.8474	0.7474	0.8368	0.8291	0.6779	0.7959
Meghalaya	0.8857	0.6848	0.8217	0.9349	0.6379	0.8166
Assam	0.9322	0.7044	0.8602	0.9364	0.6342	0.8320
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Gujarat	0.7815	0.6978	0.7837	0.8123	0.6934	0.7999
Daman & Diu	0.5839	0.5642	0.6420	0.7063	0.7062	0.7681
D & N Haveli	0.9645	0.8164	0.9104	0.8735	0.6925	0.8047
Maharastra	0.6548	0.6179	0.6850	0.6938	0.6378	0.7215
Andhra Pradesh	0.8393	0.7716	0.8526	0.8956	0.7572	0.8681
Karnataka	0.7182	0.6715	0.7430	0.7942	0.7012	0.7935
Goa	0.6032	0.6057	0.6632	0.6892	0.6829	0.7612
Lakshadweep	0.8473	0.8190	0.8953	0.8689	0.6861	0.8119
Kerala	0.8350	0.7569	0.8397	0.8824	0.7287	0.8415
Tamil Nadu	0.8351	0.7541	0.8398	0.8698	0.7607	0.8643
Pondicherry	0.9725	0.5555	0.7741	0.9362	0.5572	0.7784
A & N islands	0.6431	0.6465	0.7067	0.7035	0.6958	0.7723
all-India	0.7942	0.7045	0.7948	0.8270	0.7066	0.8174

Source: Author's calculation based on NSS 66<sup>th</sup> round data

# Surveys on Employment-Unemployment by the NSSO and Labour Bureau: Emerging Issues and Way Forward Towards Developing an Integrated Database

- G.C. Manna

*Abstract:*

*The paper compares the all-India and state level estimates of key indicators of employment-unemployment arising out of the First as well as Second Employment-Unemployment Surveys (EUS) of the Labour Bureau and NSS 66<sup>th</sup> round. By comparing the three alternative data sets, relative data quality aspects of the first and second EUS of the Labour Bureau have been commented upon. It is also deliberated whether the observed divergences between the alternative estimates based on the EUS of Labour Bureau and NSS 66<sup>th</sup> round are statistically significant or not. Finally, certain emerging issues have been identified with suggested steps forward towards developing an integrated database by tapping both the data sources.*

## 1. INTRODUCTION

Employment Unemployment Survey (EUS) is a prime source of data for assessing the volume and structure of employment and unemployment in any economy. In India, National Sample Survey (NSS) is one of the main sources of data on various indicators of employment and unemployment required by the planners, policymakers and researchers. Collection of data in the NSS on this subject based on scientifically designed sample survey of households commenced with its 9<sup>th</sup> round (May – September, 1955), followed by a number of subsequent rounds of surveys to firm up the concepts and methodology. Thereafter, based on the conceptual framework as well as concepts and definitions recommended by the Dantwala Committee, NSSO introduced the series of quinquennial surveys on employment-unemployment starting with the NSS 27<sup>th</sup> round (1972-73). NSS 66<sup>th</sup> round (July 2009 – June 2010) is the eighth such round in the series. Of late, the Labour Bureau (LB) in the Ministry of Labour and Employment has also introduced the EUS with a plan to conduct it on an annual basis. The first such survey was conducted by the LB during April – August, 2010 with April 2009 – March 2010 as the reference period for collection of data on employment-unemployment based on usual principal activity status<sup>1</sup> (UPS) only. The LB conducted its second survey during July 2011 – January 2012 with July 2010 – June 2011 as the reference period for data based on UPS. This survey also collected data based on usual activity status considering both principal and subsidiary status taken together<sup>2</sup> (UPSS) and current weekly status<sup>3</sup> (CWS) exactly following the concepts adopted in the NSS.

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<sup>1</sup> The activity status in which a person spent relatively long time (i.e. major time criterion) during the reference year is considered as the usual principal activity status.

<sup>2</sup> According to this status, workers are those who performed some work either in the principal status or in the subsidiary status with subsidiary economic activity pursued for at least 30 days during the reference year.

<sup>3</sup> Activity status during the reference period of seven days

The availability of data from the two alternative sources – NSS and LB in the instant case – has both advantage and disadvantage. The disadvantage arises when the estimates from two sources differ significantly with a further difficulty to decide which source could be taken as more reliable. However, alternative data sets have certain distinct advantages. The greatest advantage is that it helps pool the two data sets to have more reliable estimates and also estimates at further disaggregated level subject to the fact that the alternative data sets qualify the test of pooling. Otherwise, it would be necessary to identify the reasons for such divergence for taking necessary corrective measures. In this article we compare the UPS estimates of certain key indicators of employment and unemployment based on LB's first survey, to be described as LB1 henceforth, with NSS 66<sup>th</sup> round (NSS66). The marginal time differences in the alternative reference periods adopted in the two surveys may not have much impact on this comparison. The corresponding estimates emerging from the LB's second survey (LB2) are also presented to discuss the relative data quality of LB1 and LB2. Finally, keeping in view both national and international data requirements, certain emerging issues arising out of this comparison are identified with a few suggestions towards developing an integrated database based on the two sources.

## **2. KEY INDICATORS OF COMPARISON AND SURVEY METHODOLOGY**

In this article we compare labour force participation rate (LFPR), worker population ratio (WPR), proportion unemployed (PU) and unemployment rate (UR)<sup>4</sup> as per the UPS based on the alternative sources. The UPS approach is considered because only this approach was adopted in LB1. All the three indicators presented in this paper are in per thousand.

Before we compare the estimates it would be useful to take note of the survey methodologies and sample sizes adopted in the alternative sources. As regards the geographical coverage, while LB1 covered 28 states/UTs having almost 99 per cent share in the total population of the country, both LB2 and NSS66 covered all the states/UTs. In each of these surveys a stratified multi-stage sample design was adopted with households as the ultimate sampling units for data collection. LB1 grouped the districts into 4 strata: those with population (P) less than 1 million (stratum 1); those with P between 1 million and 2.5 million (stratum 2); those with P between 2.5 million and 5 million (stratum 3); and those with P as 5 million or more (stratum 4). First stage sampling units (FSUs) were districts. Districts in stratum 4 were completely enumerated. A sample of districts from each of the remaining 3 strata was selected as the FSUs with sampling fraction being 25%, 50% and 75% respectively from strata 1, 2 and 3 subject to a minimum sample size of 2 districts from each of these strata. FSUs were selected by circular systematic sampling (CSS) with PPS in the form of two independent sub-samples. This method resulted in the selection of 300 districts out of a

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<sup>4</sup> LFPR, WPR and PU consider total number of persons in the denominator with numerators as the number of persons in the labour force (i.e. employed/workers and unemployed taken together), number of workers and number of unemployed respectively for LFPR, WPR and PU. However, UR considers number of unemployed as the numerator and number of persons in the labour force as the denominator.

total number of 593 districts. LB2 and NSS66, however, considered all the districts for data collection.

LB1 selected a sample of 8 villages (rural) or urban blocks (urban) as the second stage units from rural/urban part of each selected district. In both LB2 and NSS66, villages/urban blocks comprised the FSUs with each district being treated as a broad stratum. A minimum number of 4 FSUs from both rural and urban parts of each district was selected for survey. In LB2 sample villages/blocks were selected by CSS in the form of 2 independent sub samples with PPS in case of rural and with equal probability in case of urban. NSS66, however, selected the villages by PPSWR and urban blocks by SRSWOR after further sub-stratification of the FSUs within the district/stratum. Large sample villages/urban blocks were segmented and a sample of segments was selected for listing of households in each of the three surveys.

As regards the selection of households<sup>5</sup>, which formed the ultimate sampling units in each survey, all the listed households within the sample village/block/segments were stratified into 3 strata in case of LB1 and NSS66 exactly in a similar manner as follows: Rural – relatively affluent households (stratum 1), other households with principal earning from non-agricultural establishments (stratum 2), and remaining households (stratum 3); Urban – households with average monthly per capita expenditure (MPCE) exceeding certain limit (stratum 1), households with average MPCE being lower than certain limit (stratum 3), and remaining households with average MPCE lying between the above two limits (stratum 2). NSS66 formed the limits in such a manner that nearly 10% of the population belonged to stratum 1 and 30% of the population belonged to stratum 3. From each selected village/urban block, a sample of 12 households in LB1 (2 from stratum 1 and 5 each from strata 2 and 3) and 8 households in NSS66 (2 each from strata 1 and 3, and 4 from stratum 2) was selected for detailed enquiry. LB2 grouped the listed households of a sample FSU into 4 strata depending upon the total number of members in the household (say, M) with age 15 years and above as follows: households with M = 1 (stratum 1); households with M = 2 or 3 (stratum 2); households with M = 4 or 5 (stratum 3); and households with M = 6 or more (stratum 4). A total number of 10 / 12 households were selected from each FSU with sample allocation of households as under:

Stratum No.	FSUs without segmentation		FSUs with segment formation: Rural/Urban	
	Rural	Urban	Selected Segment 1	Selected Segment 2
1	1	1	1	1
2	2	3	2	2
3	4	4	2	2
4	3	2	1	1
All	10	10	6	6

Statement 2.1 gives the sample size in terms of number of villages/urban blocks and households surveyed at the all-India level as per the three surveys. It is worth noting that sample size of LB1 is much smaller than that of NSS66 and LB2. Between NSS66 and LB2,

<sup>5</sup> Sample households were selected by SRSWOR in each of the three surveys.

although total number of households surveyed is higher in LB2, number of villages/blocks surveyed in LB2 is smaller than that of NSS66.

**Statement 2.1: Sample Sizes Adopted in the Three Surveys**

Source/ Survey	Rural India		Urban India	
	Number of villages surveyed	Number of households surveyed	Number of blocks surveyed	Number of households surveyed
LB1	2,056	24,653	1,773	21,206
NSS66	7,402	59,129	5,252	41,828
LB2	7,123	81,430	4,680	46,868

**3. ALL-INDIA ESTIMATES**

In Statement 3.1 below we present all-India estimates of LFPR, WPR and UR as per UPS for the persons in the age-group 15 years and above as per the three surveys<sup>6</sup>. Estimates based on LB1 and NSS66 should be comparable because there was not much gap in the reference periods between these two surveys for determining number of persons in the labour force, number of workers and number of unemployed as per the UPS. However, estimates based on LB2 are not strictly comparable with those of LB1 and NSS66 because LB2 was conducted later with July 2010 – June 2011 as the reference period for the data based on UPS. But the estimates as per this survey are presented in this paper to comment upon (a) relative data quality aspect of LB1 and LB2 and (b) pool ability of data of not only LB1 but also of LB2 with NSS66 for improved estimates. All-India estimates are presented for the age-group 15+ because published estimates based on LB2 are available only for this age-group and not for all age-groups taken together.

**Statement 3.1: Estimates of LFPR, WPR and UR as per UPS by Source**

*Age-group: 15 years & above*

Sector	Sex	LFPR			WPR			UR		
		LB1	NSS66	LB2	LB1	NSS66	LB2	LB1	NSS66	LB2
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Rural	Male	759	816	788	696	801	766	85	18	27
	Female	245	298	280	209	290	265	148	23	56
	Person	514	560	548	463	549	529	99	20	34
Urban	Male	718	758	733	676	736	709	58	29	34
	Female	167	171	179	144	159	157	137	70	125
	Person	450	475	472	417	458	449	73	36	50
Combined	Male	748	799	774	690	782	751	78	21	29
	Female	223	262	254	191	253	236	145	34	69
	Person	496	535	529	450	522	508	93	24	38

<sup>6</sup> Note that PU is just the difference between LFPR and WPR.

It may be seen that LB1 estimates of LFPR and WPR are lower than those of NSS66 but LB1 estimate of UR is much higher than the corresponding estimate based on NSS66. A similar pattern is observed between LB2 and NSS66 estimates although the extent of divergence is much narrower as compared to the divergence in the estimates between LB1 and NSS66.

It would be of interest to study whether the observed divergences in the estimates between LB1 / LB2 and NSS66 are statistically significant or not. This is due to two reasons: one, to identify the reasons for divergence if it exists and take remedial measures for future; and two, to explore the pooling of two data sets for improved estimates if the divergence is not statistically significant. In the next section we probe into this aspect by considering state/UT level alternative estimates.

#### 4. STATE LEVEL ESTIMATES AND THEIR POOLABILITY

For the sake of simplicity and taking note of the fact that estimates of LFPR and UR can be derived from WPR and PU (proportion unemployed), we compare state/UT level estimates of WPR and PU only. As stated earlier comparison of LB1 and NSS66 estimates do not pose problem because there was not much difference in the reference periods between these two surveys. However, strict comparison of estimates as per LB2 and NSS66 is not possible because of time differences in the alternative reference periods.

For simplicity of analysis, we consider the estimates for all persons taken together. One problem that we encounter is that LB2 does not provide estimates for all persons and instead it gives the estimates for the age-group 15+ only. Hence, for LB2, we approximate as follows the estimate (WPR or PU) for all age-groups combined by considering (a) the estimate for age-group 15+ based on LB2 and (b) the corresponding estimates for all age-groups combined and for the age-group 15+ based on NSS66:

$$y_{all} = y_{15+} \left( \frac{y^*_{all}}{y^*_{15+}} \right)$$

Where  $y$  and  $y^*$  respectively denote the estimates based on LB2 and NSS66.

It should be feasible to pool the two alternative data sets based on the surveys of NSSO and Labour Bureau (LB) if the observed divergences in the alternative estimates between LB1/LB2 and NSS66 are not statistically significant<sup>7</sup>. To assess whether the observed divergences in the alternative estimates are statistically significant or not we perform parametric Z-Test by computing Z as under and comparing the absolute values of Z with the value 1.96 at 5% critical error:

$$Z = \frac{p1 - p2}{\sqrt{\left( \frac{D1p1q1}{n1} + \frac{D2p2q2}{n2} \right)}} \text{ where}$$

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<sup>7</sup> A problem may, however, arise if the variances of the alternative estimates are wide apart.

$p_1$  and  $p_2$  denote estimates of WPR or PU as the case may be as per LB and NSS respectively;  $q_1 = 1-p_1$ ;  $q_2 = 1-p_2$ ;  $n_1$  and  $n_2$  are respectively the number of persons surveyed in the surveys of LB and NSS; and  $D_1$  and  $D_2$  are corresponding design effects as per the alternative sources.

We take recourse to the above formula involving design effects as estimates of design-based sampling variances of WPR and PU are not available from the published reports of LB and NSSO. Further, for the purpose of computing Z, we assume design effect as 1.5 for NSS66 as well as LB2 and 2.0 for LB1. We take higher value of design effect for LB1 because LB1 had relatively lesser sample size and also it had one additional stage of sampling as compared to NSS66 and LB2 for selection of sampling units<sup>8</sup>.

Estimates of approximate relative standard errors (RSE) of WPR and PU have also been derived indirectly<sup>9</sup> using the following formula:

$$RSE = \sqrt{(Dq)/(np)} \text{ where}$$

$D$  stands for assumed design effect;  $p$  = estimated value of the indicator;  
 $q = (1-p)$ ; and  $n$  = number of persons surveyed

Statement A-1 in the Annex presents values of WPR, PU and Z while Statement A-2 gives values of RSEs of WPR and PU based on LB1 and NSS66. Corresponding estimates as per LB2 and NSS66 are presented in Statements A-3 and A-4. As regards the state level estimates of WPR and PU are concerned, barring a very few cases, LB1 estimates of WPR are uniformly lower than those based on NSS66 while LB1 estimates of PU are uniformly much higher than those as per NSS66. Interestingly the above kind of unidirectional pattern in the alternative estimates is not observed when we consider LB2 in place of LB1. Further, the extent of divergence of the estimates between LB2 and NSS66 is much lower as compared to the divergence between LB1 and NSS66. From the above findings, the possibility of some systematic bias affecting the data of LB1 cannot be ruled out. Further, quality of estimates of LB2 appears to be much superior to those based on LB1.

As regards the pool ability of the estimates of WPR and PU available from two sources, namely the LB and NSSO, the same appears to be feasible (with absolute value of Z being less than 1.96) only for a relatively smaller number of states/UTs based on the LB's first survey (Statement 4.1). However, the situation has improved significantly in the LB's second survey favouring the pool ability of estimates for a larger number of states/UTs. This may be partially due to the adoption of improved sample design and larger sample size adopted in LB2 as compared to LB1. In all likelihood, the situation would have improved further had the two surveys i.e. LB2 and NSS66 adopted the same reference period. The above findings indicate that there is a great potential to pool the data from the two sources

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<sup>8</sup> The findings of the study are constrained by the assumptions indicated in this paragraph.

<sup>9</sup> Values of RSEs are indicative only and may be used with caution as the computation involves assumption of certain value of design effect and that too the same value for each state/UT.

namely, NSSO's quinquennial survey and the survey of LB for improved state/sub-state level estimates in future.

**Statement 4.1: Number of States/UTs with Observed Divergences Being Not Significant**

Sources	Total number of states/UTs considered	Number of states/UTs where observed divergences between the alternative estimates found to be not significant			
		Rural Persons		Urban Persons	
		WPR	PU	WPR	PU
(1)	(2)	(3)	(4)	(5)	(6)
LB1, NSS66	27	10	8	15	11
LB2, NSS66	35	15	19	22	24

**5. EMERGING ISSUES AND WAY FORWARD**

We observe that state/UT level estimates of PU as per all the three surveys are not so reliable with RSEs found to be quite large. To improve the estimate in future, at the stage of listing and selection of households, it may be useful to identify the households with unemployed members and form a separate stratum of such households within each sample village/block. RSEs of estimates of WPR of a few smaller states and UTs are also quite high for each survey. To overcome this problem, allocation of higher sample villages/blocks to such states and UTs would be a welcome step forward. Further, during the years when quinquennial survey of NSSO on employment-unemployment and the survey of LB are in place, to facilitate pooling of data from the two sources for further improved estimates and also generation of the estimates at the sub-state level, it would be desirable that both the surveys not only adopt the same concepts and definitions and same reference periods for collection of data as per UPS, UPSS and CWS, but also adopt the same sample design preferably. In the national interest, appropriate steps should be taken to implement this requirement. Further, annual as well as quarterly estimates of key indicators of employment and unemployment and the estimates of quarterly changes would be useful to fulfil national as well as international requirements. LB's annual series of surveys can be a very useful tool to meet this demand. In this series it would be worth introducing rotational panel survey to improve upon the estimates of change parameters. Finally, to undertake the exercise of pooling of alternative data sets available from the two sources, it would be helpful if both agencies publish on a regular basis the estimates of standard errors of important parameters based on UPS, UPSS and CWS at least for some common age-groups of population of interest including all age-groups taken together.

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Views are of the author (E-mail: [gc.manna1@gmail.com](mailto:gc.manna1@gmail.com)) and not of the organisation to which he belongs.

## Statement A-1: Estimates of WPR and PU as per LB1 and NSS66 and Values of Z

Rural Persons

State/UT	WPR		PU		No. of persons surveyed		Value of Z	
	LB1	NSS66	LB1	NSS66	LB1	NSS66	WPR	PU
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Andhra Pradesh	438	504	38	6	4,362	15,127	-5.63	7.68
Arunachal Pr.	-	399	-	5	-	5,378	-	-
Assam	323	351	19	15	3,849	12,713	-2.36	1.18
Bihar	234	271	50	6	10,870	17,339	-5.23	14.46
Chhattisgarh	453	436	12	2	2,774	7,139	1.12	3.34
Delhi	281	301	14	5	1,967	251	-0.52	1.36
Goa	270	339	173	17	448	738	-1.89	6.01
Gujarat	388	421	46	3	6,483	8,687	-3.07	11.47
Haryana	272	338	25	8	4,887	7,529	-5.89	5.00
Himachal Pr.	302	473	19	11	2,313	7,422	-11.21	1.87
J & K	277	298	14	14	2,637	7,950	-1.52	0.00
Jharkhand	262	313	111	14	4,191	8,778	-4.49	13.79
Karnataka	434	489	12	2	6,417	9,612	-5.12	5.00
Kerala	289	354	36	35	2,933	10,573	-4.95	0.19
Madhya Pradesh	354	418	26	3	6,991	14,372	-6.72	8.37
Maharashtra	449	463	21	7	7,783	18,715	-1.53	5.79
Manipur	-	339	-	15	-	7,097	-	-
Meghalaya	391	454	57	3	469	4,412	-1.90	3.56
Mizoram	-	488	-	7	-	2,894	-	-
Nagaland	-	322	-	67	-	3,597	-	-
Odisha	312	370	31	13	7,136	12,997	-6.22	5.72
Punjab	291	293	22	11	4,135	7,752	-0.17	3.11
Rajasthan	309	365	80	3	8,656	13,730	-6.48	18.50
Sikkim	449	436	23	20	489	2,513	0.38	0.29
Tamil Nadu	437	493	34	10	6,979	12,297	-5.57	7.36
Tripura	-	336	-	43	-	5,527	-	-
Uttarakhand	266	362	16	7	3,148	5,044	-6.92	2.59
Uttar Pradesh	261	292	24	4	22,018	33,264	-5.98	13.17
West Bengal	328	356	47	10	4,503	15,038	-2.55	8.10
A & N Is.	-	379	-	44	-	1,070	-	-
Chandigarh	306	301	33	98	496	144	0.09	-2.01
D & N Haveli	-*	311	-*	16	446	523	-	-
Daman & Diu	333	414	25	17	296	289	-1.54	0.50
Lakshadweep	-	384	-	58	-	269	-	-
Puducherry	151	468	43	15	264	547	-7.79	1.49
<b>All-India</b>	<b>329</b>	<b>374</b>	<b>36</b>	<b>8</b>	<b>127,940</b>	<b>281,327</b>	<b>-</b>	<b>-</b>

\* Estimate not published due to very low coverage and non-coverage of urban sample

**Statement A-1: Estimates of WPR and PU as per LB1 and NSS66 and Values of Z**

**Urban Persons**

State/UT	WPR		PU		No. of persons surveyed		Value of Z	
	LB1	NSS66	LB1	NSS66	LB1	NSS66	WPR	PU
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Andhra Pradesh	321	358	22	12	4,724	11,055	-3.33	3.05
Arunachal Pr.	-	300	-	10	-	2,554	-	-
Assam	299	312	34	19	1,938	3,508	-0.74	2.32
Bihar	241	242	14	19	7,752	6,150	-0.10	-1.76
Chhattisgarh	322	310	28	10	2,718	3,328	0.75	3.64
Delhi	307	331	3	9	1,622	3,336	-1.26	-2.16
Goa	334	332	74	14	660	1,169	0.06	4.00
Gujarat	324	361	34	7	2,515	7,475	-2.49	5.15
Haryana	266	347	28	10	4,532	5,605	-6.69	4.70
Himachal Pr.	279	349	24	18	2,013	1,380	-3.31	0.92
J & K	217	328	11	23	1,762	6,328	-7.09	-2.85
Jharkhand	276	288	14	21	2,465	4,371	-0.79	-1.64
Karnataka	361	380	15	11	5,992	8,062	-1.73	1.52
Kerala	281	344	33	31	1,923	7,488	-3.94	0.32
Madhya Pradesh	298	319	38	10	6,755	9,358	-2.13	7.95
Maharashtra	338	368	35	14	5,582	16,760	-2.99	5.75
Manipur	-	306	-	16	-	5,578	-	-
Meghalaya	262	332	18	18	336	1,935	-1.92	0.00
Mizoram	-	399	-	12	-	3,982	-	-
Nagaland	-	252	-	37	-	1,468	-	-
Odisha	283	339	42	15	6,896	4,260	-4.77	6.57
Punjab	292	344	54	19	3,886	6,811	-4.16	6.35
Rajasthan	292	302	22	8	8,280	7,580	-1.04	5.38
Sikkim	351	398	50	1	487	451	-1.13	3.48
Tamil Nadu	395	377	15	13	6,921	11,676	1.81	0.82
Tripura	-	324	-	67	-	1,981	-	-
Uttarakhand	304	322	11	10	2,738	3,159	-1.12	0.28
Uttar Pradesh	262	287	19	9	18,585	16,260	-3.97	5.95
West Bengal	350	350	24	18	3,274	10,212	0.00	1.46
A & N Is.	-	382	-	44	-	1,025	-	-
Chandigarh	295	352	2	12	471	1,033	-1.64	-1.97
D & N Haveli	-*	339	-*	19	0	407	-	-
Daman & Diu	274	344	11	9	455	288	-1.55	0.21
Lakshadweep	-	307	-	46	-	718	-	-
Puducherry	269	377	45	14	188	1,706	-2.25	1.43
<b>All-India</b>	<b>314</b>	<b>339</b>	<b>26</b>	<b>13</b>	<b>105,470</b>	<b>178,457</b>	<b>-</b>	<b>-</b>

\* Estimate not published due to very low coverage and non-coverage of urban sample

**Statement A-2: Derived Estimates of RSE of WPR and PU as per LB1 and NSS66**

State/UT	RSE (%): Rural Persons				RSE (%): Urban Persons			
	WPR		PU		WPR		PU	
	LB1	NSS66	LB1	NSS66	LB1	NSS66	LB1	NSS66
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Andhra Pradesh	2.43	0.99	10.77	12.82	2.99	1.56	13.72	10.57
Arunachal Pr.	-	2.05	-	23.56	-	3.70	-	24.11
Assam	3.30	1.48	16.38	8.80	4.92	3.07	17.12	14.86
Bihar	2.45	1.53	5.91	11.97	2.85	2.76	13.48	11.22
Chhattisgarh	2.95	1.65	24.36	32.38	3.94	3.17	15.98	21.12
Delhi	5.10	11.78	26.76	109.05	5.28	3.01	64.01	22.25
Goa	10.99	6.30	14.61	34.28	7.77	5.08	19.47	30.06
Gujarat	2.21	1.54	8.00	23.96	4.07	1.88	15.03	16.87
Haryana	3.31	1.98	12.63	15.72	3.49	2.24	12.38	16.28
Himachal Pr.	4.47	1.50	21.13	13.48	5.07	4.50	20.10	24.35
J & K	4.45	2.11	23.11	11.53	6.40	2.20	31.95	10.03
Jharkhand	3.67	1.94	6.18	10.97	4.61	2.91	23.90	12.65
Karnataka	2.02	1.28	16.02	27.91	2.43	1.74	14.80	12.93
Kerala	4.10	1.61	13.51	6.25	5.16	1.95	17.46	7.91
Madhya Pradesh	2.28	1.21	10.35	18.62	2.64	1.85	8.66	12.60
Maharashtra	1.78	0.96	10.95	10.66	2.65	1.24	9.94	7.94
Manipur	-	2.03	-	11.78	-	2.47	-	12.86
Meghalaya	8.15	2.02	26.56	33.61	12.95	3.95	56.99	20.56
Mizoram	-	2.33	-	27.12	-	2.38	-	17.61
Nagaland	-	2.96	-	7.62	-	5.51	-	16.31
Odisha	2.49	1.40	9.36	9.36	2.71	2.62	8.13	15.21
Punjab	3.43	2.16	14.66	13.19	3.53	2.05	9.50	10.66
Rajasthan	2.27	1.38	5.15	19.05	2.42	2.14	10.36	15.66
Sikkim	7.08	2.78	41.68	17.10	8.71	7.09	27.93	182.28
Tamil Nadu	1.92	1.12	9.02	10.99	2.10	1.46	13.78	9.88
Tripura	-	2.32	-	7.77	-	3.97	-	10.27
Uttarakhand	4.19	2.29	19.77	20.54	4.09	3.16	25.63	21.68
Uttar Pradesh	1.60	1.05	6.08	10.60	1.74	1.51	7.45	10.08
West Bengal	3.02	1.34	9.49	9.94	3.37	1.65	15.76	8.95
A & N Is.	-	4.79	-	17.45	-	4.87	-	17.83
Chandigarh	9.56	15.55	34.37	30.96	10.07	5.17	145.56	34.58
D & N Haveli	-	7.97	-	42.00	-	8.48	-	43.62
Daman & Diu	11.63	8.57	51.33	54.78	10.79	9.97	62.87	75.73
Lakshadweep	-	9.46	-	30.09	-	6.87	-	20.82
Puducherry	20.64	5.58	41.06	42.44	17.00	3.81	47.52	24.88
<b>All-India</b>	<b>0.56</b>	<b>0.30</b>	<b>2.05</b>	<b>2.57</b>	<b>0.64</b>	<b>0.40</b>	<b>2.67</b>	<b>2.53</b>

**Statement A-3: Estimates of WPR and PU as per LB2 and NSS66 and Values of Z**

State/UT	Rural Persons							
	WPR		PU		No. of persons surveyed		Value of Z	
	LB2*	NSS66	LB2*	NSS66	LB2	NSS66	WPR	PU
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Andhra Pradesh	511	504	11	6	25,922	15,127	1.12	4.53
Arunachal Pr.	377	399	28	5	6,367	5,378	-1.99	8.24
Assam	339	351	22	15	12,010	12,713	-1.62	3.33
Bihar	286	271	29	6	40,087	17,339	3.02	18.36
Chhattisgarh	445	436	3	2	8,724	7,139	0.93	1.03
Delhi	270	301	12	5	1,509	251	-0.81	1.09
Goa	352	339	103	17	441	738	0.37	4.61
Gujarat	398	421	2	3	16,970	8,687	-2.89	-1.20
Haryana	287	338	9	8	8,294	7,529	-5.65	0.56
Himachal Pr.	477	473	14	11	2,759	7,422	0.29	0.96
J & K	291	298	15	14	3,993	7,950	-0.65	0.35
Jharkhand	331	313	17	14	11,217	8,778	2.21	1.40
Karnataka	435	489	7	2	17,595	9,612	-6.97	5.26
Kerala	332	354	30	35	11,748	10,573	-2.82	-1.71
Madhya Pradesh	387	418	7	3	23,105	14,372	-4.85	4.58
Maharashtra	437	463	9	7	23,148	18,715	-4.34	1.88
Manipur	374	339	9	15	4,040	7,097	3.02	-2.37
Meghalaya	442	454	16	3	3,466	4,412	-0.87	4.65
Mizoram	456	488	5	7	3,719	2,894	-2.11	-0.84
Nagaland	438	322	28	67	5,070	3,597	9.06	-6.68
Odisha	356	370	10	13	14,747	12,997	-1.98	-1.90
Punjab	305	293	5	11	8,021	7,752	1.34	-3.44
Rajasthan	331	365	5	3	22,966	13,730	-5.39	2.48
Sikkim	415	436	54	20	1,811	2,513	-1.13	4.63
Tamil Nadu	479	493	11	10	16,412	12,297	-1.92	0.67
Tripura	375	336	50	43	1,290	5,527	2.14	0.86
Uttarakhand	317	362	18	7	3,199	5,044	-3.45	3.42
Uttar Pradesh	280	292	6	4	74,499	33,264	-3.28	3.65
West Bengal	355	356	23	10	27,697	15,038	-0.17	8.76
A & N Is.	349	379	43	44	530	1,070	-0.96	-0.08
Chandigarh	334	301	61	98	443	144	0.61	-1.11
D & N Haveli	384	311	12	16	483	523	1.99	-0.44
Daman & Diu	444	414	3	17	288	289	0.59	-1.38
Lakshadweep	254	384	102	58	299	269	-2.73	1.59
Puducherry	361	468	4	15	402	547	-2.72	-1.48
<b>All-India</b>	<b>360</b>	<b>374</b>	<b>14</b>	<b>8</b>	<b>403,271</b>	<b>281,327</b>	<b>-</b>	<b>-</b>

\*As approximated

**Statement A-3: Estimates of WPR and PU as per LB2 and NSS66 and Values of Z**

**Urban Persons**

State/UT	WPR		PU		No. of persons surveyed		Value of Z	
	LB2*	NSS66	LB2*	NSS66	LB2	NSS66	WPR	PU
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Andhra Pradesh	345	358	21	12	13,317	11,055	-1.73	4.54
Arunachal Pr.	256	300	39	10	1,579	2,554	-2.52	4.51
Assam	350	312	27	19	5,070	3,508	3.01	2.02
Bihar	284	242	20	19	8,036	6,150	4.62	0.35
Chhattisgarh	334	310	13	10	4,621	3,328	1.85	1.02
Delhi	337	331	17	9	10,124	3,336	0.52	3.14
Goa	323	332	38	14	385	1,169	-0.27	1.90
Gujarat	324	361	5	7	14,222	7,475	-4.44	-1.44
Haryana	285	347	12	10	5,368	5,605	-5.72	0.82
Himachal Pr.	363	349	23	18	1,884	1,380	0.67	0.82
J & K	326	328	25	23	3,097	6,328	-0.16	0.48
Jharkhand	307	288	20	21	6,693	4,371	1.75	-0.30
Karnataka	387	380	12	11	12,728	8,062	0.83	0.54
Kerala	318	344	53	31	6,141	7,488	-2.62	5.15
Madhya Pradesh	315	319	18	10	14,567	9,358	-0.53	4.33
Maharashtra	367	368	16	14	21,199	16,760	-0.16	1.30
Manipur	281	306	24	16	980	5,578	-1.31	1.26
Meghalaya	350	332	24	18	1,598	1,935	0.92	1.00
Mizoram	346	399	14	12	1,438	3,982	-2.93	0.46
Nagaland	330	252	23	37	1,485	1,468	3.82	-1.82
Odisha	329	339	14	15	6,332	4,260	-0.87	-0.34
Punjab	313	344	7	19	7,000	6,811	-3.17	-5.07
Rajasthan	282	302	6	8	11,538	7,580	-2.42	-1.31
Sikkim	347	398	147	1	749	451	-1.44	9.15
Tamil Nadu	395	377	10	13	14,140	11,676	2.42	-1.83
Tripura	358	324	110	67	928	1,981	1.47	3.00
Uttarakhand	299	322	12	10	2,776	3,159	-1.56	0.60
Uttar Pradesh	286	287	10	9	30,931	16,260	-0.19	0.88
West Bengal	314	350	51	18	14,296	10,212	-4.81	11.91
A & N Is.	393	382	55	44	539	1,025	0.35	0.77
Chandigarh	337	352	4	12	750	1,033	-0.54	-1.59
D & N Haveli	433	339	0	19	362	407	2.19	-2.29
Daman & Diu	306	344	1	9	358	288	-0.84	-1.12
Lakshadweep	320	307	42	46	273	718	0.32	-0.23
Puducherry	372	377	26	14	978	1,706	-0.21	1.68
<b>All-India</b>	<b>345</b>	<b>339</b>	<b>18</b>	<b>13</b>	<b>226,482</b>	<b>178,457</b>	<b>-</b>	<b>-</b>

\*As approximated

**Statement A-4: Derived Estimates of RSE of WPR and PU as per LB2 and NSS66**

State/UT	RSE (%): Rural Persons				RSE (%): Urban Persons			
	WPR		PU		WPR		PU	
	LB2	NSS66	LB2	NSS66	LB2	NSS66	LB2	NSS66
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Andhra Pradesh	0.74	0.99	7.21	12.82	1.46	1.56	7.25	10.57
Arunachal Pr.	1.97	2.05	9.04	23.56	5.25	3.70	15.30	24.11
Assam	1.56	1.48	7.45	8.80	2.34	3.07	10.33	14.86
Bihar	0.97	1.53	3.54	11.97	2.17	2.76	9.56	11.22
Chhattisgarh	1.46	1.65	23.90	32.38	2.54	3.17	15.70	21.12
Delhi	5.18	11.78	28.61	109.05	1.71	3.01	9.26	22.25
Goa	7.91	6.30	17.21	34.28	9.04	5.08	31.41	30.06
Gujarat	1.16	1.54	21.00	23.96	1.48	1.88	14.49	16.87
Haryana	2.12	1.98	14.11	15.72	2.65	2.24	15.17	16.28
Himachal Pr.	2.44	1.50	19.57	13.48	3.74	4.50	18.39	24.35
J & K	3.03	2.11	15.71	11.53	3.16	2.20	13.74	10.03
Jharkhand	1.64	1.94	8.79	10.97	2.25	2.91	10.48	12.65
Karnataka	1.05	1.28	11.00	27.91	1.37	1.74	9.85	12.93
Kerala	1.60	1.61	6.43	6.25	2.29	1.95	6.61	7.91
Madhya Pradesh	1.01	1.21	9.60	18.62	1.50	1.85	7.50	12.60
Maharashtra	0.91	0.96	8.45	10.66	1.10	1.24	6.60	7.94
Manipur	2.49	2.03	20.22	11.78	6.26	2.47	24.95	12.86
Meghalaya	2.34	2.02	16.31	33.61	4.18	3.95	19.54	20.56
Mizoram	2.19	2.33	28.33	27.12	4.44	2.38	27.10	17.61
Nagaland	1.95	2.96	10.13	7.62	4.53	5.51	20.71	16.31
Odisha	1.36	1.40	10.03	9.36	2.20	2.62	12.92	15.21
Punjab	2.06	2.16	19.29	13.19	2.17	2.05	17.44	10.66
Rajasthan	1.15	1.38	11.40	19.05	1.82	2.14	14.68	15.66
Sikkim	3.42	2.78	12.05	17.10	6.14	7.09	10.78	182.28
Tamil Nadu	1.00	1.12	9.06	10.99	1.27	1.46	10.25	9.88
Tripura	4.40	2.32	14.86	7.77	5.38	3.97	11.44	10.27
Uttarakhand	3.18	2.29	15.99	20.54	3.56	3.16	21.09	21.68
Uttar Pradesh	0.72	1.05	5.78	10.60	1.10	1.51	6.93	10.08
West Bengal	0.99	1.34	4.80	9.94	1.51	1.65	4.42	8.95
A & N Is.	7.27	4.79	25.10	17.45	6.56	4.87	21.87	17.83
Chandigarh	8.22	15.55	22.83	30.96	6.27	5.17	70.57	34.58
D & N Haveli	7.06	7.97	50.57	42.00	7.37	8.48	-	43.62
Daman & Diu	8.08	8.57	131.56	54.78	9.75	9.97	204.59	75.73
Lakshadweep	12.14	9.46	21.02	30.09	10.81	6.87	35.40	20.82
Puducherry	8.13	5.58	96.39	42.44	5.09	3.81	23.97	24.88
<b>All-India</b>	<b>0.26</b>	<b>0.30</b>	<b>1.62</b>	<b>2.57</b>	<b>0.35</b>	<b>0.40</b>	<b>1.90</b>	<b>2.53</b>

**SOME FIELD EXPERIENCES OF THE 66<sup>st</sup> ROUND OF NSS ON  
HOUSEHOLD CONSUMER EXPENDITURE AND  
EMPLOYMENT-UNEMPLOYMENT  
By FOD Hqrs.**

**Introduction:**

**0.1** The mandate of National Sample Survey Office (NSSO) include, among others, conduct of nationwide large scale sample surveys on different socio-economic parameters. The survey on “Household Consumer Expenditure’ and ‘Employment-Unemployment” is one of the most important and talked about subjects of NSS Surveys considering its use in measuring household consumption level and its pattern, working out consumer price indices and estimating, level of parameters of various employment and unemployment characteristics at National and State level.

**0.2** Household Consumer Expenditure surveys formed a regular feature of the NSS activities since its inception in 1950. It was an annual feature till 26<sup>th</sup> Round (1971-72) and from 27<sup>th</sup> Round, became a quinquennial survey integrated with employment-unemployment surveys. An annual series of Consumer Expenditure Surveys on ‘thin sample’ commenced from the 42<sup>nd</sup> Round (1986-87) to meet the persistent demand of planners and researchers. Since 45<sup>th</sup> Round (1989-90), the item coverage of Consumer Expenditure Survey was widened with the inclusion of important key characteristics of employment-unemployment in these annual series in order to generate Consumer Expenditure and Employment-Unemployment data. Starting from 60<sup>th</sup> Round (January-June 2004), data on these twin subjects was collected separately through schedule 1.0 and schedule 10 on thin sample basis annually. This procedure, however, dispensed with from 64<sup>th</sup> Round onwards.

**0.3** The 66<sup>th</sup>Round of Socio-Economic survey (July 2009 – June 2010), the eighth quinquennial one, was devoted to the twin subjects on Household Consumer Expenditure and Employment-Unemployment. At all India level a total of 12808 FSUs (7524 rural and 5284 urban) were allocated for survey in the central sample.

**0.4** Consumer expenditure and employment- unemployment surveys being regular surveys as such, did not pose any major technical or conceptual challenges, as concepts, definitions etc. are more or less well established over the years. However, every Round provides some unique field experiences and challenges that need critical examination for suggesting improvements for future. Such exercise, on a continual basis, helps in meeting the numerous and ever growing challenges for collection of reliable and accurate data from field. In this paper, an attempt has been made to present experiences of FOD in the conduct of the 66<sup>th</sup> Round and also suggest a few remedial measures. To have focused discussions on field

experiences in data collection, objectives and coverage of the survey have not been included in this paper; however, outline of the survey, schedules canvassed and important blocks of each schedule as well as important changes in concepts and coverage of 66<sup>th</sup> Round as compared to previous rounds have been briefly introduced. The paper has been divided into the following four sections for better appreciation of the issues viz,

- SECTION-I** : Outline of Survey  
**SECTION-II** : Field Experiences  
**SECTION-III** : Quality Control Measures  
**SECTION-IV** : Suggestions.

### **SECTION-I: OUTLINE OF 66<sup>th</sup> ROUND:**

**1.1 Survey Plan:** Data collection work of 66<sup>th</sup> Round of NSS commenced on 1<sup>st</sup> July 2009 and completed by 30<sup>th</sup> June 2010. Except some interior villages of Nagaland and Andaman & Nicobar Islands, the survey covered the whole of the Indian Union. The survey period was divided into four sub-rounds, each with duration of three months and an equal number of sample villages/blocks (FSUs) was allotted for survey in each of these four sub-rounds. The information was collected from 8 households each for consumer expenditure Schedule 1.0(Type-1), 1.0(Type-2) and employment-unemployment (Schedule 10) from each of the selected sample village/urban block. At the second stage, households were classified into three strata for both the schedules on the basis of relative affluence in rural areas and by Monthly Per Capita Expenditure (MPCE) classes in urban areas for obtaining representative sample of households.

#### **1.2**

#### **Schedu**

**les of Enquiry:** There were four types of schedules canvassed during 66<sup>th</sup> Round namely;

- i) **SCHEDULE 0.0** : **List of Households** (*Annexure-I*)
- ii) **SCHEDULE 1.0(Type-1)** : **Household Consumer Expenditure** (*Annexure-II*)
- iii) **SCHEDULE 1.0(Type-2)** : **Household Consumer Expenditure** (*Annexure-III*)
- iv) **SCHEDULE 10** : **Employment and Unemployment** (*Annexure-IV*)

Details of important information collected through these schedules are as under:

#### **SCHEDULE 0.0 : List of Households:**

Block 5 : List of households and record of selection of Households

Block 5.1: Working sheet for identifying relatively affluent households (for rural households only) to stratify the households

Block 7 : Distance of the village from nearest facility, availability of some amenities and participation in MNREG work

**SCHEDULE 1.0 (Type-1): Household Consumer Expenditure:**

- Block 3 : Household characteristics
- Block 4 : Demographic and other particulars of household members
- Block 5.1: Consumption of cereals, pulses, milk and milk products, sugar and salt during last 30 days
- Block 5.2: Consumption of edible oil, egg, fish and meat, vegetables, fruits, spices, beverages and processed food and pan, tobacco and intoxicants during last 30 days
- Block 6 : Consumption of energy(fuel, light & household appliances) during last 30 days
- Block 7 : Consumption of clothing and bedding, etc. (during last 30 days and last 365 days)
- Block 8 : Consumption of footwear(during last 30 days and last 365 days)
- Block 9 : Expenditure on education and medical(institutional) goods and services (during last 30 days and last 365 days)
- Block 10: Expenditure on miscellaneous goods and services including medical(non-institutional), rents and taxes during last 30 days
- Block 11: Expenditure for purchase and construction (including repair and maintenance) of durable goods for domestic use during last 30 days and last 365 days.

**SCHEDULE 1.0 (Type-2): Household Consumer Expenditure:**

- Block 3 : Household characteristics
- Block 4 : Demographic and other particulars of household members
- Block 5.1: Consumption of cereals, pulses, milk and milk products, sugar and salt during last 30 days
- Block 5.2: Consumption of edible oil, egg, fish and meat, vegetables, fruits, spices, beverages and processed food and pan, tobacco and intoxicants during last 7 days
- Block 6 : Consumption of energy(fuel, light & household appliances) during last 30 days
- Block 7 : Consumption of clothing and bedding, etc. (during last 365 days)
- Block 8 : Consumption of footwear(during last 365 days)
- Block 9 : Expenditure on education and medical(institutional) goods and services

(during last 365 days)

Block 10: Expenditure on miscellaneous goods and services including medical(non-institutional), rents and taxes during last 30 days

Block 11: Expenditure for purchase and construction(including repair and maintenance) of durable goods for domestic use during last 365 days

Block 13: Perception of household regarding sufficiency of food

#### **SCHEDULE 10 : Employment and Unemployment:**

Block 3 : Household characteristics

Block 3.1: Indebtedness of rural labour household as on the date of survey

Block 4 : Demographic particulars of household members

Block 5.1: Usual principal activity particulars of household members

Block 5.2: Usual subsidiary economic activity particulars of household members

Block 5.3: Time disposition during the week

Block 6 : Follow-up question for persons unemployed on all the 7 days of the week

Block 7.1: Follow-up question on availability for work to persons working in the usual principal or subsidiary status

Block 7.2: Follow-up question on change of nature of work and/or establishment to persons working in the usual principal status or subsidiary status

Block 8 : Follow-up question for persons with usual principal activity status code 92(attended domestic duties only) or 93(attended domestic duties and was also engaged in free collection of vegetables, firewood etc.)

Block 9 : Household consumer expenditure

### **1.3 Important changes in the Schedules vis-à-vis previous Rounds especially last quinquennial survey i.e. 61<sup>st</sup> Round (2004-2005).**

**1.3.1 Household Consumer Expenditure:** In household consumer expenditure schedule (1.0), following major changes were incorporated:

a) Two types (Type-1 & Type-2) of schedule 1.0 were used in 66<sup>th</sup> round as against one type used in 61<sup>st</sup> Round. Schedule Type 1 was similar to that of the 61<sup>st</sup> Round wherein, the reference period of 'last 30 days' was used for consumption items- all food; pan, tobacco & intoxicants; fuel & light; miscellaneous goods and services and both 'last 30 days ' and 'last 365 days' for consumption items - clothing, bedding, footwear, education and medical (institutional) and durable goods. In Schedule Type 2, there were three reference periods of 7, 30 and 365 days for collecting data on different items; but for any particular block, it used

only one reference period. Consumption of cereals, pulses, milk, sugar and salt, fuel & light, miscellaneous goods and services was collected for 30 days; edible oil, egg, fish and meat, vegetables, fruits, spices, beverages and processed food, pan, tobacco and intoxicants was collected for 7 days and consumption of clothing, bedding, footwear, education and medical (institutional) and durable goods was collected for a reference period of 365 days.

b) Question on possession of ration card by the household asked during 61<sup>st</sup> round was dropped during 66<sup>th</sup> Round.

c) Perception of household regarding sufficiency of food inquired during 61<sup>st</sup> round was dropped in schedule 1.0 (type 1) of 66<sup>th</sup> round, however, this question was retained in type 2 of schedule 1.0.

d) Question on “food assistance received through Government schemes by any member of the household” asked in 61<sup>st</sup> Round was dropped in 66<sup>th</sup> round.

e) Consumption of food items such as *chira*, *khoi*, etc. obtained from home-produced paddy were recorded as consumption out of home-produce against *chira*, *khoi*, etc. instead of against ‘rice’ as recorded during 61<sup>st</sup> round.

f) *Supari*, *lime*, *katha* and other ingredients for *pan* that were collected separately during 61<sup>st</sup> Round were merged to form a single item ‘ingredients for *pan*’.

g) A question on use of “internet” by household members during the last 30 days was introduced in block 3 of schedule 1.0 of both types during 66<sup>th</sup> round

**1.3.2 Employment and Unemployment:** Under Employment and Unemployment Schedule (Schedule 10), following major changes were incorporated:

a) During 61<sup>st</sup> round, information on number of members who got work for at least 60 days in public work during last 365 days was collected while in 66<sup>th</sup> round, information related to NREG works, such as ‘whether the household has NREG job card’, whether got work in NREG works during last 365 days’, ‘number of days worked’ and ‘mode of payment of the wages earned in NREG works’ were collected.

b) Information on few items related to holding of some specified Post Office Account and use of some specified postal services were collected during 66<sup>th</sup> Round on request of Department of Post.

c) Information on whether the household benefitted with the schemes such as ‘Annapurna’, ‘ICDS’, ‘Mid-day Meal’ and ‘Food-for Work’, were not collected in 66<sup>th</sup> Round.

- d) Information on ‘whether currently registered with employment exchanges’ collected for persons of age below 65 years in 61<sup>st</sup> Round was collected for persons of age 15 to 45 years during 66<sup>th</sup> Round.
- e) Information on ‘whether received/receiving any vocational training was collected for the persons of age 15 to 59 years during 66<sup>th</sup> round while it was collected for the persons of age 15 to 29 years in 61<sup>st</sup> Round.
- f) Information on ‘voluntary participation without remuneration in production of goods and services’ collected during 61<sup>st</sup> round was not collected during 66<sup>th</sup> Round.
- g) Information on some characteristics of persons with usual status as ‘self-employed’ was collected to identify Home Based Workers during 66<sup>th</sup> Round. This information was collected in 55<sup>th</sup> Round (sixth quinquennial survey) but was not collected in 61<sup>st</sup> round.
- h) During 66<sup>th</sup> Round, the activity status code 41 (casual wage labour in public works) was bifurcated in two codes i. e. 41(casual wage labour in public works other than NREG works) and 42(casual wage labour in NREG works). This bifurcation was only for recording current daily activity status and current weekly status.

## **SECTION-II: FIELD EXPERIENCES:**

### **2. Conceptual/Definitional and General Issues:**

**2.1** As such, no major conceptual or definitional problems were faced by field officials as these subjects are repeatedly taken up in different rounds since the inception of NSSO. However, for identifying affluent households in block 5.1, two items ‘spacious pucca house in good condition’ and ‘any member doctor/advocate/or with high salaried job’ were very subjective in nature. Spacious, good condition and high salary could be different for two persons; even it could be varied from place to place. Similarly, considering doctor/advocate as a factor of affluence of the family may not be true at all times as there are so many advocates/doctors who are hand to mouth in their professional life. Further, classifying a person holding high salaried job is much subjective and personal biases of field officials could influence the decision.

**2.2** The schedule 1.0 was very exhaustive and meant to collect data for each and every item of consumption. Problems encountered in canvassing schedule 1.0 were same as faced in previous rounds. People are very busy and they do not take much interest when they find that supply of information would not fetch any benefit. The field officials felt that for accurate collection of data, substantial amount of time is required which, most of the respondents do not agree to spare. The schedule needs to be rationalized and simplified to get better quality of data by following a rational process so that comparability is not lost.

**2.3** Though there were no conceptual/definitional issues relating to schedule 10 of employment-unemployment, however inclusion of block 9 for collecting household consumption expenditure in this schedule created fatigue especially in big-size households as, after providing information on so many items on employment-unemployment, the household found it difficult to provide information on household consumption expenditure. It was almost like canvassing schedule 1.0.

**2.4** The importance of proper response from the respondents hardly needs any emphasis, as it is one of the most important factors governing accuracy, reliability and efficacy of the data. The quality response inter-alia, dependent on the level of willingness and co-operation extended by the respondents during the conduct of survey, which in turn depends on a variety of factors. Some of these factors are size of the schedules, clarity of the questions therein, competence and understanding of the informant, conduct and behaviour of the interviewer and ultimately the time a respondent is willing to spare for the interview.

**2.5** In the context of NSS surveys, length and complexity of the schedule has always been a concern, both for the respondents as well as the field functionaries. Though there have been attempts by NSSO to address these issues by effecting marginal changes in the formats of the schedules (alterations/bifurcation) from time to time, yet this continues to remain a concern till date. Any plausible solution in this regard does not appear to be in sight as it would perhaps weigh on two important, yet contradictory factors viz. demand of the users to include more and more variables of study on one hand and the increasing tendency of the respondents' reluctance to spare adequate time for interview on the other.

## **2.6 Specific Observations**

During the conduct of the 66<sup>th</sup> Round, the following difficulties were encountered:

### **2.6.1 List of Households (Schedule 0.0):**

**(i) Block 5 & 5.1 Monthly Average Consumer Expenditure and Relatively Affluent Households:** Problems in deciding relative affluence both in rural and urban areas had been raised in all the relevant forums by FOD. As in previous rounds, field functionaries have to rely on some objective criteria (no. of cattle heads, cultivable/irrigated land owned, ownership of motor car/ jeep/ tractor/ harvester/ truck/ bus/ refrigerator/ washing machine/ DVD player/ VCP) and some subjective criteria (ownership of spacious pucca house in good condition and having any member with high salaried job) for deciding 10 top most affluent households in rural areas. It was felt that concepts of 'spacious' and 'in very good condition' in case of owned house were very much subjective and could be interpreted differently by different field officials. Similarly, in urban areas where affluent household were selected on

the basis of average monthly per capita expenditure(MPCE), it was observed that for single member households (students staying at hostels/hired accommodation, drivers of rich residing in servant quarters etc.) the MPCE generally becomes quite high. As a result, most of such households got code '1' and were categorized under Second Stage Stratum-1(SSS-1). The SSS-1 is intended to capture households who were economically in higher strata and thus the very purpose of stratification was defeated frequently when single member household of economically lower strata i.e. drivers, students etc. were selected. It was observed that an affluent household was substituted by its driver in case original household refused to provide information. Further, a lot of probing was required for obtaining average monthly consumer expenditure in block 5 of Schedule 0.0 that was found difficult and time consuming. Unavailability of appropriate informant at the time of listing for getting information on monthly consumer expenditure of the household was another problem felt by the primary field workers.

(ii) In some cases it was observed that informant hesitated to provide information on ownership of motor car/truck/bus and other durable goods by the households for deciding affluent households in block 5.1. In such cases, informants were suspicious about tax imposition.

### **2.6.2 Household Consumer Expenditure (Schedule 1.0)**

(i) **Block 3, items 9-15(Land as on date of survey, Land Cultivated & land Irrigated):** Field functionaries of Sikkim confronted with a peculiar situation of converting local unit of measurement of cultivable land into standard unit of hectare. In Sikkim, area of land is measured in local term commonly known as '*HAL*' that is the area which can be ploughed by a pair of bullocks in one day. Field officials faced a lot of difficulties in recording area of land in hectare as a pair of bullocks can plough more land in a day in soft soil of plain area as compared to hilly/rocky soil resulting the dilemma of conversion formulae. For a particular household having two plots of cultivable land in different terrain, Investigator faced a practical problem of recording entries of land owned/possessed that was to be converted in hectare from '*HAL*'.

(ii) **Block 4 (Order of Recording Demographic Particulars of Household Members):** In some areas particularly from urban quarters, female members of household pointed out the biased structure of block 4 which is tilted towards male members of the household. They were criticizing the provision of recording male children first followed by female children. Though our Investigators rightly argued that it is the procedures followed by the Census

Authorities, the argument did not satisfy the enlightened female members and also their male sibling.

**(iii) Block 4, Column 6 (Marital Status):** Now-a-days several cases of live-in relationship where a couple living together without any formal marriage are observed. There are doubts amongst field officials about assigning marital status to such couples. This issue is being raised continuously in All India Training of Trainers as well in Regional Training Camps, however, 'Instructions to Field Staff (Volume-I) is silent in this regard.

**(iv) Block 5.2, Column 3 & 4 of Item 282 (turmeric) and 284(black pepper):** These two items were found to be consumed by the households in some regions (Turmeric in Sikkim and black pepper in Kerala) from the home produced stock. However, columns 3 and 4 for these two items were shaded meaning that they can't be consumed out of home produce stock. There were many queries from field personnel on where to record home produced black pepper consumed by the household.

**(v) Block 6, Columns 3&4 of item 341 (firewood and chips):** In many cases, informants were unable to provide information on quantity of firewood consumed out of home produced stock during the last 30 days as they never measured it before consuming. It was also difficult for the Investigators to estimate the monthly consumption because an unknown combination of firewood, dung cake, dry leaves and other fuel materials were reported to be consumed during the reference period. In such cases, it might be possible that information collected were a mere approximation carried out jointly by the Investigator and informant.

**(vi) Block 5.2 of Schedule type-1 and type-2:** Information on these items was smoothly collected in type-2 schedule wherein reference period was last 7 days as compared to type-1 schedule wherein the reference period was last 30 days. Information particularly on vegetables and fruits items (items 210 to 268) was difficult to collect for a reference period of last 30 days in schedule type-1.

**(vii) Block 11, items 640-643 (jewellery & ornaments):** Information on purchase of jewellery and ornaments was very difficult to collect, as being very sensitive often leading to suspicion in the minds of the informants and had negative impact in collection of data on remaining items especially in urban areas in general and the affluent households in particular. It was observed very difficult task to convince that this information is required for policy formulations.

**(viii) Block 11, Column 3 of item 579 and 649(sub-totals for crockery & utensils and jewellery & ornaments):** This column was meant for recording information on whether

possessed the listed items on the date of survey by the household. All the items except these two items meant for recording total of each sub-block (item 559, 569, 599, 609, 619, 629 and 639) were shaded in this block. Items 579 and 649 were not shaded indicating that information was to be recorded. However, there was no instruction provided in Volume-1 of 'Instructions to Field Staff' in this regard resulting confusion among field functionaries and a considerable number of queries from field offices.

**(ix) Block 13 of Schedule Type-2:** As regards information on perception of food adequacy, there was a tendency among respondents to exaggerate in case of marginally better off poor households. This being a very delicate question exposing the extent of poverty, the investigators had to be very tactful while collecting correct information.

**(x) Length of Schedule:** As usual in most of the cases, informants after initial co-operation were reluctant to give further information due to lengthy schedule. This problem was however, more acute in case of economically well-off families in urban areas as the informants were very busy or pretended to be so.

### **2.6.3 Employment and Unemployment (Schedule 10):**

**(i) Block 3, Item 3(whether household has NREG Job Card):** Though generally informants were hesitating to provide information on possession of NREG Job card, it was observed some affluent households were possessing NREG Job cards.

**(ii) Block 3, Items 14 to 17(whether held a particular type of Post Office Account):** Though this question was well received by the informants, however, in some cases information on type of account held could not be collected due to ignorance of informants. Field officials were to see the Post Office Passbook for identifying the type of account though informants were reluctant to show.

**(iii) Block 3.1(Indebtedness of rural labour household as on the date of the survey):** Most of the households found it very difficult to provide all the details sought in this block i.e. nature of loan, source, purpose and amount outstanding including interest separately for different loans. In majority of the cases, they were not able to distinguish between different loans and what they could remember was only the consolidated outstanding amount. Owing to the fact that majority of the loans were taken from local moneylenders or shopkeepers, there was hardly any documentary proof to verify the facts. In substantial number of cases, households were not able to provide the exact details of credit purchase due on the date of survey. At times, there were problems in evaluating the borrowings taken in kind.

Normally rural labourer households are indebted to rich people of the locality or moneylenders because institutional finance is still inaccessible to them. In most of the cases,

the loans are consolidated frequently i.e. when need arises households already indebted to a moneylender take a fresh loan from the same person and this fresh loan is added in the previous loan. It was also observed that the purpose of taking loan was different each time a fresh loan is taken. Since this was observed to be a continuous process in many cases, recording separate entries for different loans taken were found difficult in respect of consolidated loans as informants could only tell about outstanding loan amount.

**(iv) Block 4, Column 11 (currently registered with employment exchange):** In some cases, informant was unaware about the registration status of other household members and each and every member of the household could not be contacted within the survey period. In such cases, possibility of omission could not be negated.

**(v) Block 5.1, Column 9 (enterprise type):** There were two different problems in obtaining this information i) the person employed with industry groups 012, 014, 015 and divisions 02-99 (i.e. with economic activities other than agriculture) were unavailable at the time of detailed enquiry and no other member is aware of the type of enterprise the person concerned is employed with and ii) employee available at the time of enquiry but himself not aware of the enterprise type in which he employed. This was observed specially in case of big enterprise where its employees are unaware about whether the enterprise is proprietary or partnership (with members of same/other households) or incorporated company. The persons employed with the Government Organization or private households or group of households were, however, aware about the type of enterprise with whom they employed. Though there were provision of recording code 9(others) in case the informant does not know the enterprise type, a considerable time was to be spent on probing the question before recording as code 9.

**(vi) Block 5.1, Column 21 (period of seeking/available for work during last 365 days) and Column 22 (seeking or available or suitable for the type of occupation):** Column 21 was to be asked for the persons of age 5 years and above while column 22 was for those household members who are below 75 years with any one of usual principal activity statuses of 81-97(unemployed, students, housewives, rentiers/pensioners, disabled, beggars and prostitutes etc.). Field officials faced awkward situation while putting a question on column 21 and column 22 for children of 5/6 years old and questioning about information on column 22 to a person of 70-74 year old. Majority of the 'out of labour force' respondents when asked about the suitability of occupation could not respond properly. In many cases the respondents gave vague answers like 'anything' causing difficulties in recording appropriate code.

**(vii) Block 7.1, Column 11(what amount per month would you regard as remunerative?):** Under this column information about the desired level of earnings in a month for the self employed household members was to be recorded. It was observed that in a number of cases the informants gave inconsistent response by quoting very high figures and as a result code '6' i.e. more than 3000/- was recorded in majority of cases.

**(viii) Block 9:** Schedule 10 as such is very elaborate and detailed information for each and every member of the household is to be collected and informants very often found to get irritated during the course of interview. In such a situation, inclusion of Block 9 having 36 items was like virtually canvassing a complete schedule 1.0 from the same household.

### **SECTION III: QUALITY CONTROL MEASURES:**

**3.1** Quality control measures are one of the most important aspects of conduct of large scale sample surveys by Field Operations Division (FOD). This issue is given highest priority right from the survey planning, execution and management. The following are some, among other measures, adopted by FOD to reduce the non-sampling errors.

**3.1.1 Training:** Multi level training programmes are organized before the actual commencement of field work. These training programmes include a) Training of Trainers, b) training of field functionaries at Regional Training Camps (RTC) and c) further training of field personnel at Sub Regional Office level after RTCs.

**3.1.2 Team Approach:** In this round, 'Team Approach' was adopted for data collection. This team approach served the twin purpose of mutual consultation in the field and helps Contract Personnel to get necessary guidance. It was ensured that there was at least one regular Investigator of FOD was part of the team.

**3.2 Effective Supervision and Inspections:** As usual, quality of the data collected during 66<sup>th</sup> Round was ensured through field inspections and desk scrutiny of the filled-in schedules. The fieldwork was undertaken by the Statistical Investigator Grade-II (SI Gr-II)/Contract Investigators and was inspected by the Statistical Investigator Grade-I (SI Gr-I) and other higher officers. A minimum of 50 per cent samples were inspected in the first two sub-Rounds and 40 per cent in the third & fourth sub-Rounds. The filled-in schedules were subjected to cent per cent scrutiny by the SI Gr-I/ officer in charge of the SRO/NSRO. At least one set of filled-in schedules of each SRO/NSRO in every sub-round was scrutinized by the respective Regional Heads before it dispatched to the concerned Data Processing Centre (DPC). This had given them an opportunity to assess the quality of schedules scrutinized by

the SI Gr-I and put appropriate checks wherever required. Based on the scrutiny observations, consolidated clarifications were also circulated to the field staff for updating knowledge.

**3.3 Scrutiny at Zonal / Hqrs. level:** A representative samples were super-scrutinized at the Zonal Offices as well as FOD Hqrs. While Zonal scrutiny observations were circulated to all field offices under their jurisdiction, Hqrs' scrutiny observations were circulated to all field offices of FOD for subsequent quality improvement.

**3.4 Monthly Meetings and Feedbacks:** The monthly meetings held at the end of every month or the first week of the subsequent month at Regional Offices (ROs) and Sub Regional Offices (SROs) were very useful for discussing problems faced by the field staff along with the scrutiny observations and rendering appropriate guidance and clarifications for maintenance and improvement of quality of data collected. Question – answer sessions take place where in provisional answers are provided locally and the same were sent to SDRD for confirmation.

**3.5 Publicity Measures:** Encouraged with the impact of publicity campaign initiated during 65<sup>th</sup> round, and at the instance of the then Steering Committee, publicity of NSSO activities were continued during 66<sup>th</sup> Round also to create awareness among people about survey being carried out by the NSSO. These publicity measures had a positive impact on the responses received in field.

Publicity materials with the logo of NSSO were provided to respondents and institutions as token of appreciation for their assistance in the data collection work and to establish NSSO as a brand name. Under the publicity campaign, “Appeals” seeking cooperation from general public was released in various national and regional newspapers all over India. In addition, audio and video spots both general in nature and round specific were telecast / broadcast in various Radio/TV Channels.

**3.6 Engagement of Investigators on Contract:** Regular and experienced staff is an important requirement to ensure better quality of data. However, keeping in view the large vacancies at the level of Statistical Investigators Gr-II and time bound programme schedule, FOD had to engage Investigators on contract basis for data collection work as was done for the 65<sup>th</sup> Round. About 615 Investigators were engaged on contract to carry out the fieldwork of 66<sup>th</sup> Round. As these Contract Investigators were new to the FOD environment and were not familiar with concepts & definitions used in the survey of Household Consumer Expenditure and Employment-Unemployment, all efforts were made to train them on the intricacies involved with the fieldwork of 66<sup>th</sup> Round of NSSO.

## **SECTION IV: Suggestions**

### **4.1 Listing Schedule (Schedule 0.0):**

- (i) **The criteria for selection of relatively affluent households in rural and urban areas need a re-look.** The selection procedure should be such that there is minimal subjectivity on the part of Investigators.
- (ii) **Petrol Pump should be added as an additional item in Block 7,** since consumption of petroleum products has increased substantially in rural areas also owing to increase in number of Tractors, Pump Sets, Motorcycle, Cars etc.

### **4.2 Household Consumer Expenditure (Schedule 1.0):**

- (i) Rationalization of schedule: It is desirable to rationalize the items to make the schedule more compact.
- (ii) Also the respondents were found to recall better for the last 30 days reference period than 365 days. Lengthy reference periods may create confusion on the part of both informants and investigators. Seven day reference period for food items in type-II was more appreciated
- (iii) Collecting information on purchase of jewellery and ornaments found to be very sensitive leading to suspicion in the minds of the informants and had negative impact in collection of data on remaining items especially in urban areas in general and the affluent households in particular. Dropping of this item from the schedule may be considered. Investigators were asked to collect information on these items at the end.
- (iv) As regards information on perception of food adequacy (Block 13 of type-2), it was observed that the response is in negative from some sections of society contrary to the reality.
- (v) Due to change of consumption pattern, a few more items like CNG/LPG used as fuel for vehicle being used commonly may be added in block 10 while Inverter being used even in rural areas may be added in block 11.

### **4.3 Employment – Unemployment (Schedule 10):**

- (i) In **Block 3.1(Indebtedness of rural labour household)** it was difficult to provide all the details sought in this block because in majority of the cases, respondents were unable to distinguish between different loans and what they could remember was only the consolidated outstanding amount. **It is, therefore, suggested that provision should be made to record the total loan amount outstanding along-with the source and the purpose for latest consolidation in such cases.**

- (ii) In **Block 5.1, Column 22** majority of the ‘out of labour force’ respondents when asked about the suitability of occupation gave vague answers and the investigators found it difficult to record appropriate answers/codes. Necessity of this information may be re-visited.
- (iii) In **Block 7.1, Column 11**, the issue of desired level of remuneration for self employed persons is very subjective and most of the answers were far from realistic. It is desirable to drop this item.
- (iv) **Block 9:** For reducing both respondent and investigator fatigue, it is suggested that such a detailed summary block may be avoided and it should be taken on 5 item pattern adopted in schedule 1.2 of 65<sup>th</sup> Round.

#### **4.4 Manpower Constraints:**

Field Operations Division had been facing acute shortage of manpower especially at the level of primary field worker. This issue is to be resolved with a permanent solution. For quality data, service conditions of primary field workers (SI Gr-II of SSS) may suitably be modified making it attractive to check attrition. The variance in pay structure of different posts for which combined examination is conducted by SSC, top candidates in the merit list are opting for other jobs than investigators of FOD. Further, policy of posting non-locals by the Ministry is also observed as an added deterrent to field officials’ functioning, resulting in avoidable administrative activity in dealing their transfer applications. Long standing issues like field allowance, food bill etc. are to be addressed at the earliest to boost the morale of the field functionaries keeping in view the changed field conditions over the years. In view of increasing activities of FOD in conducting various surveys, it is suggested that current allocation of SSS posts to FOD may need upward revision.

#### **4.5 Publicity:**

There is scope for enhancing the publicity of NSSO activities through electronic and print media. Workshops on the activities of NSSO, some important surveys and their utility in policy formulations by Government for the welfare of people may be organized at various educational institutions. These publicity activities may help in reduce the trust deficit of people and improve cooperation.

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# Occupation and Income Mobility in India: Evidences from Recent NSSO surveys

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## *Abstract*

*In case of developing countries an important objective is to improve the living conditions of workers and India is no exception to this. The root of this lies in improvement in income level which depends on occupational status and returns from work, or wage level. Though most studies compare occupational levels & wages at different points of time from cross-sectional data, they provide an aggregative view without control for variables that are particular to the household/family. Contrary to this, intergenerational mobility in income/Occupation following life cycle theory observes direction & quantum of movement of workers' wage relative to their parents, therefore filtering out household characteristics, and providing better measure of workers' conditions and its trends over time. The issue of equality is also related to intergenerational wage mobility. Historically some groups are belonging to lower strata of society due to economic and or social discrimination which excluded them from the process of capability formation and income-earning. As a result Intergenerational Mobility is very low among backward classes. This paper uses both the transitional matrix approach and intergenerational income regression model to find intergenerational occupational and income mobility, desegregated across social classes. We observe that occupational mobility and wage income mobility between generations have been generally low in India. Though such stickiness over generations is declining over time, especially in the post-reform period, stickiness is still higher for excluded classes. Improvement over the last decade has occurred mainly for the scheduled castes but not for the tribals who are much more spatially isolated and hence outside the orbit of economic dynamics.*

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## **I. Introduction**

In case of developing countries an important objective is to improve the living conditions of workers and India is no exception to this. Several policies have been taken over time to safeguard interest of workers and to provide decent conditions of work. The root of this lies in improvement in occupational status and increase in income level which depends on returns from work, or wage level. While non-wage aspects are also important, wage level is the most pertinent indicator of condition of workers and increase in real wage level signals improvement in condition of labour market. Though most studies compare wages at different points of time from cross-sectional data, they provide an aggregative view without control for variables that are particular to the household/family. Contrary to this, intergenerational mobility in wage income following life cycle theory observes direction & quantum of movement of workers' wage relative to their parents, therefore filtering out household characteristics, and providing better measure of workers' conditions and its trends over time. Another important aspect that can be explored by looking at intergenerational wage mobility is related to the issue of equality. Stickiness of wage income with respect to parental income leads to persistence of income inequality across generations and questions the notional objective of equity in opportunity and openness of any society. Historically some groups belong to lower strata of society due to economic and or social discrimination leading to lower income and asset possession as well as capability formation which excluded them from the process of capability formation and income-earning. This exclusion and backwardness surpass the boundary of the current generation and spills over to successive generations as well. As a result Intergenerational Mobility is very low among backward classes. With the modernization of society, as the premium on education and skill has increased immensely, not only India but the developed countries have also experienced absolute decline in wage income for the less skilled workers. After the opening of the economy nature of job market has changed – on the one hand access to new form of job has increased with higher return to human capital, and on the other hand with squeezing of formal sector in India the gap between top of the wage distribution and bottom has increased. Also of importance is to enquire whether economic liberalization and structural reforms have had any impact on the intergenerational income mobility – are workers today *more* better off than their parents compared to workers in the 1990s?

In this context the paper tries to find out the relationship between a person's current occupation and wage income with his family background, more specifically the parental

income and occupational status. The moot questions that have been addressed in this paper are – whether occupational status and income levels have improved over generation; and, whether there is any social discrimination in occupational mobility and wage income mobility. We have concentrated on wage income to link this issue of income mobility with the labour market – to reflect the trends in wage income and labour market situation. The paper thus throws light on a hitherto neglected area of research in Indian labour market studies – intergenerational occupational mobility and income mobility, desegregated across social classes and comparing pre-reform and post-reform results.

## **II. Review of Literature**

Studies on Intergenerational transmission of occupational characteristics have mostly followed two methodological approaches. The first type cross tabulates the individual characteristics with those of their parents and computes a Mobility Matrix, based on which proportion of people exhibiting Upward Mobility (children having higher educational/occupational position compared to their parents) are calculated. Starting with Driver (1962), this method has been used by Erikson and Goldthorpe (1992, 2002), Cheng (1995), Biblarz (1996), Kumar (2002), Behrman et al (2001), Beller and Hout (2006), and Louw et al (2006). This is basically a descriptive approach without analysing the impact of other variables on such transmission. When computed separately across social groups, it provides measures of upward mobility for each of them, which can then be compared. However, this method is unable to bring out the causal relation between parental educational and occupational status and that of the children objectively when several other possible explanatory factors are present. This gives rise to the second method which is more rigorous in nature and typically regress child's occupational characteristics on those of the parents along with a set of other control variables. The coefficients of parental characteristics will give us a measure of intergenerational inertia in our dependent variable. A high coefficient will denote low mobility while a low coefficient will represent high mobility. Apart from OLS Regression, Logistic Regression and Correlation has also been used to objectively measure parental influence on children's achievement level using this method. Researchers using this methodology include Behrman and Wolfe (1984), Solon (1992), Peters (1992), Gang and Zimmermann (1999), Bowles and Gintis (2002), Bourguignon (2003), Black et al (2003), Checchi et al (2008), and Brown et al (2009). While the Mobility Matrix method has been used mostly for case studies when achievement levels are discrete categories in hierarchically ordered classes (e.g. occupational category), the Regression/Correlation

method has been used when a large dataset has been available and achievement levels are measured in continuous scale (e.g. income or completed years of schooling). Though the regression/correlation approach has been in favour in recent times, it is sometimes criticised on the ground that the association between parental and children's achievements is non-linear over the achievements range of parents and hence can not be truly captured by this method (Bjorklund and Jantti, 2000).

There is a substantial literature on intergenerational income mobility, mostly from developed countries [see Solon (1999) for a good review]. Researchers like Becker & Tom (1979), Solon (1992), Bjorklund & Jantti (1997), Buron (1994), Couch & Lillard (1994), Eide & Showalter (1997), Mulligan (1997), Minicozzi (1997) have tried to find out intergenerational income elasticity for USA data [see Mazumder (2001) for a brief review]. Black and Devereux (2010) in their vast review work discussed recent developments in intergenerational mobility. According to them after works of Garry Solon (1999) literature on intergenerational mobility has taken a new turn. Earlier research emphasis was on finding estimates of correlation / elasticities, but recent emphasis is on causal relation and mechanism of transmission of intergenerational persistence. Research works, especially from the sociological standpoint have also tried to find optimal amount of intergenerational mobility, arguing that zero intergenerational stickiness may not be optimal. According to Solon (2004) affluent parents invest more on child's education (human capital) and hence zero intergenerational persistence implies no return to human capital investment, which will be suboptimal / unnatural in a market economy. It is acceptable that earning/ reward from higher human capital must be higher, otherwise motivation/ incentive / efficiency will be low. But social structure/ institutional arrangement should not be such that achievement of higher human capital depends only on high private investment. In that case it is not equality of opportunity. So if intergenerational correlation is due to variation in private investment in human capital there is need for government intervention in providing and or financing education.

It is however observed that though a plethora of work has been done at the international level, especially in the developed countries context, the area has remained under-focussed in Indian economic research except few likes Driver (1962), Kumar et al (2002a, 2002b), Majumder (2010), Maitra and Sharma (2009), Ray & Majumder (2011), Motiram & Singh (2012)]. Only one recent work (Hnatkovska et al, 2013) has explored intergenerational income mobility. While one of the major reasons has been absence of pan-generation data on income and allied

factors, it is also true that the issue of intergenerational mobility has not been explored sufficiently in Indian context. The present paper attempts to fill this void in Indian economic literature.

### **III. Database and Methodology**

The study has used the National Sample Survey Organisation (NSSO) database on employment and unemployment (unit level records) for the 50<sup>th</sup>, 61<sup>st</sup>, and 66<sup>th</sup> Rounds, pertaining to the years 1993, 2004, and 2009 respectively. Family records have been superimposed on personal records so as to obtain multi-generational data on education, occupation, earnings and other socio-economic parameters. Thereafter, the data has been processed to provide us with the necessary information on intergenerational mobility in terms of wage income separately for different social classes. Only male persons aged 20 years or above have been included in our study to allow them to complete the full educational cycle.

A note on the database seems necessary at this point. NSSO data for 1993 distinguishes between STs, SCs, and Others (whom we call General Caste or GEN), while the 2004 data provides information for OBCs separately from the GENs. Thus, there are some comparability problems in the data, which are, however, not insurmountable. With this background, we now explore the situation.

We are more interested in examining how children's occupation are related to parental standards. More specifically, we want to quantify the degree of intergenerational upward mobility in occupation. This would be given by the percentage of children moving to a higher occupational class as compared to their parents. In literature this is done by following the Transition/Mobility Matrix approach or the Regression approach. We have applied the former in this paper.

In studying intergenerational income mobility, basic objective is to examine whether current generation workers are earning more than their parents, after controlling for factors like age, experience, etc..

we may simply compute some form of wage income of parents and children, filtering out the effects of age, experience, etc. After that we may examine whether the children's *Isolated Wage* (wage post-filtering) is higher than parent's *Isolated Wage*. If the child's wage is higher (lower) than that of the parent by a specific margin (say 10%), we infer that across generation upward (downward) income mobility has occurred. Otherwise, no mobility has been exhibited. This gives us a measure of *absolute income mobility*.

*On the other*, Correlation coefficient between log of parent's income and child income may also be another measure of intergenerational stickiness, and its complimentary a measure of mobility. IGE and correlation may be same if the standard deviation of log earning is same for both parent and child. Elasticity can be higher in one society than in another because the variance in child's generation is higher in that society. IGE estimation is suitable than Correlation method for practical purpose because it is not biased by measurement error in  $Y_1$ .

One practical problem in measuring IGE is that ideally the regressor and the regressand should be permanent incomes, which is very difficult to observe. This necessitates the computation of a synthetic variable which we call *isolated wage*, of both parents and children. It is assumed that this new variable would have same measurement error across generations and hence  $\beta$  will be unbiased.

We have used the first method for examining intergenerational income mobility in Indian labour market. In order to measure income mobility we have used weekly wage data and restricted our study to the male workers only. Since our database is at household level, this means that we have used only those pair of data where both father-son (only male) are currently employed against wage, i.e. Wage Employed (Worked as regular salaried/wage employee, Worked as casual wage labour in public works, Worked as casual wage labour in other types of works, Did not work due to sickness but had regular salaried/ wage employment, Did not work due to other reasons but had regular salaried wage employment).

#### **IV. Occupational Hierarchy in India**

One of the major factors affecting income distribution is the hierarchical structure of different occupations and the occupational distribution of the workers. Occupational segregation leads to perpetuation and also the accentuation of income inequality over generations. Therefore, examining the occupational distribution of workers becomes an important issue. We have used the Indian NCO-1968 classification in our study and workers have been divided into ten occupational classes. Arranged in descending order of hierarchy and prestige, these are: Technical and Scientific Personnel, Professionals, Administrative, Clerical, Sales, Service, Farmers, Production-related, Transport, and Labourers not elsewhere classified. Occupational structure and mobility are discussed in terms of this structure. At the second level, we have clubbed similar occupations to form three broad groups – Grade-I (White Collar jobs— Technical and Scientific Personnel, Professionals, and Administrative); Grade-II (Pink Collar jobs— Clerical, Sales, and Service); and Grade-III (Blue Collar jobs— Farmers, Production-

related workers, Transport workers, and Labourers not elsewhere classified). This hierarchical structure has also been used in our study.

*a) Detailed Occupation Groups*

When we look at the detail occupational attainment level in India the two occupational classes viz. farmers and production related workers are the ones where majority of the workers are engaged at present. In 2009 nearly 43% of all workers are employed in production related works whereas 31.8% of them are farmers. All the others classes (Technical, professionals, Administrative, clerical, sales, service, Transport) comprise of 3-5 % of workers. Such pattern signifies existence of inequality in Indian job market as the bulk segment of workers are in the lower rung of the occupational ladder whereas only few of them have acquired the skill to achieve the top most jobs. The changes in the labour market during last two decades happen to be the falling proportional share of farmers (from 42% in 1993 to 31% in 2009) on the one hand and the conglomeration of workers in the production related working class on the other. This fall in the first case is the usual pattern of change in occupational composition with the process of development of economy whereas as the occurrence of second case deserve much more importance in Indian context. The percentage share of the class was only 19.4% in 1993 which reduced to 16% in 2004 and again has increased to 43% in 2009 indicating growth of informal sector.

The proportion of workers at the lowest category viz. labourers not classified is presently insignificant (only 0.1%) which was 3.6% during 1993.

The classification of workers across social groups gives some vital findings. In 1993, among the tribals, proportion of farmers was 65% which increased to 76% in 2004 and declines sharply to 43% in 2009 indicating **major displacement** or **loss of cultivable** land by the tribal groups or withdrawal from cultivation resulting from high cost of cultivation? The question is which occupational class has absorbed this shift of occupation by the ST groups from farming? Only 11% of tribals were engaged in production related works in 1993 whereas the corresponding figures are 7.9% only in 2004 and 46% in 2009 implicating that shifting from farming has occurred to this class mainly as wage workers in cultivation or manufacturing, which is supportive of the notion of displacement/dispossession of the tribals in recent times.

Similar trend can be observed for SC and OBC groups. In 1993 nearly 50% of SC workers were farmers and 21 % of them were in production related activities. In 2009, the proportionate share of farmers among SCs reduced to only 21% and that of production related workers mounted to 63%. In 2004 the proportion of workers engaged as farmers for the OBC groups was 57% which reduced to 34% in 2009. The workers of the same group is also

concentrated in production related class in 2009. On the other hand though the advanced group experienced similar trend in occupation change with falling proportion of workers as farmer but the size of fall is much lower when compared to the size of the same of excluded class. Again for the advance class also the major increase in proportion of occupational attainment is associated with production related class.

The proportion of workers engaged in high skill and service related sector are much lower for the excluded class compared to advanced class which will also be clear later when they are classified in broad occupational segment. The proportion among ST/SC groups in all such classes (viz. Technical, professionals, Administrative, clerical, sales, service ) are very low( 1% - 5 %) and also declined slightly over the period 1993-2009. Obviously the same for advanced class is higher and showed an increasing trend in classes like Technical, professionals, Administrative whereas for sales category the proportion reduced for them during 1993-2009.

#### ***b) Broad Occupational Pattern***

It is observed that the workers of the excluded classes are much more concentrated in the Grade-III jobs as compared to the advanced classes, while the proportion of the latter in Grade-I jobs is unduly large. Some improvements are observed over time and across generations whereby the proportion of excluded class workers in higher occupation classes is increasing. However, the rate of improvement is much more pronounced for the advanced classes. Moreover, the share of workers in Grade III jobs has increased for the parents and the daughters belonging to the SCs. Thus, occupational segregation and occupational stickiness among the excluded classes is very much a reality in India.

If we assess age groups instead of biological generations, a similar picture emerges. Moving from the population aged 40+ to that in the age group of 20-40 years, in 2004, there was a marginal upward movement among the OBCs, while for the STs, there was a tendency towards concentration in mid-level occupations. For the SCs, there is a clear downward movement with the proportion of Blue Collar workers increasing in both the age groups.

## **V. Occupational Mobility in India**

As we are more interested in examining how children's occupation are related to parental standards. More specifically, we want to quantify the degree of intergenerational upward mobility in occupation. This would be given by the percentage of children moving to a higher occupational class as compared to their parents

Occupational attainment is quite sticky across generations, with upward mobility being only about 13-16 per cent during the study period (Table 1). That means only one-seventh of the children are able to move up of occupational ladder compare to their father. Though mobility slightly improved during the period 1993-2004 but it again decreases marginally in 2009. This indicates that the high growth of Indian economy during the period unable to reduce the persistence of parental influence on child future outcome. The mobility of boys and girls were more or less similar in 1993 which improved for the boys in 2004 compared to girls and decreases for them in 2009. The mobility among girls for all the social classes is higher than boys in 2009. However for the advanced groups this difference is much higher indicating a wider acceptability of women's employment in diversified occupational positions and also higher aspirations among the present generation of women in the advanced classes. However, much of this mobility is perceived to be at a comparable hierarchical level and grade level stickiness is observed to be much higher when viewed at the broad occupational levels (Grade-I : White Colour, Grade-II : Pink, Grade-III : Blue colour). Only about one-tenth of the workers had better occupational grades as compared to those of their parents during the study period (Table 2). The mobility figure at the broad occupational level showed no sign of improvement over the period.

Mobility among excluded classes is lower than that for advanced classes, indicating greater intergenerational stickiness for them. The gap between advanced group and schedule castes have reduced over time whereas the gap in mobility between scheduled tribes and advanced class have increased, indicating that very few of the tribal children able to climb up the occupational ladder in post reform era.

Quite surprisingly, mobility is higher among people of the older age group people as compared to the younger age group. This may be due to various reasons. First, this may be a reflection of the lower initial or parental occupational levels of the people currently in the 40+ age group as compared to those in the 20-40 year age group, whose parents have already higher occupational levels. Hence, upward mobility may be higher for the former as compared to the latter. This higher mobility among 40+ age group is strikingly higher for the girls and more so among the schedule caste group. Second, this may also be because of tighter labour market situations in the post-1990 era whereby chances of vertical mobility have become much more sparse and most of the movements are horizontal among similar occupations.

## **VI. Wage Income Mobility in India: Matrix Approach**

As noted earlier, weekly wage of father and child at the time of survey cannot simply be compared because the point of time considered in collecting wage income are different for father and child in their life-cycle. Father's wage will contain impact of age and experience which need to be isolated for both father and children. This kind of impacts shall vary across occupation – some occupation may provide premium to age/ experience (like those engaged in service, administration, technical and professional) , other may negatively treat age (manual types of job). So impact isolation must be separately done for each generation and each occupation.

A double isolation method is used here where we create a synthetic variable for both father and child. These *Isolated Wage Incomes* are derived after controlling for age, experience, and occupation by regressing actual wage income of son (father) on respective Age, Age squared, Age cubic separately for each occupation classification. Using the regression results *estimated* wage is calculated separately for child and father, providing us with the synthetic variable called *Isolated Wage*. Let us now examine the results.

### ***Absolute Income Mobility***

We define upward mobility if *isolated wage* of child is higher than that of his father by a specific proportion since a meagre rise in wage for child compared to his father cannot be termed as upward mobility. We accept as upward income mobility if child's wage income is at least 10 per cent higher than his father, whereas if it is 10 per cent lower than his father, downward mobility is said to have occurred. If child's wage income is within 10 per cent above or below that of the father, we considered income mobility to be absent.

It is observed that absolute wage income mobility has been low and only about 22-25 per cent of 20+ male workers have higher wage income than that of their father. On the other hand about two-third of such workers have lower wage income compared to their father, after controlling for age, experience, occupation, etc., while the rest of them have not shown any noteworthy change. These low upward mobility in absolute wage income figures is consistent over the period 1993 to 2009, rather it decreases by 3 percentage points from 1993 to 2009, though during this period Indian economy grew significantly. It therefore seems that the post-reform period of high economic growth has not been able to improve the condition of the wage workers vis-à-vis their parents by much. If any, majority have had lower status than their parents at comparable position in their life cycle, while the proportion of workers having

higher income compared to their parents has declined over this period. This indicates presence of a labour market with low returns from work.

We have summarised the income mobility figures in Table 5 for comparison across methods and time. It is evident that absolute mobility has witnessed a consistent declining trend.

### ***Income Mobility and Social Group***

Table 6 gives us the measures of upward mobility figures across different social groups over the period 1993 to 2009. We tried to understand whether modern Indian labour market discriminates against different social groups resulting in different income mobility across social groups. It is observed that over the period of study, upward mobility remains low for all the social groups. Strikingly though, the SCs have enjoyed substantially higher absolute income mobility than the rest in recent years compared to STs.

## **VII. Summary and Conclusion**

### ***a) Occupational Mobility***

It is evident that upward mobility across generations in India is significantly low for the occupational level. Within that, the position of the excluded classes is even lower. As the studies of Ray & Majumder (2010) & Majumder (2010) revealed that though intergenerational educational mobility comparatively higher than occupational mobility and the educational levels of the second generation are higher than those of their parents in recent times, this is not adequately reflected in occupational mobility matrix. People are stuck in their parental occupational classes, and any movement perceived was mostly among the advanced classes. Regional patterns suggest that mobilities, in general, are lower in many of the lagging states. The relatively lower mobility of the excluded groups is also evident in most of the regions. This lack of upward mobility, especially among the socially excluded classes, is a matter of grave concern. The fact that educational mobility is not being transformed into occupational mobility brings up the possibility of discrimination in the labour market. This also brings to the fore the fact that historical discrimination and social exclusion have had a long run effect and it is very difficult to come out of this inertia. The possible policies to break this sluggishness may include targeted programmes to improve the educational situation among the excluded groups. Encouraging occupational diversification among these groups, most of which continue their traditional family/parental jobs, may be another effective mechanism. Steps must also be taken to check if these groups are facing any

discrimination in the labour market and if so, appropriate preventive measures should be adopted. Only then can we have holistic development and true progress of the society in the country.

**b) *Income Mobility***

If look into the results as obtained from calculating *Income Mobility*, we may infer the following. Stickiness in wage income across generations is substantially high in India and remained so throughout the post-reform period. There have been some improvements for the SC/OBC groups. Mobility rates are therefore low and in can be safely inferred that living conditions of the workers have not improved significantly from their parents during this period. One of the reasons behind higher mobility of excluded classes compare to advanced groups in recent times has been low base wage income of these groups. The labour market thus provides a grim picture in India. Workers' conditions across generations have not been improving satisfactorily, there still exists discrimination across social groups, and returns from wage labour have generally flattened out. This indicate that the last two decades of structural changes and openness in Indian economy may have led to significant macroeconomic growth, it has not contributed significantly in improving overall labour market situation. Intergenerational stickiness is high indicating working of a vicious trap cycle across generations, which is reflected in increasing social inequality. The state should immediately look at this issue and take steps to translate economic growth into a more visible and inclusive improvement in the lives of the working mass.

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Table 1

Table 1a: Upward Occupational Mobility (NOC1) of Different Generations in India - 1993 (%)

Social Group	All Age Group			20-40 Age Group			40+ Age Group		
	Boys	Girls	All	Boys	Girls	All	Boys	Girls	All
SC	7	9	7.6	7	9.1	7.7	2.5	0	1.8
ST	12.6	16.8	13.5	12.6	16.9	13.4	18.7	18	18.5
OBC									
General	13.7	13.2	13.6	13.6	13.2	13.5	19.1	14.8	18.3
Aggregate	12.9	13.1	13	12.9	13.1	12.9	18	13.8	17.1

Table 1b: Upward Occupational Mobility (NOC1) of Different Generations in India – 2009

Social Group	All Age Group			20-40 Age Group			40+ Age Group		
	Boys	Girls	All	Boys	Girls	All	Boys	Girls	All
Scheduled Caste	11.3	15.7	12.0	11.4	15.4	12.1	3.32	44.0	8.7
Scheduled Tribe	7.0	7.1	7.0	7.0	7.1	7.1	6.0	7.0	6.1
Other Backward Classes	11.9	15.3	12.5	11.8	15.0	12.3	16.5	30.5	18.3
General/Advanced Class	14.5	28.0	16.6	14.5	28.2	16.5	17.4	23.1	18.3
Aggregate	12.2	17.4	13.1	12.1	17.2	13.0	14.6	27.2	16.4

Source: Author's calculations from NSSO Unit level data of different rounds

Table 2

Table 2a: Upward Occupational Mobility (Occ Gr) of Different Generations in India - 1993 (%)

Social Group	All Age Group			20-40 Age Group			40+ Age Group		
	Boys	Girls	All	Boys	Girls	All	Boys	Girls	All
Scheduled Caste	5	6.4	5.4	<b>5.1</b>	<b>6.5</b>	5.5	2.5	0	1.8
Scheduled Tribe	8	8.7	8.1	7.9	8.7	8.1	17.1	7.5	14.4
Other Backward Classes									
General/Advanced Class	10.7	9.2	10.5	10.6	9.2	10.3	18	12.3	16.9
Aggregate	9.8	8.7	9.6	9.7	8.7	9.5	16.9	10.3	15.6

Table 2b: Upward Occupational Mobility (Broad Occ Group) of Different Generations in India – 2009 (%)

Social Group	All Age Group			20-40 Age Group			40+ Age Group		
	Boys	Girls	All	Boys	Girls	All	Boys	Girls	All
Scheduled Caste	11.6	8.4	8.3	8.4	7.4	8.2	3.3	44.0	8.7
Scheduled Tribe	8.4	11.6	4.5	4.7	4.1	4.5	3.5	7.0	3.8
Other Backward Classes	9.5	9.5	9.7	9.3	10.2	9.5	15.9	30.7	17.9
General/Advanced Class	11.1	11.1	11.6	10.9	14.6	11.5	16.3	22.2	17.0
Aggregate	9.4	10.2	9.5	9.3	9.8	9.4	13.7	26.6	15.5

Source: Author's calculations from NSSO Unit level data of different rounds

Table 3

Table 3a: Transitional Matrix of *Actual Wage* in India: 1993

<i>Quintile Group of Father</i>	<i>Quintile Group of Child</i>				
	(Lowest) 1	2	3	4	5 (Topmost)
(Lowest) 1	14.9	<b>5.4</b>	<b>2.4</b>	<b>0.6</b>	<b>0.3</b>
2	5.0	18.4	<b>4.2</b>	<b>0.9</b>	<b>0.1</b>
3	3.0	4.3	12.3	<b>3.5</b>	<b>0.4</b>
4	2.3	1.8	3.2	6.5	<b>1.7</b>
5 (Topmost)	0.7	0.7	0.8	2.5	4.0
Upward Mobility			19.5		
Zero Mobility/Static			56.1		
Downward Mobility			24.5		

Source: Author's calculations;

Note: Bold figures indicate upward movement;

Table 3b: Transitional Matrix of *Actual Wage* in India: 2009

<i>Quintile Group of Father</i>	<i>Quintile Group of Child</i>				
	(Lowest) 1	2	3	4	5 (Topmost)
(Lowest) 1	17.1	<b>2.7</b>	<b>1.1</b>	<b>0.5</b>	<b>0.3</b>
2	3.8	19.7	<b>2.2</b>	<b>0.9</b>	<b>0.2</b>
3	2.3	4.0	10.6	<b>6.5</b>	<b>0.7</b>
4	1.4	2.1	3.3	7.1	<b>3.1</b>
5 (Topmost)	0.7	0.5	1.5	2.7	5.4
Upward Mobility			18.1		
Zero Mobility/Static			59.9		
Downward Mobility			22.1		

Source: Author's calculations; Note: Bold figures indicate upward movement;

Table 4

Table 4a: Transitional Matrix of *Isolated Wage* in India: 1993

<i>Quintile Group of Father</i>	<i>Quintile Group of Child</i>				
	(Lowest) 1	2	3	4	5 (Topmost)
(Lowest) 1	8.2	<b>4.3</b>	<b>2.4</b>	<b>2.4</b>	<b>0.8</b>
2	4.2	11.5	<b>5.7</b>	<b>2.0</b>	<b>0.6</b>
3	3.1	4.3	14.5	<b>3.5</b>	<b>0.6</b>
4	2.6	2.3	3.1	8.7	<b>3.5</b>
5 (Topmost)	1.8	1.2	0.8	1.8	5.9
Upward Mobility			25.9		
Zero Mobility/Static			48.8		
Downward Mobility			25.3		

Source: Author's calculations;

Note: Bold figures indicate upward movement;

**Table 4b: Transitional Matrix of *Isolated Wage* in India: 2009**

<i>Quintile Group of Father</i>	<i>Quintile Group of Child</i>				
	(Lowest) 1	2	3	4	5 (Topmost)
(Lowest) 1	8.0	<b>6.4</b>	<b>2.0</b>	<b>1.9</b>	<b>1.2</b>
2	2.7	12.1	<b>5.2</b>	<b>1.5</b>	<b>0.7</b>
3	1.4	3.6	13.5	<b>5.6</b>	<b>0.5</b>
4	1.2	1.8	3.0	11.4	<b>4.3</b>
5 (Topmost)	1.4	1.2	1.7	2.6	5.1
Upward Mobility			29.3		
Zero Mobility/Static			50.1		
Downward Mobility			20.6		

*Source:* Author's calculations; *Note:* Bold figures indicate upward movement;

Table 5

**Upward Wage Income Mobility in India: 1993-2009**

<i>Measures of Mobility</i>	<i>1993</i>	<i>2004</i>	<i>2009</i>
Absolute Mobility – Isolated Wage	25.0	23.1	22.5

*Source:* Author's calculations;

Table 6

**Measures of Upward absolute Wage Income Mobility in India**

<i>Social Group</i>	<i>1993</i>	<i>2004</i>	<i>2009</i>
ST	26.8	24.5	21.5
SC	26	22.9	24.6
OBC	na	22.9	22.9
GEN	24.3	23.4	20.3
All	25	23.1	22.5

*Source:* Author's calculations;

# **A Study on Wage Rates of Casual Labour with Emphasis on Examining Effects of Vocational Training**

- Chandrajit Chatterjee & Ambica Anand

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## **Introduction**

A majority of the population in India is employed in the unorganized sector. Out of the informal employment, it is well-known that a large section of the working population is employed as casual labour. The question of policy is to ensure better livelihood conditions for these masses. In India, there are several labour laws to ensure equity and better remuneration for workers engaged in the informal sector. However, the implementation of such policies is not necessarily in line with the policy objectives. A widely used dummy to measure the effect of such policies is the wages being earned by casual labour. It is thus worth examining whether workers engaged as casual labour are remunerated fairly and also to examine if there exist variations in wage rates by state, gender and sector (rural- urban areas). It may also be interesting to identify if there is any significant shift in the pattern of employment of casual labour in terms of their sector of employment (agriculture- manufacturing- services) and if there are any differences in wages being earned by the occupation categories in which labour are employed.

National Sample Survey Office (NSSO) conducts an extensive quinquennial survey on Employment- Unemployment collecting data on a large number of related parameters that could be used to examine the above issues. Accordingly, using 66<sup>th</sup> round Employment-Unemployment Survey (EUS) data, we conducted a study to obtain any possible evidence relating to the questions posed above. We have also tried to investigate from the data if existence of vocational training in any form for the casual labour is beneficial in terms of increasing their wages significantly.

## **Methodology and Tools used**

Using unit level data of NSS EUS 66<sup>th</sup> round, data for relevant parameters was culled out for all those individuals identified as 'casual labour' using principal activity status codes as '41' (*worked as casual wage labour in public works*) and '51' (*worked as casual wage labour in other types of work*). Estimates of daily wage rates (wages/ number of days worked as casual labour in a week) and number of persons at national and sub-national levels were worked out using multipliers posted along with the unit

level data. The data was imported in Excel for analysis and generation of final reports and charts.

SPSS was used for extraction of unit level data and merging of different blocks for drafting the final layout of the data. MS Excel was then used for generating pivot reports, tables, charts and for further analysis.

## **Results**

Out of a total estimated population of 1,02,05,13,583, the total number of estimated workers engaged in casual labour is 12,73,61,086, which is about 12.48% of the total. However considering the estimated workforce which is 38,18,02,614, the casual labour accounts for 33.36%, i.e. one-third of the total workforce is engaged in casual labour.

### National averages

The average estimated daily wage rate for the entire country is Rs. 99 which, when disaggregated gender-wise, gives average daily wage rates of Rs. 111 and Rs. 65 for male and female casual labour respectively. Casual labour without vocational training registers hardly any difference in average wage rate compared to their counterparts in the same category.

Now, we shall focus on comparing the wage rates by various parameters- such as, states, gender, rural-urban sectors within a state, by occupation categories, etc. at disaggregated levels for identifying disparities and finding reasons thereof. We shall also attempt to state the effects of vocational training in improving wages of casual labour, if any.

### Unskilled casual labour: an overview

For unskilled casual labour, i.e. casual labour without vocational training, highest average wage rates were recorded for Lakshadweep (Rs. 221), Kerala (Rs. 197) and Delhi (Rs. 179) while Chhattisgarh (Rs. 65), Madhya Pradesh (Rs. 66) and Orissa (Rs. 67) were found to have the lowest average wage rates.

In terms of concentration of casual labour, the states of Andhra Pradesh, Maharashtra, Uttar Pradesh, Tamil Nadu and Bihar accounted for about half of the total casual labour without vocational training but were found to have lower than national average wage rates (Rs. 98) except for Tamil Nadu which had a higher than average wage

rate of Rs. 116. Furthermore, other states having average wage rates less than the national average were Chhattisgarh, Madhya Pradesh, Orissa, Maharashtra, Bihar, Gujarat, Uttar Pradesh, Assam, West Bengal, Karnataka, Andhra Pradesh and Jharkhand.

This would imply that since states with high population of casual labour have lower wage rates than the national average, the states at the other extreme, such as Kerala and Delhi are driving the upward movement of all-India average wage rates, which could be because of their uniform implementation of wage rate and labour laws in public works.

#### Gender-wise inter-state comparison for casual labour

While examining the aggregates, it was noticed that there is no significant difference in wage rates between states compared between the two genders for casual labour irrespective of the fact whether they received vocational training or not.

Since the casual labour with no vocational training accounts for more than 88% of the total estimated casual labour and since there are no significant differences between the two groups with respect to our study variable, we will present the facts of comparison on the basis of casual labour who did not receive any vocational training only in this section.

While looking at the inter-state variations for casual labour who have received no vocational training, wide differences between male and female participation rates coupled with large variations between male and female average wage rates were noticed. Number of males engaged in casual labour varies from 1.24 times the number of females engaged (Andhra Pradesh) to about 26 times the corresponding figure (Jammu and Kashmir). In terms of wage rates, the highest difference between males and females for a state was found to be of the order of Rs. 131.5 in Lakshadweep (Rs. 227 for males and Rs. 95.5 for females) followed by Rs. 108.8 in Kerala (Rs. 218.6 for males and Rs. 109.8 for females). Some other states with wage differences higher than the national average were Pondicherry, Tamil Nadu, Haryana, Nagaland, Goa, Meghalaya and Karnataka. On the contrary, lowest differences were recorded for Manipur and Jammu & Kashmir.

As a one-off case, Delhi was observed to have recorded a higher average wage rate for females (Rs. 200) as compared to males (Rs. 178.4).

### Intra – state rural-urban comparison

Participation rate of casual labour in rural areas was significantly higher than in urban areas, except in the states of Chandigarh, Delhi and Mizoram. Average wage rates were found to be higher in urban areas uniformly, with the highest intra-state difference between urban and rural wage rates being recorded in Sikkim followed by Pondicherry, Andhra Pradesh and Maharashtra. Chandigarh and Delhi recorded an opposite trend where notwithstanding high urban participation of casual labour, the average wage rates for rural areas were more than those in urban areas.

Participation is higher in rural areas as compared to urban areas for male casual labour, the urban wage rates for the corresponding category being higher than those in rural areas uniformly. But, in case of females, the scenario is a little different. Though participation in urban areas is much less than in rural areas in most states, the average rural wage rates were observed to be higher than average urban wage rates, though marginally, in a few states, namely Goa, Haryana, J&K, Tripura and Jharkhand.

For female casual labours without vocational training, the dominance of participation in rural areas was evident with a larger gap of urban-rural wages reaching to the extent of Rs. 75 in Daman & Diu followed by Rs. 64 in Nagaland and Rs. 42.5 in Himachal Pradesh. However in the states of Goa, Haryana, Tripura, Jharkhand and Kerala, females without vocational training recorded a higher rural wage rate.

However, for males without vocational training, rural participation dominated as well except in Chandigarh and Mizoram. The urban-rural divide for males without vocational training in terms of wage rate was highly pronounced, with no state except Delhi recording rural wage rate anywhere near the urban wage rates, with the gap reaching an extent of Rs. 70 for Sikkim, Rs. 41 for Goa and Rs. 35 for Andhra Pradesh.

### Economy-sector wise comparison

The occupation categories of casual labours as identified from the 66th round EUS have been segregated into 3 sectors viz. ‘agriculture’ (consisting of agriculture, forestry, animal husbandry, mining etc.); ‘manufacturing’ and ‘services’ (including construction, trade, etc.). This has been done using NIC 2-digit level classification of industries in the following manner:

- NIC 2004 2 digit ‘01’ to ‘14’ defined as ‘agriculture’
- NIC 2004 2 digit ‘15’ to ‘36’ defined as ‘manufacturing’

- Remaining were classified in ‘services’

On the national level, about 64% of casual labour was engaged in agriculture, while only 30% were employed in services sector and about 6 % in manufacturing sector. The lowest wage rates were in agriculture (Rs. 78) and highest (Rs. 117) in services.

When we look at the rural-urban picture, services in rural area were found to fetch an average wage rate of Rs. 112 with about 21% of the total casual labour force. This is the category of casual labours that drive up the wage rates across all categories. Primarily the growth in this sector has been facilitated by rapid urbanization and thrust of the government for infrastructure creation using local resources. The category of construction workers is the major driver in the services sector. While 61% of total casual labour force is engaged in rural agriculture, average wage rate of Rs. 76 for this category of casual labour is paltry.

The male-female divide is extremely pronounced in all sectors with a difference of Rs. 33.5 in Agriculture and about Rs. 42 each in both the other sectors.

For casual labours with some sort of vocational training, the male-female gap increases in all sectors which implies that vocational skills are not recognized for casual labour from the point of view of gender parity.

For casual labour without vocational training as compared to all casual labour, male-female gap drops in manufacturing and services sector and remains more or less constant in case of agriculture sector. However due to presence of vocational training, there is significant increase in wage rates in manufacturing sector in rural areas (Rs. 100 to Rs. 153) and also in services sector in urban areas (Rs. 123 to Rs. 143).

#### Occupation wise comparison

Growth in services sector is primarily driven by higher wage rates (coupled with significant participation levels) in occupations such as “Mining and Construction labourers” (Rs. 114), “Building Frames and Related Trades Workers” (Rs. 160), “Transport labour and freight handlers” (Rs. 113), “Motor vehicle drivers” (Rs. 146).

There is a significant heaping of agriculture sector casual labour in the occupation category “Agriculture, Fishery and Related Labourers”, but is afflicted with extremely low average wages (Rs. 75).

There is not much difference in rural and urban distribution for casual labour by occupation categories. While further examining rural vs urban sector differences, it was noticed that in the rural sector, the top four categories with highest frequency cover about 90% of the total labour engaged, with the highest concentration of ~68% in “Agriculture, Fishery and Related Labourers”. This implies lack of options of occupations in the rural areas. The situation is worsened by the fact that the average wage rate for casual labour is a paltry Rs. 75.

The existence of vocational training has no significant effect on determination of wage rates. Vocational training has an effect only in the occupation categories “Building frame and Related Trades Workers” and “Textile Garments and Related Trades Workers” for the rural areas with an effective wage difference of Rs. 4 and Rs. 8 respectively.

The distribution of occupations is widely spread in urban areas unlike its rural counterpart. Though the primarily occupying categories remain the same as in rural areas due to the very nature of casual labour, the relative importance shifts scales of each of the categories. 18 occupation categories account for 90% engagement of total casual labour in urban areas.

There are marginal shifts in distribution of casual labour in case they have not attained any vocational training to “Mining and Construction Labourers” and “Painters, Building Structure Cleaners and Related Trades Workers”, the casualties happening from the categories “Building Frame and Related Trades Workers” and “Textile, Garment and Related Trades Workers”. For the category “Blacksmith, Tool Makers and Related Trades Workers”, there is a gap in wages of all casual labours and those with no vocational training of around Rs. 17 and for the category “Building Finishers and Related Trades Workers” the corresponding gap is Rs. 5. Otherwise there are no significant changes in the wage rates due to existence of vocational training.

## **Conclusion**

Observing the patterns emerging from the above analysis, there is evidence corroborating the known facts of gender and rural-urban disparities in wage rates of casual labour. It has been found that the single criterion of skill-imparting would not suffice to drive up the wage rates of casual labour. In fact, as per the study, the gap widens in terms of male-female and rural-urban divide in wage rates due to the gap in effectiveness of desired benefits from the intervention. Implementation of related policies

is equally important to carry forward any benefits that might be derived out of imparting vocational skills.

National average wage rate for females is clearly in violation of the Minimum Wages Act, 1948. A very interesting characteristic has been observed in the state of Kerala where there is a very high difference in male-female wage rates, which is contrary to the common belief of enforcement of social equity and gender equity in the state of Kerala. Highly agriculture based states of Tamil Nadu and Haryana also show a similar trend. Delhi, on the contrary, reports a higher female wage rate which is indicative of strong Centre-based law enforcement and gender sensitivity. Densely populated states, namely, Uttar Pradesh, Bihar, Orissa, West Bengal and Madhya Pradesh, which are historically known to lag behind the national averages, still fall behind the national average wage rates. This is due to the lack of political will in these states to enforce and ensure a better livelihood to a large section of the working population. The high dominance of rural participation in these states coupled with stagnant occupation categories, primarily in agriculture sector, has led to very low wages.

The effect of vocational training is noticeable for casual labour employed in manufacturing and services sector, especially in the urban areas, with higher wages being recorded even for the female casual labour in these sub-segments. Services sector is powered mainly by strong thrust in infrastructure sector by the government and private alike, especially in the urban areas with high growth and wages noticed in Building and Construction related works. This is a positive outlook since ultimately the informal employment, which is till date primarily agriculture based, will have to be replaced with skill-based employment in secondary and tertiary sectors, which will shift the large human capital locked up in low-yielding occupations towards providing better utility for the society apart from a secure livelihood to the casual workforce.

### Tables & Graphs

Table 1: Average wage rates (gender-wise) for all states for casual labour (overall) and casual labour with no vocational training

States/ sector	Average wage rates			
	Male	Female	Male with no vocational trng	Female with no vocational trng
<b>JAMMU &amp; KASHMIR</b>	<b>143.4</b>	<b>135.9</b>	<b>140.1</b>	<b>127.2</b>
rural	136.1	139.2	133.2	124.0
urban	154.3	134.5	150.5	128.6
<b>HIMACHAL PRADESH</b>	<b>109.8</b>	<b>84.7</b>	<b>106.5</b>	<b>80.7</b>
rural	107.8	69.4	104.9	68.8
urban	125.8	126.3	121.1	111.3
<b>PUNJAB</b>	<b>127.2</b>	<b>89.4</b>	<b>130.2</b>	<b>89.8</b>
rural	122.9	87.3	126.1	89.7
urban	135.8	94.3	138.2	90.1
<b>CHANDIGARH</b>	<b>136.4</b>	<b>91.3</b>	<b>128.9</b>	<b>99.8</b>
rural	132.5		132.5	
urban	137.0	91.3	128.2	99.8
<b>UTTARANCHAL</b>	<b>114.3</b>	<b>86.6</b>	<b>115.7</b>	<b>87.4</b>
rural	110.6	85.9	112.0	85.2
urban	123.6	87.5	124.7	91.2
<b>HARYANA</b>	<b>136.6</b>	<b>77.8</b>	<b>138.7</b>	<b>78.7</b>
rural	134.3	80.8	135.8	81.6
urban	141.1	70.5	145.1	71.8
<b>DELHI</b>	<b>171.3</b>	<b>200.0</b>	<b>178.4</b>	<b>200.0</b>
rural	196.7	200.0	196.7	200.0
urban	159.1		166.9	
<b>RAJASTHAN</b>	<b>123.7</b>	<b>80.1</b>	<b>123.6</b>	<b>81.1</b>
rural	119.6	78.2	118.8	78.2
urban	135.2	90.2	137.0	98.0
<b>UTTAR PRADESH</b>	<b>88.7</b>	<b>48.9</b>	<b>89.9</b>	<b>49.9</b>
rural	85.8	46.3	87.3	46.5
urban	96.6	58.5	97.3	64.0
<b>BIHAR</b>	<b>77.6</b>	<b>57.3</b>	<b>77.9</b>	<b>58.1</b>
rural	76.3	56.6	76.8	56.9
urban	83.7	61.7	83.3	65.7
<b>SIKKIM</b>	<b>114.7</b>	<b>71.2</b>	<b>112.5</b>	<b>71.2</b>
rural	112.0	71.2	109.7	71.2
urban	166.0		180.4	

States/ sector	Average wage rates			
	Male	Female	Male with no vocational trng	Female with no vocational trng
ARUNACHAL PRADESH	<b>101.8</b>	<b>82.2</b>	<b>104.8</b>	<b>86.6</b>
rural	99.5	78.6	105.0	83.5
urban	104.5	86.9	104.5	90.8
NAGALAND	<b>160.4</b>	<b>101.8</b>	<b>160.4</b>	<b>101.8</b>
rural	160.5	85.7	160.5	85.7
urban	160.0	150.0	160.0	150.0
MANIPUR	<b>103.7</b>	<b>92.7</b>	<b>104.1</b>	<b>91.4</b>
rural	101.9	90.7	102.7	88.7
urban	107.6	113.1	107.2	123.6
MIZORAM	<b>142.0</b>	<b>89.4</b>	<b>140.3</b>	<b>104.2</b>
rural	118.7	75.4	128.2	90.7
urban	150.4	96.0	144.2	108.7
TRIPURA	<b>107.8</b>	<b>91.8</b>	<b>108.0</b>	<b>90.9</b>
rural	105.3	92.5	105.4	91.9
urban	122.6	88.4	122.9	86.3
MEGHALAYA	<b>132.4</b>	<b>82.5</b>	<b>131.4</b>	<b>83.1</b>
rural	130.5	80.7	128.5	80.4
urban	139.5	89.9	142.5	95.1
ASSAM	<b>90.4</b>	<b>73.2</b>	<b>90.4</b>	<b>73.3</b>
rural	89.3	72.7	89.4	73.4
urban	98.3	76.6	98.0	72.5
WEST BENGAL	<b>88.5</b>	<b>59.2</b>	<b>89.9</b>	<b>64.2</b>
rural	86.2	58.6	87.6	61.8
urban	95.0	60.7	97.2	70.3
JHARKHAND	<b>100.8</b>	<b>68.0</b>	<b>101.3</b>	<b>68.3</b>
rural	99.5	69.1	100.3	69.5
urban	104.8	65.1	104.6	64.8
ORISSA	<b>74.8</b>	<b>41.7</b>	<b>75.6</b>	<b>42.0</b>
rural	70.8	36.9	71.5	36.9
urban	92.0	66.6	93.2	67.6
CHATTISGARH	<b>73.1</b>	<b>53.1</b>	<b>72.8</b>	<b>53.1</b>
rural	69.3	51.2	69.9	51.3
urban	84.7	61.8	81.7	62.0
MADHYA PRADESH	<b>71.3</b>	<b>49.8</b>	<b>72.4</b>	<b>50.2</b>
rural	68.0	45.7	69.2	46.2
urban	77.7	66.6	78.7	67.6

States/ sector	Average wage rates			
	Male	Female	Male with no vocational trng	Female with no vocational trng
GUJARAT	<b>99.4</b>	<b>63.1</b>	<b>94.2</b>	<b>62.5</b>
rural	90.0	62.7	86.8	61.7
urban	116.2	64.0	108.8	64.2
DAMAN & DIU	<b>110.3</b>	<b>101.9</b>	<b>106.8</b>	<b>104.5</b>
rural	110.3	96.2	108.7	96.2
urban	110.3	125.0	101.8	171.4
D & N HAVELI	<b>119.7</b>	<b>102.4</b>	<b>122.8</b>	<b>102.4</b>
rural	116.5	103.0	119.4	103.0
urban	146.4	100.0	146.4	100.0
MAHARASTRA	<b>91.5</b>	<b>47.3</b>	<b>90.6</b>	<b>47.6</b>
rural	83.3	46.3	83.0	46.5
urban	108.3	52.4	106.0	53.1
ANDHRA PRADESH	<b>116.0</b>	<b>70.1</b>	<b>115.9</b>	<b>70.8</b>
rural	107.3	68.1	107.3	68.8
urban	141.3	80.8	142.1	81.9
KARNATAKA	<b>108.9</b>	<b>60.9</b>	<b>107.2</b>	<b>60.1</b>
rural	102.6	58.0	101.7	57.5
urban	117.3	67.6	115.3	66.4
GOA	<b>154.5</b>	<b>99.3</b>	<b>151.6</b>	<b>99.3</b>
rural	135.8	109.4	127.5	109.4
urban	167.8	85.7	168.6	85.7
LAKSHADWEEP	<b>224.9</b>	<b>134.3</b>	<b>227.0</b>	<b>95.5</b>
rural	222.3	95.5	217.5	95.5
urban	227.4	173.0	234.8	
KERALA	<b>217.1</b>	<b>104.6</b>	<b>218.6</b>	<b>109.8</b>
rural	218.8	104.1	217.6	110.3
urban	214.4	105.8	220.2	108.9
TAMIL NADU	<b>143.2</b>	<b>70.1</b>	<b>143.3</b>	<b>71.0</b>
rural	138.9	69.2	138.6	69.5
urban	150.4	72.7	151.5	76.0
PONDICHERRY	<b>149.2</b>	<b>67.8</b>	<b>157.6</b>	<b>70.8</b>
rural	126.0	55.6	141.6	56.8
urban	168.7	91.5	171.0	96.0
A & N ISLANDS	<b>141.2</b>	<b>104.6</b>	<b>137.6</b>	<b>98.1</b>
rural	135.8	80.2	130.2	82.6
urban	154.6	133.9	153.8	117.4
<b>ALL INDIA</b>	<b>111.0</b>	<b>64.8</b>	<b>110.4</b>	<b>65.2</b>

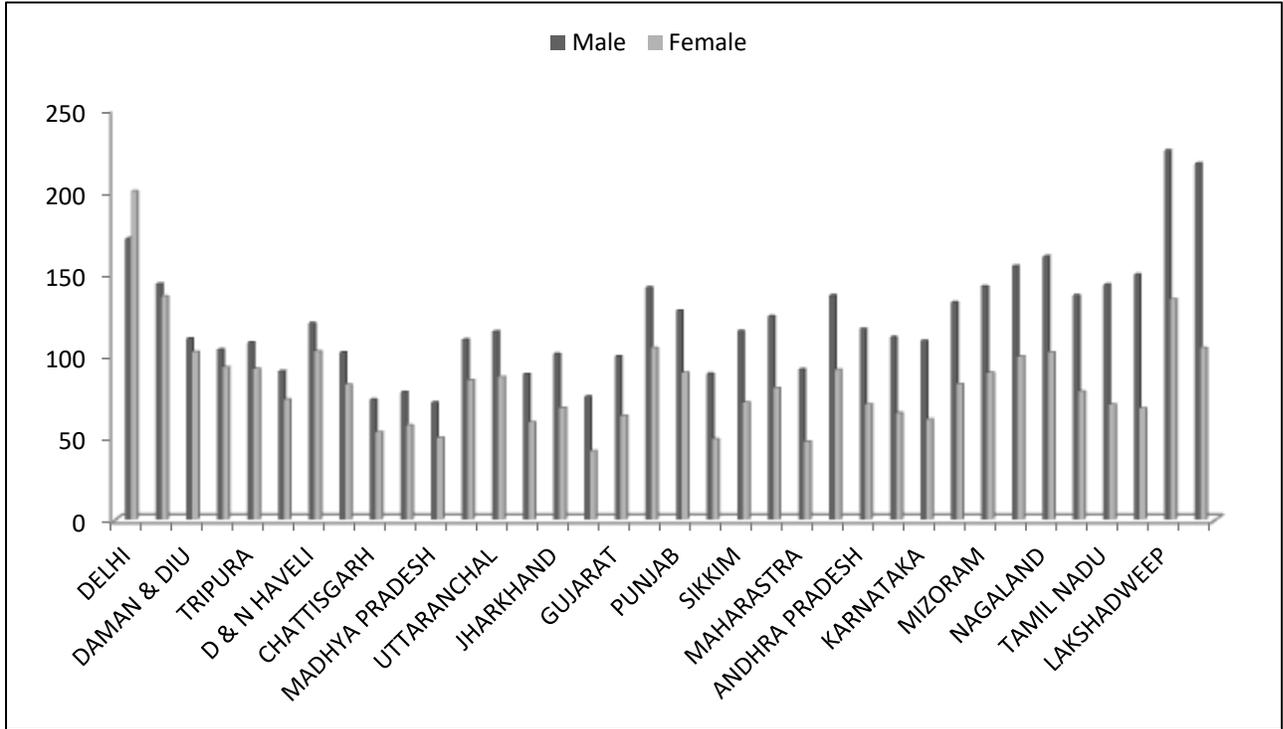
Table 2(a): Average wage rates (occupation-wise for few important occupations) for **rural** areas for casual labour (overall) and casual labour with no vocational training

<b>AGRICULTURE</b>		
<b>OCCUPATIONS</b>	<b>OVERALL</b>	<b>NO VOCATIONAL TRNG</b>
Agricultural, Fishery and Related Labourers	74.00	74.32
Subsistence Agricultural and Fishery Workers	72.25	72.57
Market Gardeners & Crop Growers	99.02	100.78
Fishery Workers, Hunters and Trappers	129.25	139.99
Forestry and Related Workers	122.11	118.85
Market –Oriented Animal Producers and Related Workers	70.16	77.26
<b>MANUFACTURING</b>		
<b>OCCUPATIONS</b>	<b>OVERALL</b>	<b>NO VOCATIONAL TRNG</b>
Manufacturing Labourers	96.02	96.84
Textile, Garment and Related Trades Workers	95.04	85.51
Building Frame and Related Trades Workers	146.50	123.69
Food Processing and Related Trades Workers	77.76	77.55
Transport Labourers and Freight Handlers	114.64	118.82
Metal Moulders, Welders, Sheet Metal Workers, Structural Metal Preparers and Related Trades Workers	142.85	132.68
Potters, Glass Makers and Related Trades Workers	90.32	93.62
Glass, Ceramics and Related Plant Operators	106.50	105.25
<b>SERVICES</b>		
<b>OCCUPATIONS</b>	<b>OVERALL</b>	<b>NO VOCATIONAL TRNG</b>
Mining and Construction Labourers	108.64	109.24
Painters, Building Structure Cleaners and Related Trades Workers	101.71	100.77
Building Frame and Related Trades Workers	154.28	152.63
Transport Labourers and Freight Handlers	109.74	110.11
Motor Vehicle Drivers	146.88	146.43
Building Finishers and Related Trades Workers	141.84	139.30
Domestic and Related Helpers, Cleaners and Launderers	73.12	80.48
House Keeping and Restaurant Services Workers	125.29	128.18
Shop Salespersons and Demonstrators	111.87	113.57

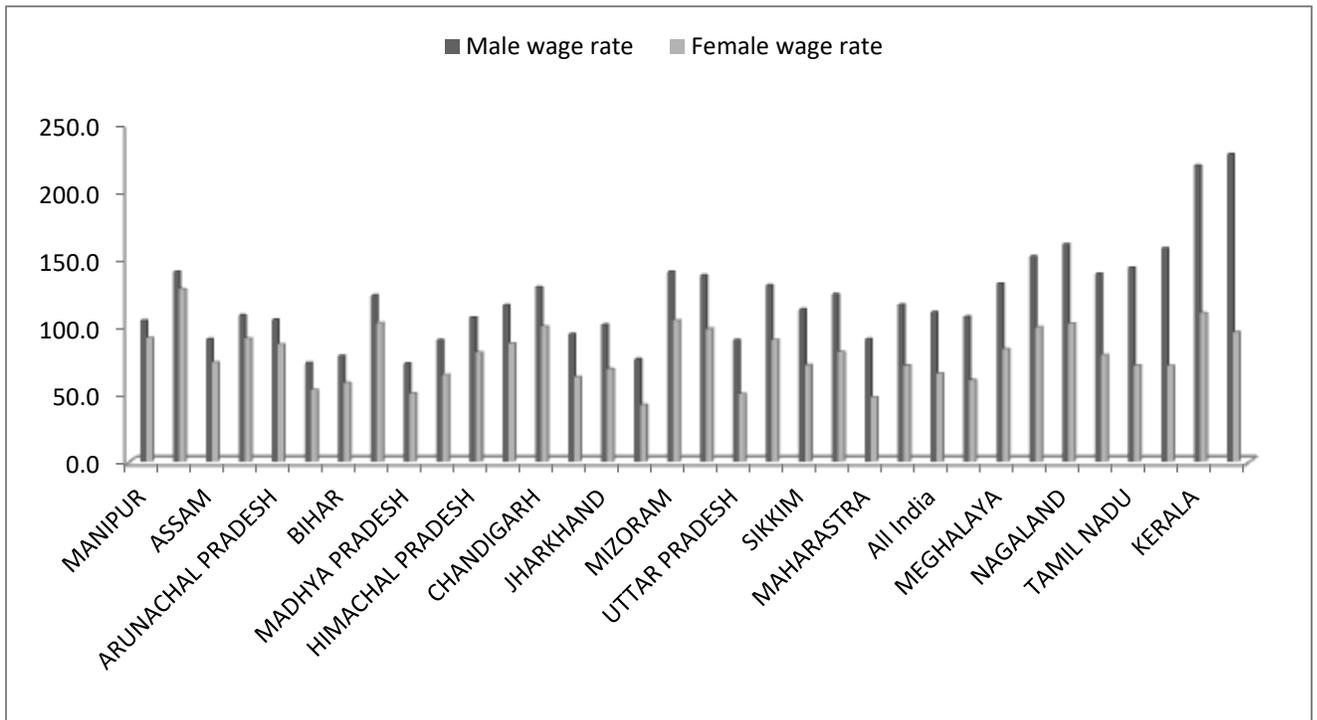
Table 2(b): Average wage rates (occupation-wise for few important occupations) for **urban** areas for casual labour (overall) and casual labour with no vocational training

<b>AGRICULTURE</b>		
<b>OCCUPATIONS</b>	<b>OVERALL</b>	<b>NO VOCATIONAL TRNG</b>
Agricultural, Fishery and Related Labourers	85.31	86.61
Fishery Workers, Hunters and Trappers	182.73	169.62
Forestry and Related Workers	146.14	155.13
Market Gardeners & Crop Growers	118.05	112.63
Subsistence Agricultural and Fishery Workers	77.69	89.00
Market –Oriented Animal Producers and Related Workers	79.11	79.11
<b>MANUFACTURING</b>		
<b>OCCUPATIONS</b>	<b>OVERALL</b>	<b>NO VOCATIONAL TRNG</b>
Manufacturing Labourers	93.90	92.91
Textile, Garment and Related Trades Workers	91.06	93.31
Metal Moulders, Welders, Sheet Metal Workers, Structural Metal Preparers and Related Trades Workers	123.26	126.96
Building Frame and Related Trades Workers	153.61	157.86
Food Processing and Related Trades Workers	74.51	70.10
Transport Labourers and Freight Handlers	114.51	106.62
Potters, Glass Makers and Related Trades Workers	106.19	105.24
Wood Treaters, Cabinet Makers and Related Trades Workers	108.04	107.02
Pelt, Leather and Shoe Making Trades Workers	90.85	93.11
<b>SERVICES</b>		
<b>OCCUPATIONS</b>	<b>OVERALL</b>	<b>NO VOCATIONAL TRNG</b>
Mining and Construction Labourers	128.26	127.65
Painters, Building Structure Cleaners and Related Trades Workers	127.42	125.50
Building Frame and Related Trades Workers	168.53	166.85
Transport Labourers and Freight Handlers	116.74	117.14
Domestic and Related Helpers, Cleaners and Launderers	68.47	69.50
Motor Vehicle Drivers	143.50	140.23
Building Finishers and Related Trades Workers	159.66	151.94
Shop Salespersons and Demonstrators	108.08	107.32
House Keeping and Restaurant Services Workers	105.47	107.33

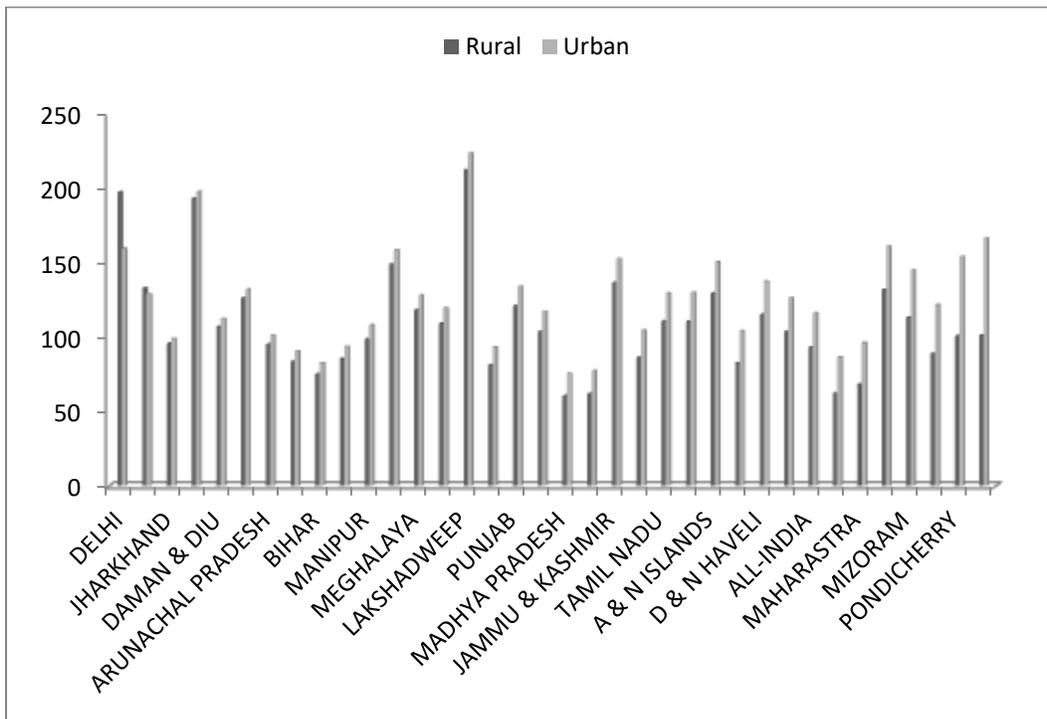
Graph 1: Gender-wise wage rate comparison for casual labour for all states



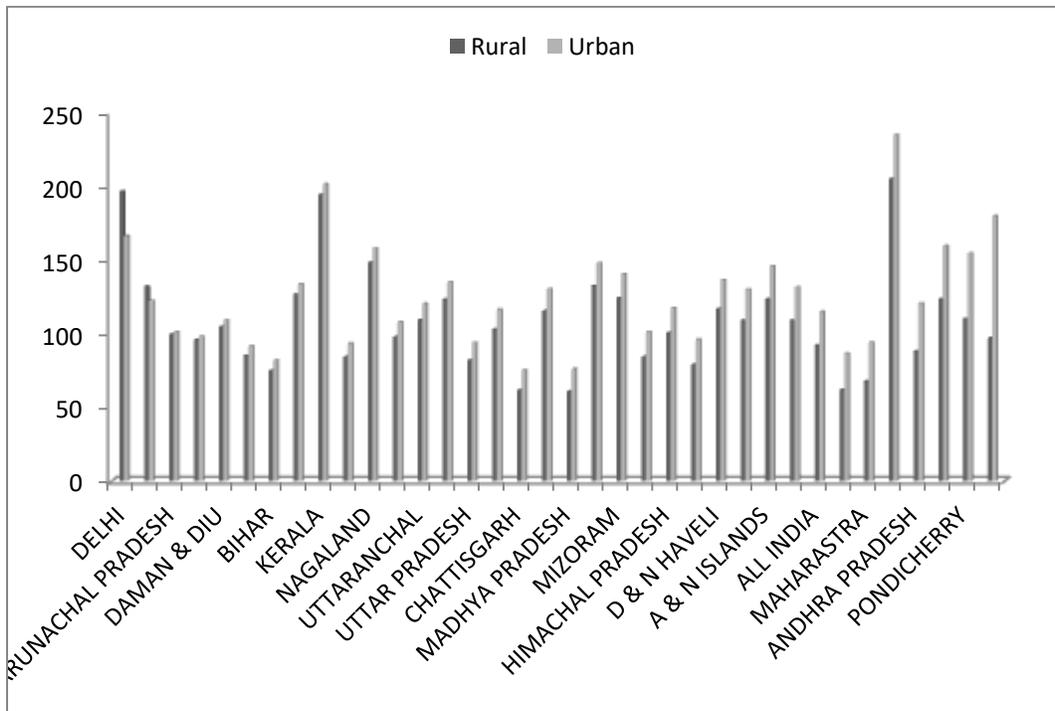
Graph 2: Gender-wise wage rate comparison for all states for casual labour with no vocational training



Graph 3: Sector-wise wage rate comparison for casual labour for all states



Graph 4: Sector-wise wage rate comparison for all states for casual labour with no vocational training



# Infrastructure, Wellbeing and Marginalization in Rural India

Sourav Chakraborty<sup>1</sup>, Ajay Bakshi<sup>2</sup> and A.K.Verma<sup>3</sup>

## ABSTRACT

Any development analysis generally gives a lot of importance on poverty reduction and ignores the idea of ‘capability deprivation’ owing to lack of data and thus stick to only ‘instruments’ rather than the ‘process’ itself. The poverty of a household does not only depend upon its income but it also depends upon its capability to develop suitable functioning’s and infrastructure, both physical and soft, plays a vital role in it. Another important factor in poverty reduction programme is the generation and availability of decent works. The earning of a person depends on the types of work he/she is performing and infrastructure plays a crucial role in the choice. This choice may vary among different strata of the population and it is particularly true for the marginalized classes in developing countries. They may have little access to the infrastructures and thus may be deprived of living a decent life.

In this paper we have tried to identify the relationship between poverty, employment and infrastructure among different social groups in rural India. First we identify some core facilities (infrastructures) which are available in villages and then develop a ‘village facility index’ to get an idea of their level of availability. The villages are then categorized based on this index and employment profile for each category of villages is discussed. Finally expenditure pattern of households belonging to different types of villages is analysed to get an idea of wellbeing of marginal classes in rural India.

**Key words:** Wellbeing, Infrastructures, Social Groups, Village facility Index, Level of living

## 1. INTRODUCTION

Any development analysis generally gives lot of importance on poverty reduction and we invariably finish our journey in analysing some basic indicators like ‘head count ratio’ or ‘gross domestic product’ or ‘per capita consumption expenditure’. Generally we ignore the idea of ‘capability deprivation’ owing to lack of data and thus stick to only ‘instruments’ rather than the ‘process’ itself. The poverty of a household does not only depend upon its income but it also depends upon its capability to develop suitable functioning’s which in turn will increase the household’s possibilities of earning a sustainable income. To develop the functioning of an individual, environment plays a vital role. Environment here not only

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includes unpolluted air, but it also includes availability of basic facilities like health care system, educational institutions, financial institutions, sustainable roads, electricity etc; and the role of infrastructure in reduction of poverty is well established.

Public policy reforms and investment in physical infrastructure significantly contributes to the pursuit of socially inclusive development. Two schools of thought emerged in the 1990s regarding physical infrastructure and poverty reduction. On the one hand, great importance was attached to physical infrastructure in the poverty reduction efforts of developing countries; on the other hand, many in the international development community viewed assistance for infrastructure with considerable skepticism on three grounds (Masika and Baden, 1997). First, though important for economic growth, infrastructure investment had little relevance to poverty reduction. Second, actual benefits from infrastructure were significantly less than anticipated. Third, weak governance and institutions gave way to corruption, distorted public investment choices, and neglected maintenance, thereby lowering infrastructure's contribution to economic growth and diverting benefits intended for the poor. Nevertheless, there is now wider recognition, including in the international donor community, that if governance and institutional frameworks are strengthened, the linkage between infrastructure and reduction of poverty can become stronger.

And it is more important in developing countries where a large section of population lives in rural area without sufficient access to basic facilities as compared to their urban counterpart. The relationship between poverty, infrastructure and employment was studied by different authors and donor agencies at different point of time and they identified the positive role of infrastructure on generation of employment and reduction of poverty. Ifzal and Ernesto (2003) observed that poverty reduction requires economic growth which, when accompanied by sound macroeconomic management and good governance, results in sustainable and socially inclusive development. Also it was observed that greater access of the poor to education and health services, water and sanitation, employment, credit, and markets for produce is needed. Moreover, the vulnerability of the poor to economic shocks and natural disasters must be reduced to enhance their well-being and encourage investment in human capital and in higher-risk and higher-return activities.

The term 'infrastructure' can be broadly classified as 'physical infrastructure' and 'soft infrastructure'. While by 'physical infrastructure' we mean those infrastructures which are tangible, 'soft infrastructure' generally signifies the intangible one. For example while an 'all weather road' is a 'physical infrastructure', availability of 'health facility' is a 'soft infrastructure'. Although the role of infrastructure in poverty reduction is well established, its influence is not a linear one. It's often problematic to get a direct causal relationship between them. While a good infrastructure stimulates growth and therefore enhance the chance of a person to become a non-poor following relative definition of poverty; the growth itself can be used as an impetus of infrastructural development. And this circular relationship quintessentially exists in all developing economies. Another important factor in poverty reduction programme is the generation and availability of decent works. A household can escape the spider of poverty if and only if it earns sufficiently to sustain in long run. The relative concept of poverty, giving sole emphasis only on earnings, often misses the long run perspectives.

There is no denial that income plays an important role in poverty reduction, but it is not the only factor. The earning of a person depends on the types of work she/he is performing and the type of work a person has depends upon the environment in which she/he develop her/his different functioning's which are suitable to get a decent work. In developing economies, a considerable portion of rural workforce works either in agriculture sector or works as self-employed. The choice that a person would make among different available alternatives depends upon her/his capabilities to work. The infrastructures, both physical and soft, influence this choice process.

In India, information on the availability of various infrastructural facilities in the villages used to be collected by the National Sample Survey Office (NSSO), more or less regularly in the past. During the NSS 47th round (July-December 1991), the main subject of which was 'Disability and Culture', a detailed survey on the facilities available to the villages was conducted. Similar information on village facilities was also collected along with the listing operations during the 52nd round (1995-96). During its 58th round (July-December 2002), NSSO undertook the collection of information on village facilities. The enquiry also included the collection of information on availability of facilities to the disabled persons in the sample villages. From the survey results of NSS, the role of infrastructure on poverty reduction and general level of wellbeing is re-emphasized. The other indicator for availability of infrastructural facilities in villages is the distance of the villages from those places where these facilities are available. For example, suppose every student of a village has to travel 15 km to attain primary school. Then, although the primary school facility is available to the villagers, but practically this facility may not be availed by the students, specially girls, because of this distance. Thus data on distances of various facilities in a village is very important to study the wellbeing of its inhabitants.

Mohanan and Chakraborty (2008) examined the extent to which the four criteria viz. access to improved water, access to improved sanitation, sufficient living area and structural quality; are met by the Indian households during NSS 58<sup>th</sup> round. The results show that the rural areas need an urgent boost up in infrastructural development to decrease further inequalities in terms of living and wellbeing. Chakraborty, Baksi and Verma (2012) indentified the relationship between infrastructure, employment opportunities and level of living in rural India using NSS 66<sup>th</sup> round data. They showed that at all India level, the villagers of a village with 'good' or 'very good' infrastructure has a better chance to live a more decent life than their counterparts who lives in villages with either 'poor' or 'marginally good' infrastructures and they concluded that the better facility (infrastructure wise) one gets, the better one earns and lives.

In this paper we have extended our earlier work a little further. First we have tried to indentify the linkages between the available village facilities in a state with the growth of that state represented by respective 'state domestic product' and discuss the role of growth in infrastructural development. Secondly, we have tried to identify the status of rural households belonging to different social groups in respect of the facilities they are availing and tried to identify whether there exists any clustering among social groups' vis-à-vis infrastructural facilities in rural areas. To do this we have extended our study on 20 bigger states. Here we have defined a bigger state as that state where the total number of surveyed second stage units (households) in rural area was 1000 or more. Although for states like Arunachal Pradesh,

Manipur, Tripura the total number of surveyed second stage stratum was more than 1000 but we had ignored them in this state level comparative analysis keeping in view of their size and composition compared to other bigger states. We have also tried to identify whether there exists any regional differences on infrastructural development.

The methodology described here can be replicated for any developing economy. At first we have identified some core infrastructures which are generally available in villages of India and develop a 'basic infrastructure index' to get an idea of the level of infrastructural development in each village. The villages are then categorized based on the index and employment profiles for each category of villages are presented for bigger states. Finally expenditure pattern of households among different categories of villages are analysed to find whether there exists any inequality among the households residing in different categories (facility wise) of villages in these 20 bigger states. The detailed methodology is described in Section 2 whereas Section 3 discusses about the data which we have used in our analysis. Analysis and findings of the study is presented in Section 4 and some concluding remarks are made at Section 5.

## **2. PROPOSED METHODOLOGY**

The objective of this study was to find out whether there exists any relationship between infrastructure, employment opportunities and level of living in rural sector. The infrastructure, both physical and soft, being a primary vehicle of development has the capacity to increase the functional capabilities of individuals and therefore, it enhances their chance of living a quality life. It is true that in developing countries, a person in rural area can not choose to remain unemployed because of financial constraints of their families. And therefore the incidence of child labours and underemployment is also very high in these areas. But a person equipped with better functionality, can expect to get a decent work in comparison to a person without it.

To be equipped with better functionality which may suit the labour market, a person needs some basic facilities like education and health from the very beginning of her/his life. A person with feeble health and without basic education has a lower chance of getting a decent work which is essential to meet the needs of her/his family. To be able to access the basic education and existing health facilities, a family at the same time needs the presence of some physical and financial infrastructural facilities like mettaled roads, basic sanitation, electricity, fair price shop, co-operative banks etc. in their locality or in close proximity of their locality. Thus there exists a simultaneous relationship between all types of these basic facilities and one cannot solely influence the other; but they all influence each other and make the relationship an interesting one.

In this analysis, as our interest rests on villages and villagers of India, we broadly identified four 'core facilities' which a villager must have to equip themselves with better functionality. These 'core facilities' are (A) health facility, (B) education facility, (C) financial facility and (D) physical infrastructure facility. The first three relates with 'soft infrastructure' while the last one is 'physical infrastructure'. The composition of each of these 'core facilities' is as follows:

(A) Medical facility includes

1. Health sub-centre/dispensary
2. Primary health centre
3. Community health centre
4. Government hospital
5. ICDS
6. Private clinic/doctor
7. Medicine shop

(B) Education facility includes

1. Schools having primary level classes
2. Schools having secondary level classes
3. Higher secondary school / junior college

(C) Financial facility includes

1. Fair price shop
2. Cooperative credit society
3. Commercial bank
4. Agricultural produce market / rural primary market
5. Fertilizer / pesticide shop

(D) Physical infrastructure facility includes

1. Metalled road
2. Electricity connection
3. Type of drainage arrangement

Based on these core facilities, first we have assessed the relative position of each village in India and to do this, we develop 'village facility index' for each village. Firstly we have assigned a score for each sub-facility and then convert them to 'normalized score' to obtain their relative position. Based on this normalized scores, we have obtained an 'average score' for each core facility. Keeping in mind the different nature and importance of each core facility, we have assigned separate weight to them and compute 'village facilities index' of a village as a weighted mean of 'average scores' of core facilities with respect to that village.

Let us define,

$s_{ijk t}$  = score of the  $j^{\text{th}}$  sub facilities among  $i^{\text{th}}$  core facility in  $k^{\text{th}}$  village having  $t^{\text{th}}$  condition  
 $i = 1, 2, \dots, I; j = 1, 2, \dots, J, k = 1, 2, \dots, K, t = 1, 2, \dots, T_j$

$S_{ij}$  = set of all possible scores of  $j^{\text{th}}$  sub-facility among  $i^{\text{th}}$  core facility =  $\{s_{ijt}; t = 1, 2, \dots, T_j\}$

The 'normalized score' of  $j^{\text{th}}$  sub-facility among  $i^{\text{th}}$  core facility in  $k^{\text{th}}$  village is

$$\delta_{ijk} = \frac{s_{ijkt} - \min_{t \in S_{ij}} \{s_{ijkt}\}}{\max_{t \in S_i} \{s_{ijkt}\} - \min_{j \in S_{ij}} \{s_{ijkt}\}}; 0 \leq \delta_{ijk} \leq 1 \forall i = 1, 2, \dots, I; j = i, 2, \dots, J$$

And the average score of  $i^{\text{th}}$  core facility for  $k^{\text{th}}$  village will be  $d_{ik} = \frac{\sum_{j=1}^J \delta_{ijk}}{J}$

Defining,  $w_i$  = weight of ' $i^{\text{th}}$ ' core facility with  $\sum_{i=1}^I w_i = 1$  ; for  $k^{\text{th}}$  village, we will get

'village facilities index' as  $V_k = \sum_{i=1}^I w_i d_{ik}$

Naturally higher values of index indicate the better facility of that village. Next based on the values of village facility index, we have identified each village into any of the four categories as follows:

**Table 1: State of facilities in a village based on 'Village facility index'**

$V_k$	State of facilities
0.0 – 0.20	Poor
0.20 – 0.50	Marginally Good
0.50 – 0.80	Good
0.80 – 1.0	Very good

Here we have to choose the weights keeping in mind the relative importance of core facilities. To enhance the functionality of an individual, the importance of basic health and education is unquestionable. Also if India needs to meet several Millennium Development Goals by 2015, no one can argue the importance of basic health and education in its rural heartland and the same is true for all developing economies. In our analysis we have used the following simple weighting diagram for 'core facilities':

**Table 2: Weights for each 'core facility'**

w	value
weight for medical facility ( $w_1$ )	0.3
weight for education facility ( $w_2$ )	0.3
weight for financial facility ( $w_3$ )	0.2
weight for physical infrastructure facility ( $w_4$ )	0.2

These weights can also be derived from the data directly i.e. one can use principal component analysis or cluster analysis and derive the weights. The subjective weights we have used may not be same as the data driven weights. We have used the subjective weights keeping in mind the relative importance of health, education in developing economies. Also the data driven weights will change as and when new data set will be used and therefore one particular set of weights cannot be used directly for comparison over different time periods.

To obtain the ‘village facility index’ we have used different scores for each of sub-facilities as described in Table 3. Here also we have used simple linear scoring and gave the maximum score to the best alternatives. One can also use some other types of data driven scores using techniques like Likert’s scale. However once one uses data driven score, one cannot use the same score over two different time points unless one assumes that the underlying trait distribution is stationary. Since this assumption is of more restrictive nature, use of data driven score is not considered here.

**Table 3: Score structure of each facility**

Core facility	Sub-facility	Description of codes	Scores
Medical facilities	Health sub-centre/dispensary, Primary health centre, Community health centre, Government hospital, ICDS, Private clinic/doctor, Medicine shop	within village	3
		outside village: less than 5 kms	2
		5 kms or more	1
Education facility	Schools having primary level classes, Schools having secondary level classes, Higher secondary school / junior college	within village	3
		outside village: less than 5 kms	2
Financial facility	Fair price shop, Cooperative credit society, Commercial bank, Agricultural produce market / rural primary market, Fertilizer / pesticide shop	within village	3
		outside village: less than 5 kms	2
Physical infrastructure facility	Metalled road	5 kms or more	1
		yes: (percentage of households connected) : $P \geq 50\%$	4
		yes: (percentage of households connected) : $25\% \leq P < 50\%$	3
	Electricity connection	yes: (percentage of households connected) : $P < 25\%$	2
		no	1
		underground	5
		covered pucca	4
Type of drainage arrangement	open pucca	3	
	open katcha	2	
	no drainage	1	

### 3. THE DATA

The 66th round survey of NSSO in India was earmarked for survey on 'Household Consumer Expenditure' and 'Employment and Unemployment'. The survey was held during July 2009 to June 2010. The area coverage of the survey was whole of the Indian Union except (i) interior villages of Nagaland situated beyond five kms of the bus route and (ii) villages in Andaman and Nicobar Islands which remain inaccessible throughout the year. A stratified multi-stage design had been adopted in the 66th round survey. The first stage units (FSU) were the 2001 census villages (Panchayat wards in case of Kerala) in the rural sector and Urban Frame Survey (UFS) blocks in the urban sector. In addition, two non-UFS towns of Leh and Kargil of Jammu & Kashmir were also treated as FSUs in the urban sector. The ultimate stage units (USU) were households in both the sectors. In case of large FSUs, one intermediate stage of sampling was the selection of two hamlet-groups (hgs)/ sub-blocks (sbs) from each rural/ urban FSU.

Within each district of a State/UT, two basic strata were formed viz. i) rural stratum comprising all rural areas of the district and (ii) urban stratum comprising all urban areas of the district. Each rural stratum was divided into two sub-strata viz. sub-stratum 1: all villages with proportion of child workers ( $p$ )  $> 2P$  (where  $P$  is the average proportion of child workers for the State/UT as per Census 2001) and sub-stratum 2: remaining villages. Within each sector of a State/UT, the sample size was allocated to different strata/sub-strata in proportion to population as per Census 2001. Allocations at stratum/sub-stratum level were adjusted to multiples of 4 with a minimum sample size of 4 and equal-sized samples were allocated to the four sub-rounds.

For the rural sector, from each stratum/sub-stratum, the required numbers of sample villages were selected by probability proportional to size with replacement (PPSWR), size being the population of the village as per Census 2001. Having determined the area(s) to be considered for listing, the next step was to list all the households (including those found through local enquires to be temporarily locked). Households listed in the selected FSU/hamlet-group in rural areas were next stratified into three second stage strata (SSS) as per specific stratification rule (GoI, 2011). From each SSS the sample households for each of the schedules were selected by SRSWOR. The survey period of one year was divided in to four sub-rounds of three months' duration each starting from July 2009 – September 2009. In each of these four sub-rounds, equal number of sample villages/ blocks (FSUs) was allotted for survey with a view to ensure uniform spread of sample FSUs over the entire survey period.

During this round, three schedules of enquiry were canvassed by NSSO enumerators. These schedules were (i) Schedule 0.0: list of households, (ii) Schedule 1.0: consumer expenditure and (iii) Schedule 10: employment and unemployment. In schedule 0.0 an attempt was made to collect information on the availability of some specific facilities like communication, educational institutions, health institutions, banks, credit societies, drainage, participation in NREG works etc. in rural FSUs (villages). If a facility was available in general to the residents of a village, it was considered as a facility. The required information was obtained by contacting the village officials and/ or other knowledgeable person(s) and in case of their non-awareness, the relevant information was collected from the nearest Block Development Officer or other related government agencies.

In our analysis, from the surveyed data we have identified the above discussed four core facilities and related sub-facilities. Only those villages were considered where information was available for all the facilities. For a particular village if there was any item specific non-response in any of the facilities, the information on that village was altogether dropped. Thus we consider only those villages for which information for all facilities were available. Therefore while in this survey 7320 number of villages was surveyed, our analysis has used data of 7301 sample villages only. Using proper multiplier, we then derived all the estimates. Also we have considered only those bigger states where the number of second stage units (households) in rural area was 1000 or more. Further we have categorized these 20 bigger states on basis of their geographical regions (Table 4) as follows:

**Table 4: Categorization of States on basis of geographical regions**

Sl. No.	Name of the zone	Name of the States
1	North	Punjab, Haryana, Himachal Pradesh, Uttaranchal, Jammu and Kashmir
2	Central	Madhya Pradesh, Chhattisgarh, Uttar Pradesh
3	West	Gujarat, Rajasthan, Maharashtra
4	East and North East	Assam, Bihar, Jharkhand, West Bengal, Odisha
5	South	Tamil Nadu, Karnataka, Kerala, Andhra Pradesh

#### 4. ANALYSIS AND FINDINGS

We have first compute the ‘village facility index’ for each village in India to assess the existing ‘state of facilities’ there. Table 5 shows the percentage distribution of villages in 20 bigger states of India categorized by existing ‘state of facilities’. The table gives an interesting picture. While at all India level, only 8.7 percent villages are facility wise ‘poor’, which is a good sign of development; the fact that as big as 64 percent of villages have only ‘marginally good’ facilities is very alarming. Extending the argument little further, if we add ‘poor’ facility with ‘marginally good’ facility, we find that the existing facilities are not even ‘good’ for almost 73 percent of villages in India. And the lack of infrastructure development on these villages is bound to hurt the development of its inhabitants and India as a whole.

**Table 5: Percentage distribution of villages based on ‘state of facilities’ during 2009-10**

State/UT	Poor	Marginally Good	Good	Very Good
<b>North Zone</b>				
Punjab	0.0	26.6	68.4	4.9
Haryana	0.0	33.3	62.8	4.0
Himachal Pradesh	4.2	69.0	26.7	0.1
Uttaranchal	12.6	70.1	16.9	0.3
Jammu & Kashmir	4.5	61.3	34.2	0.1
<b>Central Zone</b>				
Madhya Pradesh	6.1	89.2	4.4	0.3
Chhattisgarh	14.3	55.5	28.2	2.1
Uttar Pradesh	3.1	57.0	38.5	1.4
<b>West Zone</b>				
Gujarat	2.1	65.3	30.3	2.3
Rajasthan	6.5	65.9	25.3	2.3
Maharashtra	10.5	47.8	38.3	3.5
<b>East and North-East Zone</b>				
Assam	21.2	62.9	15.7	0.2
Bihar	18.8	58.9	21.7	0.6
Jharkhand	24.1	59.4	16.1	0.3
Odisha	16.7	65.1	17.5	0.8
West Bengal	5.5	61.6	31.8	1.1
<b>South Zone</b>				
Andhra Pradesh	10.5	57.7	28.0	3.8
Karnataka	0.6	62.6	33.7	3.2
Kerala	0.3	23.5	73.7	2.6
Tamil Nadu	0.9	46.4	49.4	3.4
<b>all-India</b>	<b>8.7</b>	<b>64.0</b>	<b>25.8</b>	<b>1.5</b>

Source: Authors’ calculation based on NSS data

If one considers the situation in the bigger states, one can see that the poorly facilitated villages are mainly concentrated in East and North-East zone as compared to other zones and if one adds poorly facilitated villages with marginally good facilitated villages, the relative position of states does not alters.

In market driven economy, State domestic product in general and per capita state domestic products in particular is generally used as a parameter of economic development. Lots of literature suggests that higher growth is a must for better development. And it is assumed that a better growth percolates its benefit in the form of better infrastructural development. Therefore it is natural to believe that the states in higher growth trajectory have a better rural infrastructure. To test this hypothesis we rank these 20 bigger states with respect to their ‘state domestic products’ and ‘village facility index’ during 2009-10 in such a way that the best state gets the rank 1. Table 6 shows the relative position of bigger states on basis of state domestic products and village facility index.

**Table 6: Per capita SDP and VFI in bigger States during 2009-10**

State/UT	Per capita SDP in Rs. (2004-05 prices)	Rank based on Per capita SDP	Village facility Index	Rank based on Village facility Index
<b>North Zone</b>				
Punjab	42752	8	0.58	1
Haryana	55229	1	0.56	3
Himachal Pradesh	43305	7	0.41	13
Uttaranchal	44636	6	0.37	15
Jammu & Kashmir	26518	12	0.43	10
<b>Central Zone</b>				
Madhya Pradesh	21029	17	0.35	18
Chhattisgarh	24690	13	0.41	14
Uttar Pradesh	16390	19	0.46	5
<b>West Zone</b>				
Gujarat	48511	3	0.44	7
Rajasthan	24166	15	0.42	12
Maharashtra	54166	2	0.45	6
<b>East and North-East Zone</b>				
Assam	20193	18	0.34	19
Bihar	10773	20	0.37	16
Jharkhand	21534	16	0.31	20
Odisha	24275	14	0.37	17
West Bengal	29798	11	0.44	8
<b>South Zone</b>				
Andhra Pradesh	37061	10	0.43	11
Karnataka	37297	9	0.44	9
Kerala	45908	5	0.57	2
Tamil Nadu	46886	4	0.52	4
<b>all-India</b>	<b>33843*</b>	<b>--</b>	<b>0.41</b>	<b>--</b>

Note: \*: Net National Income

Source: Central Statistics Office and Authors' calculation based on NSS data

From Table 6, we computed the Spearman's and Kendal-Tau's rank correlation coefficient to see whether there exist any relationship between per capita state domestic product and status of village facilities. Although the comparison would be more appropriate if one can consider the 'district domestic product' instead of 'state domestic product', but unfortunately no data on 'district domestic product' is available and therefore we restrict our analysis on the basis of 'state domestic product' only. The above computed values of Spearman's and Kendal-Tau's rank correlation are 0.644 and 0.474 respectively. The result shows that there exist a positive correlation between per capita state domestic product and status of village facilities. But the relationship may not be one way rather it is a two way relationship. A better rural infrastructure is an impetus for better investment which in turn assures a better growth; at the same time a better growth in turn is quintessential for better

rural infrastructural development. Also Kendal-Tau's rank correlation suggests that there might be some other factors which influence the both.

Generally in developing countries it is observed that there is a tendency that people with lesser fortune, both in terms of income and social position, stays in the lesser developed areas. To get an idea of it we compute the distribution of households of these villages by their social status and religion. Here we prepare two sets of tables in each case. In the first set, we identify the households by the facility index of their respective villages and then cross tabulate the households according to their social class. Table 7 shows the 'percentage distribution of households among different social groups categorized by facilities in the villages' in India.

Table 7 shows that there really exists some alarming feature. While only 13 percent of schedule tribes households are staying in a village which can be considered facility wise 'good' or 'very good', it is true for 57 percent households who belongs to 'general' category. It seems that there exists a clustering within the social groups and the backward classes seems to stay in a lesser developed villages. To get an idea about the relationship between religious groups and social groups vis-à-vis the village facility in bigger states; we present the status of zone-wise best and worst states, based on village facility index, in respect 'percentage distribution of households among different social groups categorized by facilities in the villages' in the sequel of Tables 7a, and 7b.

Like Table 7, Tables 7a and 7b shows a clear clustering among households belonging to schedules tribes or schedule castes who inhabit in poorly facilitated villages irrespective of the relative status of states. This situation is more pronounced in Maharashtra, Rajasthan, Jharkhand, and Andhra Pradesh. For example, in Andhra Pradesh, out of 100 persons residing in poorly facilitated villages, 77 are either schedule tribes or schedule castes. In case of Jharkhand, 73 percent of people staying in poorly facilitated villages are either schedule tribes or schedule castes.

**Table 7: Percentage distribution of households among different social groups by state of facilities in villages of India during 2009-10**

State of facilities	Schedule Tribes	Schedule Castes	Other backward classes	General	Total
Poor	35	16	30	18	100
Marginally good	14	22	43	22	100
Good	7	22	44	27	100
Very good	6	21	42	30	100
<b>All</b>	<b>11</b>	<b>22</b>	<b>43</b>	<b>25</b>	<b>100</b>

Source: Authors' calculation based on NSS data

**Table 7a: Percentage distribution of households among different social groups by state of facilities in villages of 'best states' during 2009-10**

State of facilities	Schedule Tribes	Schedule Castes	Other backward classes	General	Total
<b>North Zone</b>			<b>Punjab</b>		
Poor	0	0	0	0	--
Marginally good	0	46	15	38	100
Good	1	42	14	43	100
Very good	0	50	13	38	100
<b>All</b>	<b>0</b>	<b>44</b>	<b>14</b>	<b>42</b>	<b>100</b>
<b>Central Zone</b>			<b>Uttar Pradesh</b>		
Poor	1	11	74	14	100
Marginally good	0	27	53	20	100
Good	1	26	52	21	100
Very good	0	26	54	20	100
<b>All</b>	<b>0</b>	<b>26</b>	<b>53</b>	<b>20</b>	<b>100</b>
<b>West Zone</b>			<b>Maharashtra</b>		
Poor	42	0	57	2	100
Marginally good	21	14	33	32	100
Good	9	16	39	36	100
Very good	6	19	42	33	100
<b>All</b>	<b>13</b>	<b>16</b>	<b>38</b>	<b>34</b>	<b>100</b>
<b>East and North-East Zone</b>			<b>West Bengal</b>		
Poor	4	28	13	54	100
Marginally good	8	34	7	50	100
Good	6	26	6	62	100
Very good	4	27	5	64	100
<b>All</b>	<b>7</b>	<b>30</b>	<b>7</b>	<b>57</b>	<b>100</b>
<b>South Zone</b>			<b>Kerala</b>		
Poor	0	0	64	36	100
Marginally good	4	15	55	25	100
Good	2	11	58	29	100
Very good	0	1	85	14	100
<b>All</b>	<b>2</b>	<b>12</b>	<b>58</b>	<b>28</b>	<b>100</b>

Source: Authors' calculation based on NSS data

**Table 7b: Percentage distribution of households among different social groups by state of facilities in villages of 'worst states' during 2009-10**

State of facilities	Schedule Tribes	Schedule Castes	Other backward classes	General	Total
<b>North Zone</b>			<b>Uttaranchal</b>		
Poor	0	33	3	64	100
Marginally good	4	24	5	67	100
Good	9	17	25	49	100
Very good	8	17	5	70	100
<b>All</b>	<b>6</b>	<b>21</b>	<b>14</b>	<b>59</b>	<b>100</b>
<b>Central Zone</b>			<b>Madhya Pradesh</b>		
Poor	53	15	23	9	100

**Table 7b: Percentage distribution of households among different social groups by state of facilities in villages of ‘worst states’ during 2009-10**

State of facilities	Schedule Tribes	Schedule Castes	Other backward classes	General	Total
Marginally good	28	20	39	13	100
Good	17	27	42	14	100
Very good	13	20	46	22	100
<b>All</b>	<b>27</b>	<b>21</b>	<b>38</b>	<b>13</b>	<b>100</b>
<b>West Zone</b>					<b>Rajasthan</b>
Poor	38	5	49	8	100
Marginally good	20	21	49	10	100
Good	14	21	51	14	100
Very good	8	22	38	32	100
<b>All</b>	<b>17</b>	<b>21</b>	<b>48</b>	<b>14</b>	<b>100</b>
<b>East and North-East Zone</b>					<b>Jharkhand</b>
Poor	62	11	21	6	100
Marginally good	32	19	43	6	100
Good	25	20	39	17	100
Very good	12	8	67	13	100
<b>All</b>	<b>33</b>	<b>18</b>	<b>39</b>	<b>10</b>	<b>100</b>
<b>South Zone</b>					<b>Andhra Pradesh</b>
Poor	47	30	6	17	100
Marginally good	10	22	52	16	100
Good	6	21	51	22	100
Very good	1	24	41	34	100
<b>All</b>	<b>7</b>	<b>22</b>	<b>49</b>	<b>22</b>	<b>100</b>

Source: Authors’ calculation based on NSS data

To get an idea of this clustering more clearly, in the second set, we have identified the households by their social groups and then cross tabulate them on basis of the facility indices of their respective villages. Table 8 shows the ‘percentage distribution of households having a particular type of village facilities categorized by different social groups’.

**Table 8: Percentage distribution of households having a particular type of village facilities by different social groups in villages of India during 2009-10**

State of facilities	Schedule Tribes	Schedule Castes	Other backward classes	General	Total
Poor	13	3	3	3	4
Marginally good	54	43	43	38	43
Good	27	45	45	49	44
Very good	5	8	8	10	8
<b>All</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

Source: Authors’ calculation based on NSS data

As in Table 7, Table 8 clearly indicates a clustering among deprived social groups to stay in facility-wise more disadvantaged condition. It shows that while only 3 percent of SC/OBC/general households were staying in a ‘poor facility’ village during 2009-10, the same is true for 13 percent of ST households, which is more than 3 times of SC/OBC/general

households. Further it shows that 67 percent of schedule tribes' households were staying in villages with either 'poor' facility or 'marginally good' facility whereas the same was 46 percent for SC and OBC and 41 percent for households belonging to 'general' category. Only a minuscule of 5 percent schedule tribes' households were staying in villages with 'very good' facility in comparison to 10 percent 'general' households.

To get an idea about the relationship between social groups vis-à-vis the village facility in bigger states; we represent the status of zone-wise best and worst states, based on village facility index, in respect of 'percentage distribution of households having a particular type of village facilities categorized by different social groups' in the sequel of Tables 9a and 9b. Like Table 8, Tables 9a and 9b show a clustering among deprived social groups to stay in facility-wise more disadvantaged condition true in the bigger states irrespective of zone and their village facility-wise relative opulence. For example in Maharashtra, 55 percent of schedule tribes' households were staying in villages where the facility was either 'poor' or 'marginally good' whereas the same was only 29 percent for 'general' households. In Jharkhand, only 1 percent schedule tribes' households were staying in villages with 'very good' facility in comparison to 74 percent who were staying in villages with either 'poor' or 'marginally poor' facility.

**Table 9a: Percentage distribution of households having a particular type of village facilities by different social groups in villages of 'best states' during 2009-10**

State of facilities	Schedule Tribes	Schedule Castes	Other backward classes	General	Total
<b>North Zone</b>					<b>Punjab</b>
Poor	0	0	0	0	0
Marginally good	0	17	18	15	16
Good	100	68	71	73	71
Very good	0	15	11	12	13
<b>All</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>Central Zone</b>					<b>Uttar Pradesh</b>
Poor	4	1	2	1	2
Marginally good	23	45	44	43	44
Good	71	49	49	51	49
Very good	2	5	5	5	5
<b>All</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>West Zone</b>					<b>Maharashtra</b>
Poor	3	0	1	0	1
Marginally good	52	27	27	29	31
Good	37	51	53	53	50
Very good	8	22	19	17	17
<b>All</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>East and North-East Zone</b>					<b>West Bengal</b>
Poor	2	3	7	3	3
Marginally good	59	54	51	42	47
Good	36	38	39	48	44
Very good	3	4	3	5	4
<b>All</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

**Table 9a: Percentage distribution of households having a particular type of village facilities by different social groups in villages of 'best states' during 2009-10**

State of facilities	Schedule Tribes	Schedule Castes	Other backward classes	General	Total
<b>South Zone</b>					<b>Kerala</b>
Poor	0	0	0	0	0
Marginally good	45	29	22	20	23
Good	55	71	74	78	74
Very good	0	0	4	1	3
<b>All</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

Source: Authors' calculation based on NSS data

**Table 9b: Percentage distribution of households having a particular type of village facilities by different social groups in villages of 'worst states' during 2009-10**

State of facilities	Schedule Tribes	Schedule Castes	Other backward classes	General	Total
<b>North Zone</b>					<b>Uttaranchal</b>
Poor	0	8	1	6	5
Marginally good	29	51	17	52	45
Good	66	38	81	38	46
Very good	5	3	1	4	4
<b>All</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>Central Zone</b>					<b>Madhya Pradesh</b>
Poor	14	5	4	5	7
Marginally good	60	55	60	58	59
Good	15	30	26	26	24
Very good	2	5	6	9	5
<b>All</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>West Zone</b>					<b>Rajasthan</b>
Poor	9	1	4	2	4
Marginally good	54	46	46	32	46
Good	31	38	39	36	37
Very good	6	13	10	29	13
<b>All</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>East and North-East Zone</b>					<b>Jharkhand</b>
Poor	25	8	7	8	13
Marginally good	49	54	56	33	51
Good	25	36	33	55	33
Very good	1	1	3	2	2
<b>All</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>South Zone</b>					<b>Andhra Pradesh</b>
Poor	11	2	0	1	2
Marginally good	49	35	38	25	35
Good	35	42	46	45	44
Very good	4	20	16	29	19
<b>All</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

Source: Authors' calculation based on NSS data

These two sets of tables are indicating that there does exist a clustering among social groups and backward classes and they are more prone to stay in facility-wise backward regions. The agenda of so called ‘inclusive growth’ seems to defy its very basic objective and benefit of the growth is not distributed judiciously across the social fabric. And because of this lesser infrastructural development, the inhabitants of these villages are lagging behind in living a decent life. The hindrance of getting basic facilities is making them more vulnerable in the job market and in the process a great amount of human resources are either not used at all or get wasted. These set of tables also indicates social exclusions of schedule tribes’ households in rural India due to which they might be forced to stay in a more clustered way in a more disadvantaged condition.

Next we considered the employment opportunities that villagers in India can ascertain and tried to assess that whether there was any relationship between infrastructures (measured by village facility index) of a village with employment scenario among inhabitants of that village during 2009-10. To do this we categorize the villages on basis of state of facilities and computed labour force participation rate (LFPR) and work force participation rate (WPR) based on current weekly status. The LFPR is defined as the ratio between the number of persons in the labour force and population; while WPR is defined as the ratio between number of workers and the population.

Table 10 shows an interesting trend. LFPR, being an indicator of employment opportunities, was very high for the villagers having ‘very good’ facilities but it is comparably low for the villagers having ‘poor’ facilities. The difference was in tune of 3.5 percent, which is quite alarming keeping in view the total rural population of the country. Had there been a proper infrastructural development, there might be a higher participation in the labour force. Thus one can infer that during 2009-10, at least 3.5 percent of rural population was missing the employment opportunities because of lesser infrastructural development on their villages. The trend is also same if we consider WPR. Here also at least 3 percent rural population was denied of getting a job because of lesser infrastructural development.

**Table 10: Employment opportunities and Standard of livelihood among inhabitants of villages in India during 2009-10**

State of facilities	LFPR	WPR	Avg. MPCE (URP)
Poor	37.51	36.80	683.39
Marginally good	39.35	38.17	839.30
Good	39.53	38.08	1008.53
Very good	41.02	39.56	1084.91
<b>All</b>	<b>39.39</b>	<b>38.08</b>	<b>927.70</b>

Source: Authors’ calculation based on NSS data

To ascertain the relationship between the infrastructural development and the level of living of the villagers in India, we also computed the average monthly per capita expenditure (MPCE) of the households belonging to each category of villages using uniform reference period. Table 10 indicates that while a typical household living in a village with ‘poor’ facilities could make an expenditure in tune of Rs 683 per month, the same was Rs 1085 for a typical household having ‘very good’ facilities in its village during 2009-10. This shows a

sign of inequality as it can be surmise that a household in a village having 'very good' facility could actually spent 1.5 times more than a household staying in a village with 'poor' facilities.

## 5. CONCLUDING REMARKS

The analysis indicates the existence of relationship between growth of a state, infrastructure of its villages and level of living of its inhabitants. It also indicates that the relationship is not one dimensional. The growth is essential for infrastructural development and at the same time a better infrastructure is an impetus for sustainable investment. The analysis also shows that the villagers of a village with 'good' or 'very good' infrastructure has a better chance to live a more decent life than their counterparts who lives in villages with either 'poor' or 'marginally good' infrastructures. The better facility (infrastructure wise) one gets, the better one earns and lives. The gap between poorly facilitated villagers and the villagers having very good facilities is of considerable amount in some cases.

Among different social groups, the analysis indicates that the schedule tribes and schedule castes are more deprived than others and the level of deprivation among socially disadvantaged people is alarming. This certainly hints towards the formation of special types of clustering among poorly facilitated villages and indicates a form of social exclusion too. The results show that there exists economic inequality among households living in villages with different facilities. A household living in a village having 'very good' facility could actually spent 1.5 times more than a household staying in a village with 'poor' facilities during 2009-10. At all India level LFPR is found to be very high for the villagers having 'very good' facilities in comparison to villagers having 'poor' facilities and it may indicate the existence of a relationship between infrastructure and job opportunities. And as indicated by the analysis, socially disadvantaged people tend to stay in poorly facilitated villages and therefore they remained more exposed of living in a more non-decent way than their counter parts. A detailed state level analysis in this direction will be very interesting. Also this methodology can be replicated using data from different NSS rounds to assess the impact of liberalization and trickledown effect of growth in rural India.

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# Employment growth in India at disaggregated level

Asis Ray and Salil Kumar Mukhopadhyay\*

## 1. Introduction

1.1 The results of the employment and unemployment survey of NSS 66<sup>th</sup> round show very little growth in employment (only 2.3 million) between NSS 61<sup>st</sup> round (July 2004 – June 2005) and NSS 66<sup>th</sup> round (July 2009 – June 2010) as against the massive growth in employment (60 million) between NSS 55<sup>th</sup> round (July 1999 – June 2000) and NSS 61<sup>st</sup> round. The survey results of NSSO give a picture of all time highest employment growth in 61<sup>st</sup> round and all time lowest employment growth in 66<sup>th</sup> round. This incident has evoked reactions from many social scientists. Many have even raised doubts on the quality of data of NSS 66<sup>th</sup> round. In view of addressing some of the reactions made by the social scientists, here an attempt has been made to study the growth in employment between 61<sup>st</sup> round and 66<sup>th</sup> round and that between 55<sup>th</sup> round and 61<sup>st</sup> round, at a disaggregated level in terms of *status in employment (self-employed, regular wage/salaried, and casual labour)* and *Industry of work (primary, secondary, and tertiary)* for persons of different *age groups (15-24 years, 15 years and above, all ages)*. The study highlights that employment growth for males between 61<sup>st</sup> round and 66<sup>th</sup> round was substantial and there was significant growth in paid employment during this period, even though overall employment growth in this period was very low. The study observes that the major contributor for high growth in employment in 61<sup>st</sup> round as well as that for very low growth in employment in 66<sup>th</sup> round was self-employment of females and more specifically, the *unpaid employment of rural females in the primary sector*. Between 55<sup>th</sup> round and 61<sup>st</sup> round, growth rate in real wage of casual labour decreased and a large number of males and females joined in the workforce in the capacity of *self-employment* but between 61<sup>st</sup> round and 66<sup>th</sup> round when growth rate in real wage of casual labour increased, many of the males shifted from self-employment to casual labour employment while females and children withdrew themselves from workforce. Study of long term growth in employment in this paper also confirms that the survey results of neither NSS 61<sup>st</sup> round nor 66<sup>th</sup> round are outlier.

1.2 A person will be termed as ‘worker in ps’ (or ‘principal status worker’), if the person belonged to the labour force for the major time during last 365 days and within that period in the labour force, major time was spent in work activity. A person will be termed as ‘worker in ss’ (or ‘subsidiary status worker’), if the person was not ‘worker in ps’ but did some work activity for 30 days or more during last 365 days. A person will be termed as ‘worker in ps+ss’ (or ‘worker in usual status (ps+ss)'), if the person was either ‘worker in ps’ or ‘worker in ss’. If nothing is mentioned specifically, the term employment will refer to number of workers in the usual status (ps+ss). In the present study, estimates of workers at the all-India level have only been considered.

1.3 The estimates of workforce obtained from employment and unemployment surveys of NSSO have been adjusted to the census projected population. For getting number of persons employed corresponding to any round of NSSO, the workforce participation rate (WPR) obtained from NSS surveys have been multiplied by the census projected population corresponding to the mid-point of the survey period of that round.

## 2 Credibility of the results of NSS 61<sup>st</sup> round and NSS 66<sup>th</sup> round

2.1 Table 1 shows number of workers in the usual status (ps+ss) in 55<sup>th</sup> round, 61<sup>st</sup> round and 66<sup>th</sup> round. Out of 1093.0 million population of India as on 1.1.05 (mid period of NSS 61<sup>st</sup> round survey), 457.9 millions were employed and out of 1176.7 million population of India as on 1.1.10 (mid period of NSS 66<sup>th</sup> round survey), 460.2 millions were employed. Growth in employment between 55<sup>th</sup> round and 61<sup>st</sup> round was 60 million whereas between 61<sup>st</sup> round

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Views expressed here are their personal views.

and 66<sup>th</sup> round, it was only 2.3 million. In view of this contrast in employment growth observed in 61<sup>st</sup> round and 66<sup>th</sup> round, we first attempt to see whether results of any of 61<sup>st</sup> round or 66<sup>th</sup> round is not trustworthy.

category of persons	NSS Round		
	55 <sup>th</sup>	61 <sup>st</sup>	66 <sup>th</sup>
rural males	198.6	218.9	232.3
rural females	105.7	124.0	104.8
urban males	75.4	90.4	100.2
urban females	18.2	24.6	22.9
<b>all</b>	<b>397.9</b>	<b>457.9</b>	<b>460.2</b>

round and 66<sup>th</sup> round is lower than that between 43<sup>rd</sup> round and 55<sup>th</sup> round but is higher than that between 32<sup>nd</sup> round and 43<sup>rd</sup> round. Therefore, long term growth in employment including results of both NSS 61<sup>st</sup> round and NSS 66<sup>th</sup> round, does not show much deviation from the usual trend in employment growth obtained from NSS surveys over a long period. Though long term growth in employment does not show much irregularity, lower growth in employment after 1999 as compared to that during 1987 to 1999 is not in the line with the high rate of GDP growth in India after 1999. It may be due to the fact that growth in GDP in India is more in the service sector where labour productivity is very high whereas majority of the workers in India, particularly in rural areas, are engaged in agricultural sector where growth in GDP is much lower as compared to the service sector.

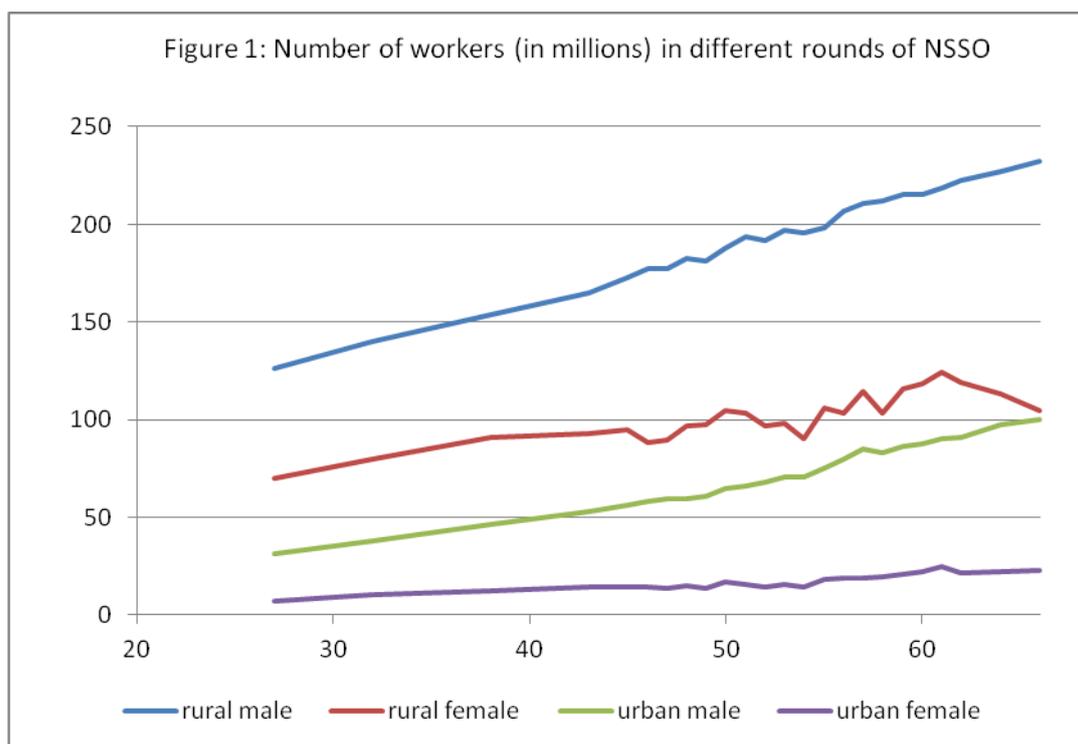
2.2 Table 2 gives number of workers according to the usual status (ps+ss) for the quinquennial rounds in an interval of 10 years. Between 32<sup>nd</sup> round and 43<sup>rd</sup> round, growth in employment was 56.6 million. Growth in employment between 43<sup>rd</sup> round and 55<sup>th</sup> round was 73.0 million and it was 62.3 million between 55<sup>th</sup> round and 66<sup>th</sup> round. Growth in employment between 55<sup>th</sup>

NSS Round	no. of workers
32 (July 1977 - June 1978)	268.3
43 (July 1987 - June 1988)	324.9
55 (July 1999 - June 2000)	397.9
66 (July 2009 - June 2010)	460.2

2.3 From NSS 45<sup>th</sup> round to 59<sup>th</sup> round, excluding the quinquennial rounds, information on activity status of persons according to the usual principal status (ps), usual status (ps+ss) was collected through Consumer Expenditure Schedule of NSSO (Schedule 1.0) by adopting same concepts and definitions followed in the Employment and Unemployment surveys of NSSO. In NSS 60<sup>th</sup>, 62<sup>nd</sup> and 64<sup>th</sup> rounds, a separate employment-unemployment schedule was canvassed which was designed in the line of the employment-unemployment schedule of the quinquennial rounds. In these rounds, number of households selected within a first stage unit (fsu) was less as compared to the quinquennial rounds. Table 3 shows that starting from 27<sup>th</sup> round, employment of males, both in rural and urban areas, has increased steadily till 66<sup>th</sup> round but reduction in employment of females (i.e., withdrawal of females from employment), particularly for rural females, has taken place in several occasions. From 105.7 million female workers in rural areas in 55<sup>th</sup> round, the number reached to the level of 124.0 million in 61<sup>st</sup> round through consistent growth in 57<sup>th</sup> round (114.6 million), 59<sup>th</sup> round (115.7 million) and 60<sup>th</sup> round (118.3 million). After 61<sup>st</sup> round, number of female workers in rural areas started declining – from 124.0 million in 61<sup>st</sup> round to 118.9 million in 62<sup>nd</sup> round, 113.4 million in 64<sup>th</sup> round and 104.8 million in 66<sup>th</sup> round. From 18.2 million of female workers in urban areas in 55<sup>th</sup> round, the number reached to the level of 24.6 million in 61<sup>st</sup> round through consistent growth over 56<sup>th</sup> to 60<sup>th</sup> rounds and thereafter, it was in between 21.7 million to 22.9 million between 62<sup>nd</sup> round and 66<sup>th</sup> round. Therefore, survey results of NSSO show that reduction in employment of females happened in 66<sup>th</sup> round, as compared to that of 61<sup>st</sup> round, was not a sudden event. The high employment growth of 61<sup>st</sup> round and very low employment growth of 66<sup>th</sup> round was indicated by the results of the surveys in between these quinquennial surveys. Figure 1 shows the trend in employment in India for persons of different categories as obtained from 27<sup>th</sup> round to 66<sup>th</sup> round of NSSO. Consistent change in employment growth for different categories of persons over the surveys of NSSO, since 27<sup>th</sup> round, therefore, indicate that results of neither 61<sup>st</sup> round nor 66<sup>th</sup> round can be treated as outlier.

NSS round	survey period	WPR (ps+ss)				number of workers (in millions)			
		rural male	rural female	urban male	urban female	rural male	rural female	urban male	urban female
27*	( October 1972 - September 1973)	545	318	501	134	126.5	70.0	31.3	7.2
32*	(July1977-June78)	552	331	508	125	140.1	79.8	38.2	10.2
38*	1983	547	340	512	151	153.9	90.7	46.7	12.1
43*	(July1987-June88)	539	323	506	152	164.8	93.1	52.9	14.1
45	July 89 – June, 90	548	319	512	146	173.0	94.9	56.4	14.3
46	(July1990-June91)	553	292	513	143	177.4	88.2	58.0	14.4
47	July-Dec,1991	546	294	516	132	177.1	89.8	59.4	13.5
48	Jan – Dec, 1992	556	313	507	146	182.8	96.9	59.7	15.3
49	Jan-June 1993	545	311	509	130	181.4	97.4	61.1	13.9
50*	(July1993-June94)	553	328	521	155	187.7	104.7	64.6	17.2
51	July94-June95	560	317	519	136	193.5	103.1	66.3	15.6
52	(July'95-June'96)	551	295	525	124	192.0	96.8	68.0	14.4
53	(Jan-Dec.'97)	550	291	521	131	196.8	98.2	70.5	15.9
54	(Jan-June'98)	539	263	509	114	195.5	90.0	70.4	14.2
55*	(July'99-June'00)	531	299	518	139	198.6	105.7	75.4	18.2
56	(July'00-June'01)	544	287	531	140	207.1	103.3	79.6	18.9
57	(July'01-June'02)	546	314	553	139	210.7	114.6	84.9	19.2
58	(July - Dec'02)	546	281	534	140	212.1	103.2	83.0	19.6
59	(Jan - Dec'03)	547	311	541	146	215.2	115.7	86.1	20.9
60	(Jan. - June'04)	542	315	540	150	215.3	118.3	87.4	21.9
61*	(July'2004-June'05)	546	327	549	166	218.9	124.0	90.4	24.6
62	(July'2005-June'06)	549	310	540	143	222.7	118.9	91.0	21.7
64	(July,2007-June,08)	548	289	554	138	227.4	113.4	97.6	21.9
66*	(July'2009-June'10)	547	261	543	138	232.3	104.8	100.2	22.9

\*: *Quinquennial surveys of NSSO on Employment and Unemployment.*



### 3 Employment growth at disaggregated level

**3.1 Growth in employment for different categories of persons:** Table 4 shows growth in employment in the usual status (ps+ss) between two quinquennial rounds. Growth in

NSS round	employment growth (in millions)				
	rural male	rural female	urban male	urban female	all
32	13.6	9.8	6.9	3.0	33.3
38	13.8	10.9	8.5	1.9	35.1
43	10.9	2.4	6.2	2.0	21.5
50	22.9	11.6	11.7	3.1	49.3
55	10.9	1.0	10.8	1.0	23.7
61	20.3	18.3	15.0	6.4	60.0
66	13.4	-19.2	9.8	-1.7	2.3

employment between 27<sup>th</sup> round and 32<sup>nd</sup> round is shown against 32<sup>nd</sup> round and similarly growth in any round with respect to the previous quinquennial round is shown against that round. Table 4 shows that all time highest growth in employment occurred in 61<sup>st</sup> round and all time lowest growth in employment occurred in 66<sup>th</sup> round. Employment growth for rural males in 66<sup>th</sup> round was in the same order as that of the other quinquennial rounds, excepting 50<sup>th</sup> round and 61<sup>st</sup> round where growth was

very high. Growth in employment for urban males in 66<sup>th</sup> round was also in the same order as that of the other quinquennial rounds, excepting 61<sup>st</sup> round where it was very high. Employment growth for rural females shows ups and downs over the rounds and it was very high in 61<sup>st</sup> round as compared to the other rounds. Employment growth for urban females in 61<sup>st</sup> round was also much higher as compared to the other rounds. Whatever be the dimension of growth in employment for females in different rounds, the employment growth over a period of 5 years never turned out to be negative excepting the 66<sup>th</sup> round. Between 61<sup>st</sup> round and 66<sup>th</sup> round, size of employment of rural females and urban females were reduced by about 19.2 million and about 1.7 million, respectively. Even after huge growth in employment between 55<sup>th</sup> round and 61<sup>st</sup> round, there was sizeable growth in employment for males (23.2 million) between 61<sup>st</sup> round and 66<sup>th</sup> round, but huge reduction in the size of employment of females (reduced by 20.9 million) resulted into negligible growth in overall employment (2.3 million) between 61<sup>st</sup> round and 66<sup>th</sup> round.

**3.2 Growth in Employment in ps+ss, ps and ss:** Table 5 shows that out of total growth of 60.0 million workers in (ps+ss) between 55<sup>th</sup> round and 61<sup>st</sup> round, contribution for workers in ps was 48.3 million and that for workers in ss was 11.7 million. Between 61<sup>st</sup> round and 66<sup>th</sup>

category of persons	employment growth (in millions)					
	between 55 <sup>th</sup> and 61 <sup>st</sup>			between 61 <sup>st</sup> and 66 <sup>th</sup>		
	ps+ss	ps	ss	ps+ss	ps	ss
rural male	20.3	19.2	1.1	13.4	13.6	-0.2
rural female	18.3	10.0	8.3	-19.2	-10.6	-8.6
urban male	15.0	14.4	0.6	9.8	10.3	-0.5
urban female	6.4	4.7	1.7	-1.7	-0.2	-1.5
<b>all</b>	<b>60.0</b>	<b>48.3</b>	<b>11.7</b>	<b>2.3</b>	<b>13.1</b>	<b>-10.8</b>

round, growth in principal status employment was about 13.1 million but subsidiary status employment was reduced by 10.8 million. Contribution of subsidiary status workers in the total volume of employment is very small (less than 10% of principal status workers) but out of the shortfall of 57.7 million in the employment growth between

61<sup>st</sup> round and 66<sup>th</sup> round as compared to that of between 55<sup>th</sup> round and 61<sup>st</sup> round, contribution of subsidiary status workers was about 22.5 million (nearly 40 percent). Henceforth, shortfall in employment growth between 61<sup>st</sup> round and 66<sup>th</sup> round as compared to that between 55<sup>th</sup> round and 61<sup>st</sup> round may sometimes simply be referred to as shortfall in employment growth of 66<sup>th</sup> round.

3.2.1 Shortfall in the employment growth of 66<sup>th</sup> round happened for all categories of persons. In the shortfall of 57.7 million in the employment growth of 66<sup>th</sup> round, contribution for rural males, rural females, urban males and urban females were 6.9 million, 37.5 million, 5.2 million and 8.1 million, respectively. Share of rural males, rural females, urban males and urban females in the workforce are about 50 percent, 23 percent, 22 percent and 5 percent, respectively, but their share in shortfall of employment growth of 66<sup>th</sup> round are nearly 12 percent, 65 percent, 9 percent and 14 percent, respectively. About 73 percent of workers are in the rural areas but the contribution of rural areas in the shortfall is about 77 percent i.e., factors influencing shortfall in employment growth has more or less equal impact among persons of rural and urban areas. Shortfall among females is much higher than males - share of females in the workforce is about 28 percent but their contribution to the shortfall is about 79 percent.

3.2.2 Between 55<sup>th</sup> round and 61<sup>st</sup> round, number of workers increased in both ps and ss for all categories of persons while between 61<sup>st</sup> round and 66<sup>th</sup> round, number of workers in ss decreased for all categories of persons and number of workers in ps also decreased for females. Among males, employment in principal status is mainly responsible for growth in employment - between 55<sup>th</sup> round and 61<sup>st</sup> round, growth for male workers in ps+ss was 35.3 million of which 33.6 million was due to workers in ps while between 61<sup>st</sup> round and 66<sup>th</sup> round, it was 23.2 million in ps+ss and 23.9 million in ps. Among females, employment in both principal status and subsidiary status were responsible for growth/reduction in employment for females. Between 55<sup>th</sup> round and 61<sup>st</sup> round, growth for female workers in ps+ss was 24.7 million of which 14.7 million was in ps and 10.0 million was in ss while between 61<sup>st</sup> round and 66<sup>th</sup> round, out of the reduction of 20.9 million female workers, 10.8 million was in ps and 10.1 million was in ss. Out of the reduction of 20.9 million female workers between 61<sup>st</sup> round and 66<sup>th</sup> round, share of rural females was 19.2 million. Table 5 shows that withdrawal of rural females from workforce between 61<sup>st</sup> round and 66<sup>th</sup> round has taken place by the same magnitude, separately for workers in ps and workers in ss, by which females entered in the workforce between 55<sup>th</sup> round and 61<sup>st</sup> round.

**3.3 Growth in Employment for persons of different age groups:** Table 6 shows that for persons of age less than 15 years, there was reduction in employment in both 66<sup>th</sup> round and 61<sup>st</sup> round as compared to the previous round and the reduction was almost of the same dimension. Employment for persons of age 15 - 24 years was reduced by 15.6 million in 66<sup>th</sup> round as against the growth of 12.2 million in 61<sup>st</sup> round. For persons of this age group, there was growth for employment in both ps and ss in 61<sup>st</sup> round but there was reduction for employment in both ps and ss in 66<sup>th</sup> round. For persons of age 25 years or more, there was growth for employment in both ps and ss in 61<sup>st</sup> round but there was reduction for employment in ss in the 66<sup>th</sup> round. Among persons of age 25 years or more, considerable growth for employment in ps (27.4 million) took place between 61<sup>st</sup> round and 66<sup>th</sup> round.

3.3.1 Table 6 shows that growth in employment, between 61<sup>st</sup> round and 66<sup>th</sup> round, for

persons of age group (years)	employment growth (in millions)					
	between 55 <sup>th</sup> and 61 <sup>st</sup>			between 61 <sup>st</sup> and 66 <sup>th</sup>		
	ps+ss	ps	ss	ps+ss	ps	ss
0-14	-2.5	-1.9	-0.6	-3.3	-3.1	-0.2
15 - 24	12.2	8.1	4.1	-15.6	-11.2	-4.4
25 or more	50.3	42.1	8.2	21.2	27.4	-6.2
15 or more	62.5	50.2	12.3	5.6	16.2	-10.6
<b>all</b>	<b>60.0</b>	<b>48.3</b>	<b>11.7</b>	<b>2.3</b>	<b>13.1</b>	<b>-10.8</b>

persons of age 25 years or more was 21.2 million but the overall growth turned out to be only 2.3 million due to withdrawal of a large number of persons of age below 25 years from employment. Persons of age below 25 years have contributed significantly in the shortfall of the employment growth of 66<sup>th</sup> round. In the shortfall of 57.7 million in the employment growth of 66<sup>th</sup> round,

contribution for persons of age 25 years or more was 29.1 million and that for persons of age below 25 years was 28.6 million. In the shortfall of 35.2 million in the growth of principal status workers, contribution for persons of age 25 or more was 14.7 million and that for persons of age less than 25 years was 20.5 million. Share for persons of age less than 25 years in the workforce is around 20 per cent, but their share in the shortfall of the employment growth of 66<sup>th</sup> round was about 50 percent and it was about 58 percent for employment in ps.

3.3.2 For persons of age below 25 years, one basic reason for reduction in employment between 61<sup>st</sup> round and 66<sup>th</sup> round may obviously be higher participation in education by them between 61<sup>st</sup> round and 66<sup>th</sup> round as compared to that of between 55<sup>th</sup> round and 61<sup>st</sup> round. Table 7 shows that among persons of age 15 years or more, substantial growth in number of persons attending educational institutions took place between 61<sup>st</sup> round and 66<sup>th</sup> round and this growth was basically

age group (years)	number (in millions)		
	55 <sup>th</sup>	61 <sup>st</sup>	66 <sup>th</sup>
15 - 24	48.0	57.4	85.8
15 or more	49.1	58.4	87.6

for persons of age 15 - 24 years. Table 8 shows that for persons of age 15 - 24 years, while there was shortfall of 27.8 million (male: 15.1 million; female: 12.7 million) in the employment growth of 66<sup>th</sup> round, there was addition of only 19.0 million (male: 12.1 million; female: 6.9 million) persons in attending educational institutions between 61<sup>st</sup> round and 66<sup>th</sup> round. Therefore, shortfall in employment growth for males of age 15-24 years can be explained to some extent by increase in attendance in educational institutions but that for females can not be explained by education only. Table 7 underlines that education has no impact for the shortfall in employment growth for persons of age 25 years or more. Therefore, education can explain only a part of the shortfall in employment growth of 66<sup>th</sup> round. As education cannot explain the shortfall in employment growth of 66<sup>th</sup> round even for persons of age 15-24 years, factors responsible for negligible employment growth between 61<sup>st</sup> round and 66<sup>th</sup> round for persons of age 25 years or more will also have some impact on the reduction in employment for persons of age 15-24 years.

Table 8: Employment growth and growth in attending educational institutions according to usual status ps+ss for persons of age 15-24 years between two quinquennial rounds

category of persons	growth (in millions) in			
	employment		attending educational institutions	
	55 <sup>th</sup> & 61 <sup>st</sup>	61 <sup>st</sup> & 66 <sup>th</sup>	55 <sup>th</sup> & 61 <sup>st</sup>	61 <sup>st</sup> & 66 <sup>th</sup>
rural male	4.6	-5.2	2.8	11.7
rural female	2.7	-7.6	3.2	7.5
urban male	3.4	-1.9	1.8	5.0
urban female	1.5	-0.9	1.6	4.2
<b>all</b>	<b>12.2</b>	<b>-15.6</b>	<b>9.4</b>	<b>28.4</b>

**3.4 Growth in Employment by category of employment:** Table A1, placed at the end, shows that more than half of the workers among rural males and rural females are engaged in self-employment whereas more than half of the workers among urban males and urban females are engaged either in regular wage/salaried employment or casual labour employment.

3.4.1 Table 9 shows that self-employment played the key role for the huge growth in employment between 55<sup>th</sup> round and 61<sup>st</sup> round as well as for a negligible growth in employment between 61<sup>st</sup> round and 66<sup>th</sup> round. Between 55<sup>th</sup> round and 61<sup>st</sup> round, growth in self-employment was very high and persons of all categories contributed in the growth of self-employment. Growth in self-employment in ps was contributed by both males and females while growth in self-employment in ss was contributed mainly by females, more specifically by rural females. During this period, there was some growth in regular wage/salaried employment but no growth in casual labour employment. Between 61<sup>st</sup> round and 66<sup>th</sup> round, high growth in casual labour employment happened along with comparatively smaller growth in regular wage/salaried employment and huge withdrawal from self-employment. During this period, growth in casual labour employment took place mainly for

males and growth in regular wage/salaried employment took place mainly for urban males for their work in ps. Withdrawal from self-employment happened to some extent for persons of all the categories but rural females contributed the most in the withdrawal from self-employment in both ps and ss. Shortfall in the growth of self-employment between 61<sup>st</sup> round and 66<sup>th</sup> round as compared to that of between 55<sup>th</sup> round and 61<sup>st</sup> round was 73.5 million. Growth in casual labour employment or regular wage salaried employment between 61<sup>st</sup> round and 66<sup>th</sup> round could not compensate the huge shortfall in the growth in self-employment in this period and finally resulted into a shortfall of 57.7 million in the employment growth of 66<sup>th</sup> round. Out of the total shortfall of 57.7 million, contribution of rural female was 37.5 million and this shortfall of rural females occurred primarily due to the shortfall in the growth of self-employment (38.2 million).

3.4.2 Table 9 shows that among males of age 25 years or more of both rural and urban areas, growth in employment between 61<sup>st</sup> round and 66<sup>th</sup> round was higher than the corresponding growth between 55<sup>th</sup> round and 61<sup>st</sup> round but the overall growth of both rural males and rural females between 61<sup>st</sup> round and 66<sup>th</sup> round was lower than the corresponding growth between 55<sup>th</sup> round and 61<sup>st</sup> round.

Therefore, shortfall of 66<sup>th</sup> round in the employment growth of males was contributed by persons of age below 25 years only. Table 9 also shows that overall growth in casual labour employment and regular wage/salaried employment for males between 61<sup>st</sup> round and 66<sup>th</sup> round was almost of the same order of the corresponding growth for males of age 25 years or more. This indicates that shortfall of 66<sup>th</sup> round in the employment growth of males was basically due to withdrawal of males of age below 25 years from self-employment. For females, instead of any growth in employment between 61<sup>st</sup> round and 66<sup>th</sup> round, withdrawal from employment happened for persons of age below 25 years as well as for persons of age 25 years or more. About 50 percent of the withdrawal of females from employment was contributed by persons of age below 25 years. Table 9 shows that withdrawal of females from employment was basically from self-employment.

3.4.3 In spite of reduction in the size of self-employment, males showed substantial growth in employment in 66<sup>th</sup> round, as casual labour employment for rural males and casual labour employment along with regular wage/salaried employment for urban males increased

Table 9: Growth for different categories of employment in ps+ss, ps and ss between two quinquennial rounds								
category of persons	growth in employment (in millions)							
	between 55 <sup>th</sup> and 61 <sup>st</sup>				between 61 <sup>st</sup> and 66 <sup>th</sup>			
	self-employed	regular wage/salaried	casual labour	all	self-employed	regular wage/salaried	casual labour	all
<b>ps+ss</b>				<b>age: all</b>				
rural male	17.9	2.0	0.4	20.3	-3.1	0.4	16.1	13.4
rural female	18.0	1.4	-1.1	18.3	-20.2	-0.2	1.2	-19.2
urban male	9.2	5.3	0.5	15.0	0.8	5.2	3.8	9.8
urban female	3.5	2.7	0.2	6.4	-2.4	0.3	0.4	-1.7
<b>all</b>	<b>48.6</b>	<b>11.4</b>	<b>0.0</b>	<b>60.0</b>	<b>-24.9</b>	<b>5.7</b>	<b>21.5</b>	<b>2.3</b>
				<b>age: 25+</b>				
rural male	16.4	1.2	-0.5	17.1	2.7	0.6	16.3	19.6
rural female	15.9	1.1	-0.3	16.7	-13.8	0.2	3.5	-10.1
urban male	8.0	3.4	0.3	11.7	2.2	5.9	3.9	12.0
urban female	2.5	2.2	0.1	4.8	-1.2	0.3	0.6	-0.3
<b>all</b>	<b>42.8</b>	<b>7.9</b>	<b>-0.4</b>	<b>50.3</b>	<b>-10.1</b>	<b>7.0</b>	<b>24.3</b>	<b>21.2</b>
<b>ps</b>				<b>age: all</b>				
rural male	17.3	2.0	0.0	19.3	-2.9	0.4	16.1	13.6
rural female	10.9	1.4	-2.2	10.1	-10.6	-0.2	0.1	-10.6
urban male	8.8	5.1	0.5	14.4	0.8	5.5	4.0	10.3
urban female	2.3	2.5	-0.1	4.7	-1.2	0.4	0.6	-0.2
<b>all</b>	<b>39.1</b>	<b>11.0</b>	<b>-1.8</b>	<b>48.3</b>	<b>-13.8</b>	<b>6.1</b>	<b>20.8</b>	<b>13.1</b>
				<b>age: 25+</b>				
rural male	16.2	0.9	-0.5	16.6	3.2	0.9	14.8	18.9
rural female	10.2	0.9	-0.6	10.5	-7.1	0.1	2.4	-4.6
urban male	7.8	3.2	0.3	11.3	2.5	6.0	3.9	12.4
urban female	1.6	2.0	0.1	3.7	-0.4	0.5	0.6	0.7
<b>all</b>	<b>35.8</b>	<b>7.0</b>	<b>-0.7</b>	<b>42.1</b>	<b>-1.8</b>	<b>7.5</b>	<b>21.7</b>	<b>27.4</b>
<b>ss</b>				<b>age: all</b>				
rural male	0.7	0.0	0.4	1.1	-0.2	0.0	0.0	-0.2
rural female	7.3	0.0	1.0	8.3	-9.7	0.0	1.1	-8.6
urban male	0.3	0.2	0.1	0.6	0.0	-0.3	-0.2	-0.5
urban female	1.2	0.2	0.3	1.7	-1.2	-0.1	-0.2	-1.5
<b>all</b>	<b>9.5</b>	<b>0.4</b>	<b>1.8</b>	<b>11.7</b>	<b>-11.1</b>	<b>-0.4</b>	<b>0.7</b>	<b>-10.8</b>
				<b>age: 25+</b>				
rural male	0.2	0.3	0.0	0.5	-0.5	-0.3	1.5	0.7
rural female	5.7	0.2	0.3	6.2	-6.7	0.1	1.1	-5.5
urban male	0.2	0.2	0.0	0.4	-0.3	-0.1	0.0	-0.4
urban female	0.9	0.2	0.0	1.1	-0.8	-0.2	0.0	-1.0
<b>all</b>	<b>7.0</b>	<b>0.9</b>	<b>0.3</b>	<b>8.2</b>	<b>-8.3</b>	<b>-0.5</b>	<b>2.6</b>	<b>-6.2</b>

significantly between 61<sup>st</sup> round and 66<sup>th</sup> round. For males, growth in regular wage/salaried and casual labour employment taken together was much higher in 66<sup>th</sup> round (25.5 millions) than that of the 61<sup>st</sup> round (8.2 millions). As shortfall in the growth of employment of males in 66<sup>th</sup> round was basically due to withdrawal of males of age below 25 years from self-employment, reduction in the size of self-employment between 61<sup>st</sup> round and 66<sup>th</sup> round for males of age 25 years or more was adjusted by growth in casual labour employment and for urban males, this was adjusted by growth in regular wage/salaried employment and casual labour employment. As massive withdrawal of females from self-employment between 61<sup>st</sup> round and 66<sup>th</sup> round could not be compensated by negligible growth in casual labour employment, withdrawal of females from self-employment resulted into the withdrawal of females from workforce.

**3.5 Paid and unpaid employment:** Having observed that reduction in self-employment played the major role for huge shortfall in the employment growth of 66<sup>th</sup> round, it may be of interest to see whether paid employment or unpaid employment within the category of self-employment contributed more to this. As reduction in self-employment in 66<sup>th</sup> round happened together with considerable growth in casual labour employment, it may also be of interest to see how paid employment have undergone changes over the years. Own account workers (activity status code: 11) and employers (activity status code: 12) within self-employment, regular wage/salaried employees (activity status code: 31) and casual labours (activity status code: 41 & 51) together constitute the category of paid employment. Unpaid family workers i.e., those engaged in household enterprises as helpers (activity status code: 21) constitute the category of unpaid employment.

3.5.1 Table A1 shows that paid employment is the major component in the employment of all categories of persons but unpaid employment has a significant share in the employment of females. About 40 percent of rural females and about 17 percent of urban females are engaged in unpaid employment. Among females engaged in self-employment, about 71 percent in rural areas and about 40 percent in urban areas are engaged in unpaid employment. Among males engaged in self-employment, about 83 percent in urban areas and about 75 percent in rural areas are engaged in paid employment.

3.5.2 *Unpaid employment*: Table 10 shows that persons of all categories contributed to the growth of paid and unpaid employment to achieve huge growth in self-employment between 55<sup>th</sup> round and 61<sup>st</sup> round but subsequently, between 61<sup>st</sup> round and 66<sup>th</sup> round, withdrawal from unpaid employment happened for persons all categories and this happened for females from paid employment also. Between 61<sup>st</sup> round and 66<sup>th</sup> round, withdrawal from self-employment happened for females for both paid and unpaid employment for persons of age below 25 years as well as for persons of age 25 years or more and this happened for males only for unpaid employment for persons of age below 25 years which was not adjusted with any growth in paid self-employment. For each category of persons, withdrawal from unpaid employment between 61<sup>st</sup> round and 66<sup>th</sup> round, was almost of the same magnitude by which there was entry in unpaid employment between 55<sup>th</sup> round and 61<sup>st</sup> round - this happened for

Table 10: Growth in paid and unpaid employment within self-employment in ps+ss, ps and ss between two quinquennial rounds for persons of age 25+ and all ages								
category of persons	growth (in millions) between rounds							
	age: all				age: 25 or more			
	unpaid		paid		unpaid		paid	
	55 <sup>th</sup> and 61 <sup>st</sup>	61 <sup>st</sup> and 66 <sup>th</sup>	55 <sup>th</sup> and 61 <sup>st</sup>	61 <sup>st</sup> and 66 <sup>th</sup>	55 <sup>th</sup> and 61 <sup>st</sup>	61 <sup>st</sup> and 66 <sup>th</sup>	55 <sup>th</sup> and 61 <sup>st</sup>	61 <sup>st</sup> and 66 <sup>th</sup>
<b>ps+ss</b>								
rural male	5.1	-4.7	12.8	1.6	2.7	-0.6	13.7	3.3
rural female	15.4	-17.8	2.6	-2.4	12.9	-11.7	3.0	-2.1
urban male	1.9	-0.7	7.3	1.5	1.2	0.2	6.8	2.0
urban female	2.0	-2.0	1.5	-0.4	1.4	-1.1	1.1	-0.1
<b>all</b>	<b>24.4</b>	<b>-25.2</b>	<b>24.2</b>	<b>0.3</b>	<b>18.2</b>	<b>-13.2</b>	<b>24.6</b>	<b>3.1</b>
<b>ps</b>								
rural male	4.1	-4.4	13.2	1.5	2.7	-0.1	13.5	3.3
rural female	8.3	-9.0	2.6	-1.6	7.8	-6.2	2.4	-0.9
urban male	1.7	-0.8	7.1	1.6	1.2	0.0	6.6	2.5
urban female	1.4	-1.2	0.9	0.0	1.0	-0.8	0.6	0.4
<b>all</b>	<b>15.5</b>	<b>-15.4</b>	<b>23.6</b>	<b>1.6</b>	<b>12.7</b>	<b>-7.1</b>	<b>23.1</b>	<b>5.3</b>
<b>ss</b>								
rural male	1.0	-0.3	-0.3	0.1	0.0	-0.5	0.2	0.0
rural female	7.1	-8.8	0.2	-0.9	5.1	-5.5	0.6	-1.2
urban male	0.2	0.1	0.1	-0.1	0.0	0.2	0.2	-0.5
urban female	0.6	-0.8	0.6	-0.4	0.4	-0.3	0.5	-0.5
<b>all</b>	<b>8.9</b>	<b>-9.8</b>	<b>0.6</b>	<b>-1.3</b>	<b>5.5</b>	<b>-6.1</b>	<b>1.5</b>	<b>-2.2</b>

unpaid employment in ps and also in ss. Rural females contributed the most in the withdrawal from unpaid employment for their work in principal capacity as well as in subsidiary capacity. Out of the withdrawal of 25.2 million from unpaid employment between 61<sup>st</sup> round and 66<sup>th</sup> round, contribution of rural females was 17.8 million (ps: 9.0 and ss: 8.8). About 23 percent of female workers are engaged in subsidiary capacity but they contributed about 50 percent in the withdrawal of females from unpaid employment between 61<sup>st</sup> round and 66<sup>th</sup> round. Table 10 shows that out of the total shortfall of 57.7 million in the employment growth of 66<sup>th</sup> round, about 49.6 million were

due to unpaid employment of which about 33.2 million was contributed by rural females. Table 10 also shows that about one-half of the withdrawal from unpaid employment between 61<sup>st</sup> round and 66<sup>th</sup> round was due to persons of age less than 25 years whose contribution to total employment was less than 20 percent.

3.5.3 *Paid employment*: Table 11 shows that there was substantial growth in paid employment (activity status codes 11, 12, 31, 41, 51) between 61<sup>st</sup> round and 66<sup>th</sup> round. Growth in paid employment between 61<sup>st</sup> round and 66<sup>th</sup> round was nearly of the same order of the corresponding growth between 55<sup>th</sup> round and 61<sup>st</sup> round, and these figures were much closer for the paid employment in ps. In the shortfall of 57.7 million in the employment growth of 66<sup>th</sup> round, contribution of paid employment was about 8.1 million only. For

males, growth in paid employment between 61<sup>st</sup> round and 66<sup>th</sup> round (28.6 million) was

Table 11: Growth in paid employment according to ps+ss, ps and ss between two quinquennial rounds for persons of age 25+ and all ages

category of persons	growth (in million) between rounds			
	age: all		age: 25 or more	
	55 <sup>th</sup> and 61 <sup>st</sup>	61 <sup>st</sup> and 66 <sup>th</sup>	55 <sup>th</sup> and 61 <sup>st</sup>	61 <sup>st</sup> and 66 <sup>th</sup>
<b>ps+ss</b>				
rural male	15.2	18.1	14.4	20.2
rural female	2.9	-1.4	3.8	1.6
urban male	13.1	10.5	10.5	11.8
urban female	4.4	0.3	3.4	0.8
<b>all</b>	<b>35.6</b>	<b>27.5</b>	<b>32.1</b>	<b>34.4</b>
<b>ps</b>				
rural male	15.2	17.9	13.9	19.0
rural female	1.8	-1.7	2.7	1.6
urban male	12.7	11.1	10.1	12.4
urban female	3.3	1.0	2.7	1.5
<b>all</b>	<b>32.8</b>	<b>28.5</b>	<b>29.4</b>	<b>34.5</b>
<b>ss</b>				
rural male	0.0	0.2	0.5	1.2
rural female	1.1	0.3	1.1	0.0
urban male	0.4	-0.6	0.4	-0.6
urban female	1.1	-0.7	0.7	-0.7
<b>all</b>	<b>2.8</b>	<b>-1.0</b>	<b>2.7</b>	<b>-0.1</b>

higher than the corresponding growth between 55<sup>th</sup> round and 61<sup>st</sup> round (28.3 million). Table 10 and Table 11 together show that withdrawal of females from paid self-employment was marginally balanced by other paid employment. Growth in paid employment between 61<sup>st</sup> round and 66<sup>th</sup> round happened for all categories of persons of age 25 years or more. Higher growth in paid employment for persons of age 25 years or more as compared to the overall growth in paid employment for each category of persons indicates that withdrawal from paid employment between 61<sup>st</sup> round and 66<sup>th</sup> round happened for persons of age below 25 years only. For persons of age 25 years or more, growth in paid employment between 61<sup>st</sup> round and 66<sup>th</sup> round (34.4 million) was higher than the corresponding growth between 55<sup>th</sup> round and 61<sup>st</sup> round (32.1 million). Among males of age 25 years or more, growth in paid employment between 61<sup>st</sup> round and 66<sup>th</sup> round was 32.0 million as against the growth of 24.9 million between 55<sup>th</sup> round and 61<sup>st</sup> round. As against the growth of 7.2 million in paid

employment of females of age 25 years or more between 55<sup>th</sup> round and 61<sup>st</sup> round, corresponding growth between 61<sup>st</sup> round and 66<sup>th</sup> round was 2.4 million.

**3.6 Employment by industry of work:** As per the broad classification of industries, divisions 01 to 05 of NIC-2004 constitute the primary sector, divisions 10 to 45 of NIC-2004 constitute the secondary sector and divisions 50 to 99 of NIC-2004 constitute the tertiary sector. Table A1 shows that about 52 percent of workers in India are engaged in primary sector, about 22 percent in secondary sector and about 26 percent in tertiary sector. Among workers in the primary sector, about 61 percent are rural males and 35 percent are rural females. In the primary sector, about 28 percent are engaged in unpaid employment – this is about 18 percent for rural males and about 45 percent for rural females. About 79 percent of workers in the secondary sector and about 83 percent in the tertiary sector are males. About 93 percent of workers in secondary sector and about 93 percent of tertiary sector are engaged in paid employment.

3.6.1 Table 12 shows that between 55<sup>th</sup> round and 61<sup>st</sup> round, employment growth was very high for all the three sectors. Between 61<sup>st</sup> round and 66<sup>th</sup> round, there was considerable growth in the employment of the secondary sector (14.8 million) and tertiary sector (8.3 million) but huge withdrawal took place in the employment of the primary sector (20.8 million). Out of the total shortfall of 57.7 million in the employment growth of 66<sup>th</sup> round, contribution of primary sector, secondary sector and tertiary sector was 39.9 million (male: 4.3 million; female: 35.6 million), 6.5 million (male: 1.5 million; female: 5.0 million) and 11.3 million (male: 6.3 million; female: 5.0 million), respectively. Share of the primary sector in the shortfall (about 69 percent) is more as compared to the share of this sector in the volume of employment (about 52 percent). Share of females in the workforce is much less as

compared to that of males, but their share in the shortfall of employment growth of 66<sup>th</sup> round for each sector is very high. Rural female workers of the primary sector contributed the most in the shortfall of employment growth of 66<sup>th</sup> round (about 57 percent) and this happened mainly due to massive withdrawal of rural females from employment in the primary sector (about 20.0 million).

Table 12: Growth in paid and unpaid employment in ps+ss between two quinquennial rounds for persons of age 25+ and all ages for different industry of work													
category of persons	growth (in millions) between rounds												
	age: all						age: 25 or more						
	unpaid		paid		all		unpaid		paid		all		
	55 <sup>th</sup> and 61 <sup>st</sup>	61 <sup>st</sup> and 66 <sup>th</sup>	55 <sup>th</sup> and 61 <sup>st</sup>	61 <sup>st</sup> and 66 <sup>th</sup>	55 <sup>th</sup> and 61 <sup>st</sup>	61 <sup>st</sup> and 66 <sup>th</sup>	55 <sup>th</sup> and 61 <sup>st</sup>	61 <sup>st</sup> and 66 <sup>th</sup>	55 <sup>th</sup> and 61 <sup>st</sup>	61 <sup>st</sup> and 66 <sup>th</sup>	55 <sup>th</sup> and 61 <sup>st</sup>	61 <sup>st</sup> and 66 <sup>th</sup>	
<b>primary</b>													
rural male	4.0	-4.1	0.2	4.3	4.2	0.2	2.2	-0.5	2.9	7.1	5.1	6.6	
rural female	14.6	-15.8	-1.6	-4.2	13.0	-20.0	12.1	-10.9	0.8	-1.9	12.9	-12.8	
urban male	0.3	-0.1	0.3	0.4	0.6	0.3	0.1	0.1	0.3	0.7	0.4	0.8	
urban female	0.7	-0.9	0.6	-0.4	1.3	-1.3	0.6	-0.7	0.3	-0.1	0.9	-0.8	
<b>all</b>	<b>19.6</b>	<b>-20.9</b>	<b>-0.5</b>	<b>0.1</b>	<b>19.1</b>	<b>-20.8</b>	<b>15.0</b>	<b>-12.0</b>	<b>4.3</b>	<b>5.8</b>	<b>19.3</b>	<b>-6.2</b>	
<b>secondary</b>													
rural male	0.1	-0.3	8.8	10.9	8.9	10.6	0.2	-0.2	6.5	9.2	6.7	9.0	
rural female	0.6	-1.8	2.4	2.8	3.0	1.0	0.4	-1.0	1.4	3.4	1.8	2.4	
urban male	0.6	-0.4	6.0	3.8	6.6	3.4	0.2	-0.1	4.3	4.7	4.5	4.6	
urban female	0.6	-0.4	2.2	0.2	2.8	-0.2	0.3	-0.1	1.4	0.3	1.7	0.2	
<b>all</b>	<b>1.9</b>	<b>-2.9</b>	<b>19.4</b>	<b>17.7</b>	<b>21.3</b>	<b>14.8</b>	<b>1.1</b>	<b>-1.4</b>	<b>13.6</b>	<b>17.6</b>	<b>14.7</b>	<b>16.2</b>	
<b>tertiary</b>													
rural male	1.0	-0.3	6.2	2.9	7.2	2.6	0.3	0.2	5.0	3.6	5.3	3.8	
rural female	0.2	-0.2	2.1	0.0	2.3	-0.2	0.3	-0.1	1.3	0.3	1.6	0.2	
urban male	1.0	-0.2	6.8	6.3	7.8	6.1	0.5	0.4	6.3	6.5	6.8	6.9	
urban female	0.7	-0.7	1.6	0.5	2.3	-0.2	0.4	-0.5	1.5	0.8	1.9	0.3	
<b>all</b>	<b>2.9</b>	<b>-1.4</b>	<b>16.7</b>	<b>9.7</b>	<b>19.6</b>	<b>8.3</b>	<b>1.5</b>	<b>0.0</b>	<b>14.1</b>	<b>11.2</b>	<b>15.6</b>	<b>11.2</b>	
<b>all</b>													
rural male	5.1	-4.7	15.2	18.1	20.3	13.4	2.7	-0.6	14.4	20.2	17.1	19.6	
rural female	15.4	-17.8	2.9	-1.4	18.3	-19.2	12.9	-11.7	3.8	1.6	16.7	-10.1	
urban male	1.9	-0.7	13.1	10.5	15.0	9.8	1.2	0.2	10.5	11.8	11.7	12.0	
urban female	2.0	-2.0	4.4	0.3	6.4	-1.7	1.4	-1.1	3.4	0.8	4.8	-0.3	
<b>all</b>	<b>24.4</b>	<b>-25.2</b>	<b>35.6</b>	<b>27.5</b>	<b>60.0</b>	<b>2.3</b>	<b>18.2</b>	<b>-13.2</b>	<b>32.1</b>	<b>34.4</b>	<b>50.3</b>	<b>21.2</b>	

3.6.2 Table 12 shows that unpaid employment in primary sector and paid employment in secondary and tertiary sectors mainly contributed to the growth in employment between 55<sup>th</sup> round and 61<sup>st</sup> round. Between 61<sup>st</sup> round and 66<sup>th</sup> round, growth in paid employment happened along with withdrawal from unpaid employment for all the three sectors. Table 12 shows that withdrawal from employment in primary sector happened for females of all ages and for males of age below 25 years for both unpaid and paid employment. In the secondary and tertiary sectors, withdrawal from employment happened mainly for persons of age below 25 years. Between 61<sup>st</sup> round and 66<sup>th</sup> round, in spite of withdrawal from unpaid employment by persons of age 25 years or more and that from paid and unpaid employment both by persons of age below 25 years, substantial growth in paid employment resulted into respectable growth in employment in the secondary and tertiary sectors. For persons of age 25 years or more, growth in employment between 61<sup>st</sup> round and 66<sup>th</sup> round for the secondary and tertiary sectors together (27.4 million) was almost at the same level as that of between 55<sup>th</sup> round and 61<sup>st</sup> round (30.3 million) and it was higher in the secondary sector. In the primary sector, in spite of withdrawal from unpaid employment by persons of age 25 years or more and that from paid and unpaid employment by persons of age below 25 years, growth in

paid employment of males of age 25 years or more resulted into some growth in the employment of males in this sector. Therefore, withdrawal from employment between 61<sup>st</sup> round and 66<sup>th</sup> round happened only in the primary sector and that happened for withdrawal of females and children from employment in this sector.

3.6.3 Shortfall in the employment growth of 66<sup>th</sup> round happened for all the sectors – primary sector being the major contributor. Females of all ages and males of age below 25 years are mainly responsible for the shortfall for their work in both paid and unpaid employment. Withdrawal of females and children from employment is the basic cause of the shortfall. Withdrawal of rural females and male children from unpaid employment in the primary sector caused for about 53 percent and about 9 percent of the shortfall in the employment growth of 66<sup>th</sup> round.

3.7 *Growth in unpaid employment in primary sector:* Rapid growth in unpaid employment in the primary sector in 61<sup>st</sup> round and thereafter rapid fall of this employment in 66<sup>th</sup> round,

Table 13: percentage of unpaid employment to total employment in ps+ss in primary sector in 55 <sup>th</sup> , 61 <sup>st</sup> and 66 <sup>th</sup> rounds			
category of persons	NSS round		
	55 <sup>th</sup>	61 <sup>st</sup>	66 <sup>th</sup>
rural male	13.5	14.1	11.5
rural female	36.4	42.8	35.6
urban male	0.9	1.1	0.9
urban female	6.6	7.7	4.4
<b>all</b>	<b>16.9</b>	<b>19.0</b>	<b>14.3</b>

leads to further study on unpaid employment in the primary sector for different categories of persons. Table 13 shows that proportion of unpaid employment in primary sector was much higher in 61<sup>st</sup> round (19.0 percent) as compared to that of 55<sup>th</sup> round (16.9 percent) and 66<sup>th</sup> round (14.3 percent). For rural females, this proportion was very high in 61<sup>st</sup> round (42.8 percent) as compared to that of 55<sup>th</sup> round (36.4 percent) and 66<sup>th</sup> round (35.6 percent). This divergence in proportion of unpaid employment to total employment in primary sector, particularly for rural female, indicate that there could be some socio-economic condition in the country between 55<sup>th</sup> round and 61<sup>st</sup> round which insisted large number females and children to enter into the

workforce as a helper in family enterprises and when the condition changed between 61<sup>st</sup> round and 66<sup>th</sup> round, they pulled out themselves from workforce to maintain their normal way of living.

3.8 *Is employment growth of 66<sup>th</sup> round Jobless?* We have observed that between 61<sup>st</sup> round and 66<sup>th</sup> round, there was considerable growth in employment in secondary and tertiary sectors. In these two sectors, growth in employment between 61<sup>st</sup> round and 66<sup>th</sup> round for persons of age 25 years or more was almost at the same level as that of between 55<sup>th</sup> round and 61<sup>st</sup> round, and growth in paid employment for them between 61<sup>st</sup> round and 66<sup>th</sup> round was higher than that of between 55<sup>th</sup> round and 61<sup>st</sup> round. We have already seen that shortfall in the employment growth of 66<sup>th</sup> round has taken place primarily as a result of withdrawal of females and children from employment and more particularly that from unpaid employment in the primary sector. Employment in primary sector is low productive and unpaid employment of females and children in primary sector are expected to be further low productive. In the withdrawal from unpaid employment, a significant proportion is for employment in ss whose productivity is expected to be very low. Therefore, entry or withdrawal of females and children in unpaid employment in primary sector may not effect much to the agricultural production and finally to the GDP of the country. Growth in employment in secondary and tertiary sector is in the line of high growth in GDP in these two sectors and this does not support the view that growth in India is a jobless growth.

3.9 Table A3, placed at the end, gives a summary picture of the employment growth in India at disaggregated level between NSS 55<sup>th</sup> and 61<sup>st</sup> rounds and that between NSS 61<sup>st</sup> and 66<sup>th</sup> rounds.

**4 Summary of findings:** The study shows that growth in employment between 55<sup>th</sup> round and 66<sup>th</sup> round is in order with the usual growth in employment in India over a period of 10 years. Consistent change in the employment growth of different categories of persons over the surveys of NSSO, since 27<sup>th</sup> round, indicate that results of neither 61<sup>st</sup> round nor 66<sup>th</sup> round can be treated as outlier. Between 55<sup>th</sup> round and 61<sup>st</sup> round, huge growth in employment took place due to massive growth in self-employment. Between 61<sup>st</sup> round and 66<sup>th</sup> round, size of unpaid employment reduced drastically. Reduction of unpaid employment of rural males was partially balanced by growth in casual labour employment and that of urban males was partially balanced by growth in casual labour employment and regular wage/salaried employment but reduction of unpaid employment of females resulted into withdrawal of females from workforce. Withdrawal from workforce happened for both rural females and urban females for their work in self-employment but rural females played the key role in the withdrawal for their unpaid employment in the primary sector. Between 61<sup>st</sup> round and 66<sup>th</sup> round, amount of withdrawal of rural females from unpaid employment was almost same for their work in ps and ss, and the magnitude of withdrawal was almost the same to that by which they entered in employment in ps and ss between 55<sup>th</sup> round and 61<sup>st</sup> round. Persons of age below 25 years contributed to about 50 percent of the shortfall of employment growth of 66<sup>th</sup> round. For males, shortfall in employment growth of 66<sup>th</sup> round was essentially for persons of age below 25 years but for females, the shortfall happened for persons of age below 25 years as well as for persons of age 25 years or more. A part of the shortfall in employment growth of 66<sup>th</sup> round is explained by growth in participation in education by persons of age below 25 years and the remaining part can be explained by growth in wages of casual labours in real terms between these two periods. Between 55<sup>th</sup> round and 61<sup>st</sup> round, growth in GDP at constant prices was much lower than that of between 61<sup>st</sup> round and 66<sup>th</sup> round, and during this period, growth of wages for casual labours in agriculture as well as non-agriculture in real terms was much lower than that of between 61<sup>st</sup> round and 66<sup>th</sup> round (*Himanshu (EPW, 2011) and NSS Report Number 537*). The present study reveals that there was practically no growth in casual labour employment between 55<sup>th</sup> round and 61<sup>st</sup> round and both paid and unpaid employment in the primary sector within the category of self-employment increased during this period. This happened as a result of new entry of females and children in workforce as self-employed and participation of males of age 25 years or more in self-employment activity rather than casual labour activity. New entry of females and children in workforce happened mainly for unpaid employment in the primary sector. As labour productivity in the primary sector is low, larger number of persons had to participate in work activities to maintain their family income. Between 61<sup>st</sup> round and 66<sup>th</sup> round, when rate of growth of casual labour wages in real terms became higher, substantial growth in casual labour employment took place for males whereas females and children, who entered in the workforce as unpaid family worker in the primary sector, withdrew themselves from workforce to be engaged in their usual activity status outside work activity. Growth in employment in secondary and tertiary sector between 61<sup>st</sup> round and 66<sup>th</sup> round is in the line of high growth in GDP in these two sectors and this does not support the view that growth in India is a jobless growth.

**5 Remarks:** Higher participation in education along with growth in wages of casual labours in real terms between 61<sup>st</sup> round and 66<sup>th</sup> round, as compared to that between 55<sup>th</sup> round and 61<sup>st</sup> round, give an explanation for negligible growth in employment between 61<sup>st</sup> round and 66<sup>th</sup> round. But, the extent of withdrawal of rural females from unpaid employment in the primary sector between 61<sup>st</sup> round and 66<sup>th</sup> round, even after some new entry in the workforce during this period, gives caution to us whether we are missing some of the unpaid employments where production of goods for own consumption is considered as work activity and the employments are not clearly visible.

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Table A1: Number of workers (in million) according to ps+ss in NSS 55<sup>th</sup> to 66<sup>th</sup> rounds for different categories of employment and industry of work

all-India															
all ages															
category of persons	number of workers (in million) in different industries by category of employment according to ps														
	55 <sup>th</sup> round					61 <sup>st</sup> round					66 <sup>th</sup> round				
	unpaid self-employed	all self-employed	regular wage/salaried	casual labour	all	unpaid self-employed	all self-employed	regular wage/salaried	casual labour	all	unpaid self-employed	all self-employed	regular wage/salaried	casual labour	all
<b>primary</b>															
rural male	26.9	83.0	2.6	56.1	141.7	30.9	93.0	2.0	50.9	145.9	26.8	88.8	1.7	55.6	146.1
rural female	38.5	50.9	0.7	38.5	90.1	53.1	66.7	0.4	36.0	103.1	37.3	49.0	0.4	33.7	83.1
urban male	0.7	3.1	0.3	1.6	5.0	1.0	4.0	0.3	1.3	5.6	0.9	3.9	0.2	1.8	5.9
urban female	1.2	1.7	0.1	1.4	3.2	1.9	2.8	0.1	1.6	4.5	1.0	1.7	0.0	1.5	3.2
<b>all</b>	<b>67.3</b>	<b>138.7</b>	<b>3.7</b>	<b>97.6</b>	<b>240.0</b>	<b>86.9</b>	<b>166.5</b>	<b>2.8</b>	<b>89.8</b>	<b>259.1</b>	<b>66.0</b>	<b>143.4</b>	<b>2.3</b>	<b>92.6</b>	<b>238.3</b>
<b>secondary</b>															
rural male	1.9	9.4	4.5	11.6	25.5	2.0	12.0	5.2	17.2	34.4	1.7	11.5	5.5	28.0	45.0
rural female	3.2	6.4	0.7	2.5	9.6	3.8	8.0	0.8	3.8	12.6	2.0	5.6	0.8	7.2	13.6
urban male	1.5	7.3	10.3	7.1	24.7	2.1	9.6	12.8	8.9	31.3	1.7	9.2	14.2	11.3	34.7
urban female	1.3	2.9	1.0	1.3	5.2	1.9	4.9	1.5	1.6	8.0	1.5	4.3	1.3	2.2	7.8
<b>all</b>	<b>7.9</b>	<b>26.0</b>	<b>16.5</b>	<b>22.5</b>	<b>65.0</b>	<b>9.8</b>	<b>34.5</b>	<b>20.3</b>	<b>31.5</b>	<b>86.3</b>	<b>6.9</b>	<b>30.6</b>	<b>21.8</b>	<b>48.7</b>	<b>101.1</b>
<b>tertiary</b>															
rural male	2.2	16.8	10.5	4.1	31.4	3.2	22.1	12.4	4.1	38.6	2.9	23.7	12.8	4.7	41.2
rural female	2.1	3.5	1.8	0.7	6.0	2.3	4.1	3.4	0.8	8.3	2.1	4.0	3.2	0.9	8.1
urban male	3.6	20.9	20.8	4.0	45.7	4.6	26.9	23.6	3.0	53.5	4.4	28.2	27.5	3.9	59.6
urban female	1.3	3.7	4.9	1.2	9.8	2.0	4.1	7.1	0.9	12.1	1.3	3.4	7.7	0.8	11.9
<b>all</b>	<b>9.2</b>	<b>44.9</b>	<b>38.0</b>	<b>10.0</b>	<b>92.9</b>	<b>12.1</b>	<b>57.2</b>	<b>46.5</b>	<b>8.8</b>	<b>112.5</b>	<b>10.7</b>	<b>59.3</b>	<b>51.2</b>	<b>10.3</b>	<b>120.8</b>
<b>all industries</b>															
rural male	31.0	109.2	17.6	71.8	198.6	36.1	127.1	19.6	72.2	218.9	31.4	124.0	20.0	88.3	232.3
rural female	43.8	60.8	3.2	41.7	105.7	59.2	78.8	4.6	40.6	124.0	41.4	58.6	4.4	41.8	104.8
urban male	5.8	31.3	31.4	12.7	75.4	7.7	40.5	36.7	13.2	90.4	7.0	41.3	41.9	17.0	100.2
urban female	3.8	8.3	6.0	3.9	18.2	5.8	11.8	8.7	4.1	24.6	3.8	9.4	9.0	4.5	22.9
<b>all</b>	<b>84.4</b>	<b>209.6</b>	<b>58.2</b>	<b>130.1</b>	<b>397.9</b>	<b>108.8</b>	<b>258.2</b>	<b>69.6</b>	<b>130.1</b>	<b>457.9</b>	<b>83.6</b>	<b>233.3</b>	<b>75.3</b>	<b>151.6</b>	<b>460.2</b>

Table A2: Number of workers (in million) according to ps in NSS 55<sup>th</sup> to 66<sup>th</sup> rounds for different categories of employment and industry of work

all-India															all ages
category of persons	number of workers (in million) in different industries by category of employment according to ps														
	55 <sup>th</sup> round					61 <sup>st</sup> round					66 <sup>th</sup> round				
	unpaid self-employed	all self-employed	regular wage/salaried	casual labour	all	unpaid self-employed	all self-employed	regular wage/salaried	casual labour	all	unpaid self-employed	all self-employed	regular wage/salaried	casual labour	all
															<b>primary</b>
rural male	25.1	80.8	2.6	55.7	139.1	28.1	89.8	2.0	50.5	142.3	24.2	85.8	1.7	55.2	142.7
rural female	26.2	33.2	0.7	34.6	68.5	33.7	42.1	0.4	31.9	74.4	26.1	33.3	0.4	30.1	63.8
urban male	0.7	2.9	0.3	1.6	4.8	1.0	3.6	0.3	1.3	5.2	0.9	3.7	0.2	1.8	5.7
urban female	0.7	0.9	0.1	1.3	2.3	1.0	1.6	0.1	1.3	3.0	0.7	1.0	0.0	1.3	2.3
<b>all</b>	<b>52.7</b>	<b>117.8</b>	<b>3.7</b>	<b>93.2</b>	<b>214.7</b>	<b>63.8</b>	<b>137.1</b>	<b>2.8</b>	<b>85.0</b>	<b>224.9</b>	<b>51.9</b>	<b>123.8</b>	<b>2.3</b>	<b>88.4</b>	<b>214.5</b>
															<b>secondary</b>
rural male	1.5	9.0	4.5	11.6	25.1	2.0	11.6	5.2	17.2	34.0	1.7	11.0	5.5	28.0	44.5
rural female	2.5	4.9	0.7	2.1	7.7	2.7	6.1	0.8	3.0	9.9	1.6	4.4	0.4	4.8	9.6
urban male	1.5	7.1	10.3	7.1	24.5	2.1	9.4	12.8	8.7	30.9	1.7	9.0	14.2	11.3	34.5
urban female	0.9	2.2	1.0	1.2	4.4	1.5	3.3	1.3	1.5	6.1	1.2	3.2	1.3	1.8	6.3
<b>all</b>	<b>6.4</b>	<b>23.2</b>	<b>16.5</b>	<b>22.0</b>	<b>61.7</b>	<b>8.3</b>	<b>30.4</b>	<b>20.1</b>	<b>30.4</b>	<b>80.9</b>	<b>6.2</b>	<b>27.6</b>	<b>21.4</b>	<b>45.9</b>	<b>94.9</b>
															<b>tertiary</b>
rural male	2.2	16.5	10.8	4.1	31.4	2.8	22.5	12.4	4.0	38.9	3.0	24.2	12.7	4.2	41.1
rural female	1.4	2.8	2.1	0.7	5.6	1.9	3.4	3.0	0.4	6.8	1.6	3.2	3.6	0.8	7.6
urban male	3.5	20.7	20.7	3.8	45.2	4.3	26.7	23.4	3.0	53.1	4.2	27.7	27.3	3.9	58.9
urban female	1.0	2.9	4.7	0.9	8.5	1.5	3.3	7.0	0.7	11.0	1.0	2.8	7.5	1.0	11.3
<b>all</b>	<b>8.1</b>	<b>42.9</b>	<b>38.3</b>	<b>9.5</b>	<b>90.7</b>	<b>10.5</b>	<b>55.9</b>	<b>45.8</b>	<b>8.1</b>	<b>109.8</b>	<b>9.8</b>	<b>57.9</b>	<b>51.1</b>	<b>9.9</b>	<b>118.9</b>
															<b>all industries</b>
rural male	29.2	106.2	17.6	71.4	195.2	33.3	123.5	19.6	71.4	214.5	28.9	121.0	20.0	87.5	228.5
rural female	30.0	41.0	3.2	37.8	82.0	38.3	51.6	4.6	35.6	91.8	29.3	41.0	4.4	35.7	81.1
urban male	5.7	30.7	31.3	12.5	74.5	7.4	39.7	36.4	13.0	89.1	6.6	40.6	41.9	17.0	99.5
urban female	2.6	5.9	5.9	3.5	15.3	4.0	8.0	8.4	3.4	19.8	2.8	7.0	8.8	4.0	19.8
<b>all</b>	<b>67.5</b>	<b>183.8</b>	<b>58.0</b>	<b>125.2</b>	<b>367.0</b>	<b>83.0</b>	<b>222.8</b>	<b>69.0</b>	<b>123.4</b>	<b>415.2</b>	<b>67.6</b>	<b>209.6</b>	<b>75.1</b>	<b>144.2</b>	<b>428.9</b>

Table A3: Employment growth (in millions) in India at disaggregated level

<b>1. Growth in employment in usual status ps+ss, ps and ss</b>								
	between 55 <sup>th</sup> and 61 <sup>st</sup>			between 61 <sup>st</sup> and 66 <sup>th</sup>				
	ps+ss	ps	ss	ps+ss	ps	ss		
male	35.3	33.6	2.7	23.2	23.9	-0.7		
female	24.7	14.7	10.0	-20.9	-10.8	-10.1		
person	60.0	48.3	11.7	2.3	13.1	-10.8		
<b>2. Growth in employment for different age groups (years)</b>								
	between 55 <sup>th</sup> and 61 <sup>st</sup>			between 61 <sup>st</sup> and 66 <sup>th</sup>				
	less than 25	25 or more		less than 25	25 or more			
male	6.5	28.8		-8.4	31.6			
female	3.2	21.5		-10.5	-10.4			
person	9.7	50.3		-18.9	21.2			
<b>3. Growth in different status in employment</b>								
	between 55 <sup>th</sup> and 61 <sup>st</sup>				between 61 <sup>st</sup> and 66 <sup>th</sup>			
	self-employed	regular wage/salaried	casual labour	all	self-employed	regular wage/salaried	casual labour	all
male	27.1	7.3	0.9	35.3	-2.3	5.6	19.9	23.2
female	21.5	4.1	-0.9	24.7	-22.6	0.1	1.6	-20.9
person	48.6	11.4	0.0	60.0	-24.9	5.7	21.5	2.3
<b>4. Growth in paid and unpaid employment</b>								
	between 55 <sup>th</sup> and 61 <sup>st</sup>				between 61 <sup>st</sup> and 66 <sup>th</sup>			
	paid		unpaid		paid		unpaid	
	all ages	25+	all ages	25+	all ages	25+	all ages	25+
rural male	15.2	14.4	5.1	2.7	18.1	20.2	-4.7	-0.6
urban male	13.1	10.5	1.9	1.2	10.5	11.8	-0.7	0.2
male	28.3	24.9	7.0	3.9	28.6	32.0	-5.4	-0.4
rural female	2.9	3.8	15.4	12.9	-1.4	1.6	-17.8	-11.7
urban female	4.4	3.4	2.0	1.4	0.3	0.8	-2.0	-1.1
female	7.3	7.2	17.4	14.3	-1.1	2.4	-19.8	-12.8
all persons	35.6	32.1	24.4	18.2	27.5	34.4	-25.2	-13.2
<b>5. Growth in employment by industry for persons of all ages and age 25+</b>								
	between 55 <sup>th</sup> and 61 <sup>st</sup>				between 61 <sup>st</sup> and 66 <sup>th</sup>			
	primary	secondary	tertiary	all	primary	secondary	tertiary	all
all ages	19.1	21.3	19.6	60.0	-20.8	14.8	8.3	2.3
25+	19.3	14.7	15.6	50.3	-6.2	16.2	11.2	21.2
<b>6. Growth in unpaid employment by industry</b>								
persons of all ages	between 55 <sup>th</sup> and 61 <sup>st</sup>				between 61 <sup>st</sup> and 66 <sup>th</sup>			
	primary	secondary	tertiary	all	primary	secondary	tertiary	all
	19.6	1.9	2.9	24.4	-20.9	-2.9	-1.4	-25.2
<b>7. Growth in paid and unpaid employment in primary sector</b>								
	between 55 <sup>th</sup> and 61 <sup>st</sup>			between 61 <sup>st</sup> and 66 <sup>th</sup>				
	unpaid	paid	all	unpaid	paid	all		
male	4.3	0.5	4.8	-4.2	4.7	0.5		
female	15.3	-1.0	14.3	-16.7	-4.6	-21.3		
person	19.6	-0.5	19.1	-20.0	0.1	-20.8		

# **Student Workers in India -Incidences of Earning while Learning**

Salil Kumar Mukhopadhyay and Tarak Chandra Patra<sup>1</sup>

## **1 Introduction**

1.1. Education is associated with knowledge acquisition leading to the enrichment and flourishing of the self. But on a different plane and on a more pragmatic scale, education is highly associated with employability and consequently determines crucially the chances of success in labour market. Demand in the labour market with the better conditions of employment is enhanced with attainment of higher education. Thus, education ensures financial security and a better place in the job market.

1.2 The relation of education with the job market can be viewed in two different perspectives: first is the situation of completion of a level of education, therefore, being in a situation of out of the education system and being in the job market; secondly to enter the job market while pursuing the education. The first category basically involves, those who either never attended any educational institution as well as those who ever attended but currently not attending (henceforth will be referred to as 'non-students'). In the second category are the persons who are currently attending educational institutions (henceforth will be referred to as 'students'). The situation of 'earning while learning' or combining earning and study results in a time budgeting for this two activities and a trade-off between study and job. Impacts of such trade-off between the study and the labour market can be both positive and negative. The positive impacts may be in the form of acquisition of skill and experience and negative in the sense of not giving adequate time for study. The students enter the labour market for a myriad of reasons: to make provision for higher studies, for responsibility towards family, for financial constraints, for gaining freedom to spend and acquiring skills for future prospect in the job market.

## **2 Objective**

2.1 This paper attempts to find the labour market characteristics of the students of age 5-29 years and their degrees of comparability with those of non-students as captured in the labour force surveys of NSSO. For this the information collected in 66<sup>th</sup> round (July 2009- June 2010) survey of NSSO on employment and unemployment has been used. The labour market characteristics that have been studied here are those of student employment (or earning while learning status), structure of the student workforce and their comparability with the non-students.

## **3 Methodology**

3.1 In the 66<sup>th</sup> round employment and unemployment surveys of NSSO, information is collected on the status of current attendance in educational institutions for persons of age

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below 30 years. Thus, each person can be classified as a student or non-student from the information on the status of current attendance in educational institutions. NSSO collects data on employment and unemployment using three measures or approaches, viz., ‘usual activity status’ (US)<sup>2</sup> ‘current weekly activity status’ (CWS)<sup>3</sup> and ‘current daily activity status’ (CDS)<sup>4</sup> for all the household members. In all of these approaches of measurement of activity status of the persons, a separate category ‘student’ is identified. Thus, information on the labour market characteristics can be studied for the students (i.e., for those currently attending educational institutions) as well as those of the non-students. This is one aspect of the paper. The other aspect of the paper is to study the labour market characteristics of the persons who are classified as students in the activity status classification in their usual principal activity status<sup>5</sup>. The labour market characteristics of the persons who are classified as students in the usual principal activity status have been studied with respect to their engagement in subsidiary economic activities.

#### **4 Dataset used**

4.1 For the purpose of the analysis, we have used the data collected in the employment and unemployment surveys of NSSO in its 66<sup>th</sup> round (July 2009- June 2010). Use has also been made of the results in NSS report no. 537 (Employment and Unemployment Situation in India 2009-10).

### **5 Classification of a person as student in employment and unemployment surveys of NSSO**

5.1 Student as a category in the labour force framework of activity determination: In the labour force surveys of NSS, a person’s activity status is determined separately in all the

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<sup>2</sup> Usual activity status (US) relates to the activity status of a person during the reference period of last 365 days preceding the date of survey. The activity status on which a person spent relatively longer time (major time criterion) is considered the usual *principal activity status*. To decide the usual principal activity status of a persons, a two-stage dichotomous classification is used to determine the broad activity status, viz., employed, unemployed and out of labour force. Within the broad activity status so determined, the detailed activity status is determined depending on the relatively longer time spent in the activities. Besides the usual *principal activity status*, a person may be engaged in economic activity, during the last 365 days, for a period of 30 days or more. The status in which such economic activities are pursued is the subsidiary economic activity of the person.

<sup>3</sup> The current weekly activity status (CWS) of a person is the activity status obtaining for a person during a reference period of 7 days preceding the date of survey. According to the CWS approach, a person is considered as worker if he/she has performed any economic activity at least for one hour on any day of the reference week, and is obtained from the daily activities or in-activities performed in each day of the last seven days prior to the date of survey.

<sup>4</sup> The current daily activity status (CDS) of a person is determined on the basis of his/her activity status on each day of the reference week using a priority-cum-major time criterion (day to day labour time disposition).

<sup>5</sup> Activity status in the usual principal activity status are as follows: worked in h.h. enterprise (self-employed): *own account worker -11, employer-12, worked as helper in h.h. enterprise (unpaid family worker) -21; worked as regular salaried/ wage employee -31, worked as casual wage labour: in public works -41, in other types of work -51; did not work but was seeking and/or available for work -81, attended educational institution -91, attended domestic duties only -92, attended domestic duties and was also engaged in free collection of goods (vegetables, roots, firewood, cattle feed, etc.), sewing, tailoring, weaving, etc. for household use -93, rentiers, pensioners, remittance recipients, etc. -94, not able to work due to disability -95, others (including begging, prostitution, etc.) -97.*

approaches of measurements and each person is assigned a unique activity status. Of all the approaches of measurement of employment and unemployment characteristics adopted in NSS surveys, usual status is determined with a long reference period of one year. There may be several situations for a person during the reference period. The individual might be engaged in a single dominant activity throughout the year or the dominant activity might be carried out along with other activities simultaneously or in succession or in alternation. In the first situation, the dominant activity for the person, which did not change during the reference period, is his/her usual principal activity status. In the second situation, where the dominant activity changed, the usual principal status for the person is determined by the activity that prevailed for longer period for the person during the reference period, that is, by major time criteria. Thus, in the usual principal activity status, a person may be classified as student according to the major time criteria with a reference period of last 365 days, who may have other economic or non-economic activities during the same reference period.

**5.2 Status of current attendance to determine student:** In the employment and unemployment surveys of NSSO, for each person of age below 30 years his/her status of current attendance in educational institution is recorded. The persons who are currently attending any educational institution are classified as students. Thus, it is quite possible that a person who is currently attending any educational institution is not classified as a student in the activity status determination adopted in the approaches of measurement of employment-unemployment and *vice versa*. Thus, one can derive the labour market characteristics in both ways of classification: one determined on the basis of status of current attendance and the other based on the usual principal activity status, ‘student’.

## 6 Students in the population

Table 1: Percentage distribution of population by five year age groups 2009-10

age group (years)	all-India			
	category of persons			
	rural		urban	
	male	female	male	female
(1)	(2)	(3)	(4)	(5)
0-4	9.3	9.5	7.7	7.7
5-9	11.7	10.6	9.1	8.4
10-14	12.4	11.1	10.3	9.3
15-19	10.9	9.1	10.7	9.6
20-24	7.9	8.8	9.8	9.9
25-29	7.2	8.4	8.9	9.4
5-29	50.1	48.0	48.8	46.6
30-34	7.0	7.9	8.0	8.6
35-39	7.0	7.7	7.8	8.4
40-44	6.0	6.1	6.6	6.4
45-49	5.5	5.3	6.0	6.2
50-54	4.1	4.0	4.6	4.0
55-59	3.4	3.5	3.2	3.4
60 & above	7.7	8.1	7.3	8.6
all ages	100.0	100.0	100.0	100.0

**6.1 Age distribution of the population:** In the labour force surveys of NSS, all the persons of age below 5 years are assigned a non-economic activity status without any probing about their participation in economic or non-economic activities. For persons of age 5 years and above, detailed probing is done to determine the details of the activities performed by them and accordingly activity status is assigned. Since the purview of this paper has been confined to the students of age 5-29 years, the composition of the population in different age groups has been studied here. It is seen from Table 1 that nearly 50 per cent of the Indian population belongs to the age group 5-29 years (50 per cent of rural

male, 48 per cent of rural female, 49 per cent of urban male and 47 per cent of urban female). Thus, our study concentrates on the activities of the half of the population.

6.2 Students among persons of age 5-29 years: The estimates of proportion of students derived from both the approaches, viz., from their status of current attendance (ref: Table 2) and from the usual principal activity status (ref: Table 3) shows high degree of convergence, though there are methodological differences in the derivation of such statuses. Nearly half (slightly more than 50 per cent) of the Indian population at the age group 5-29 years are students. The 5-year age group disaggregated estimates of proportion of students will help to study the labour market behavior of the students better because it is seen that with the progression of the ages there is sign of gradual severance of ties with the 'student' status:

Table 2: Percentage of person of age 5-29 years currently attending in educational institutions

category of persons (1)	age groups					
	5-9 (2)	10-14 (3)	15-19 (4)	20-24 (5)	25-29 (6)	5-29 (7)
rural male	85.0	89.3	58.7	18.6	2.4	58.0
rural female	83.3	85.2	47.3	8.2	1.4	48.8
rural male+female	84.2	87.4	53.7	13.3	1.9	53.6
urban male	91.0	91.3	68.8	32.5	5.2	58.8
urban female	90.2	91.6	66.9	24.0	3.8	54.2
urban male+female	90.6	91.5	68.0	28.4	4.5	56.7
rural+urban male	86.4	89.8	61.5	23.1	3.3	58.2
rural+urban female	84.8	86.7	52.8	12.9	2.1	50.2
rural+urban male+female	85.7	88.4	57.6	18.0	2.7	54.4

Table 3: Percentage of persons of age 5-29 years with the activity status student in the principal status approach

category of persons (1)	age groups					
	5-9 (2)	10-14 (3)	15-19 (4)	20-24 (5)	25-29 (6)	5-29 (7)
rural male	86.1	92.4	60.2	18.1	1.3	59.1
rural female	84.4	87.8	48.5	7.7	0.5	49.6
rural male+female	85.3	90.3	55.0	12.8	0.9	54.6
urban male	92.4	93.9	70.8	30.7	4.0	59.5
urban female	91.4	93.9	68.6	23.8	2.6	55.0
urban male+female	91.9	93.9	69.8	27.4	3.3	57.4
rural+urban male	87.6	92.8	63.1	22.2	2.2	59.2
rural+urban female	86.0	89.2	54.1	12.5	1.1	51.0
rural+urban male+female	86.8	91.2	59.1	17.3	1.6	55.3

6.3 Distribution of students and non-students of age 5-29 years among different age groups: The distribution of students given in Table 4 shows that nearly 95 per cent of the

students in the rural areas and 88 per cent of the students in the urban areas are less than 20 years of age, moreover, nearly 75 per cent of the students in rural areas and 63 per cent in the urban areas are in the age group 5-14 years. The distribution of the non-students (Ref: Table 5) among persons of age 5-29 years show clearly different picture: nearly 33 per cent in rural areas and 22 per cent in the urban areas were less than 20 years of age while nearly 13 per cent in rural areas and 7 per cent in urban areas were in the age group 5-14 years. The higher age groups, say 20 years or more, shared nearly 67 per cent of the non-students in the rural areas and 78 per cent of the non-students in the urban areas. These shows that among the students a very small proportion while among the non-students, a very high proportion belong to the higher age groups (say 20 years or more), when the likelihood of participation in the labour force increases compared to the persons in the lower age groups.

Table 4: Percentage distribution of students of age 5-29 years among different age groups

category of persons (1)	age groups					
	5-9 (2)	10-14 (3)	15-19 (4)	20-24 (5)	25-29 (6)	5-29 (7)
rural male	34.2	38.1	22.1	5.0	0.6	100.0
rural female	37.8	40.3	18.4	3.1	0.5	100.0
rural male+female	35.7	39.0	20.5	4.2	0.6	100.0
urban male	29.0	32.7	25.6	11.1	1.6	100.0
urban female	29.9	33.9	25.4	9.4	1.4	100.0
urban male+female	29.4	33.2	25.5	10.3	1.5	100.0
rural+urban male	32.7	36.6	23.1	6.7	0.9	100.0
rural+urban female	35.5	38.4	20.4	4.9	0.8	100.0
rural+urban male+female	34.0	37.4	21.9	5.9	0.8	100.0

Table 5: Percentage distribution of non-students of age 5-29 years among different age groups

category of persons (1)	age groups					
	5-9 (2)	10-14 (3)	15-19 (4)	20-24 (5)	25-29 (6)	5-29 (7)
rural male	8.0	4.7	21.1	31.4	34.8	100.0
rural female	6.9	5.6	19.4	33.5	34.7	100.0
rural male+female	7.4	5.2	20.2	32.5	34.7	100.0
urban male	3.7	3.6	16.0	33.6	43.0	100.0
urban female	3.6	2.9	14.4	35.8	43.3	100.0
urban male+female	3.7	3.3	15.2	34.7	43.2	100.0
rural+urban male	6.8	4.4	19.7	32.0	37.0	100.0
rural+urban female	6.1	5.0	18.1	34.1	36.8	100.0
rural+urban male+female	6.4	4.7	18.9	33.1	36.9	100.0

## 7 Students in the labour force

7.1 Percentage of students in the labour force according to usual status (ps+ss): The magnitude of labour supply available for the production of goods and services by the

students (ref: Table 6) and non-students (ref: Table 7) in the usual status approach have been studied here. It is seen (ref: Table 6) that students in the higher age groups are more in labour force compared to the students in the lower age groups. For the students in the lower age groups say, below 15 years, which are also termed as children in the context of child labor, at the all India level a very small proportion are in the labour force : 0.3 per cent in the age group 5-9 years and 1 per cent in the age group 10-14 years, while for the non-students (ref: Table 7), the proportion in the labour force for the corresponding age groups were 0.7 per cent and 29 per cent. Among the students in the higher age groups, 20-24 years and 25-29 years, the proportion in the labour force are 11 per cent and 33 per cent respectively, while for the non-students, nearly 62 per cent and 66 per cent were in the labour force for the corresponding age group. Among the students of age 25-29 years, nearly 51 per cent for the rural male, 23.9 per cent for rural female, 31 per cent for urban males and 18 per cent for urban females are in the labour force, while among the non-students of the corresponding ages a very high proportion are in the labour force.

Table 6: Percentage of students in labour force in the usual status among students of age 5-29 years

category of persons	age groups					
	5-9	10-14	15-19	20-24	25-29	5-29
(1)	(2)	(3)	(4)	(5)	(6)	(7)
rural male	0.3	1.7	6.8	16.1	51.2	3.4
rural female	0.3	1.1	3.3	8.0	23.9	1.5
rural male+female	0.3	1.4	5.4	13.5	40.3	2.6
urban male	0.0	0.5	2.1	11.5	31.0	2.5
urban female	0.1	0.4	1.2	5.3	18.2	1.2
urban male+female	0.1	0.4	1.7	9.0	25.7	1.9
rural+urban male	0.3	1.4	5.4	14.0	41.0	3.1
rural+urban female	0.3	0.9	2.6	6.5	20.9	1.4
rural+urban male+female	0.3	1.2	4.2	11.3	32.9	2.4

Table 7: Percentage of non-students in labour force in the usual status among non-students of age 5-29 years

category of persons	age groups					
	5-9	10-14	15-19	20-24	25-29	5-29
(1)	(2)	(3)	(4)	(5)	(6)	(7)
rural male	0.8	39.4	89.0	96.7	98.7	85.4
rural female	0.7	21.3	35.0	33.6	40.7	33.4
rural male+female	0.7	29.1	61.7	62.4	68.1	58.0
urban male	0.6	37.2	84.5	96.0	98.2	89.5
urban female	0.4	13.4	24.5	24.4	22.3	22.3
urban male+female	0.5	26.7	56.6	59.6	60.7	56.4
rural+urban male	0.8	38.9	88.0	96.5	98.5	86.5
rural+urban female	0.7	20.2	33.0	31.3	35.5	30.7
rural+urban male+female	0.7	28.7	60.6	61.7	65.9	57.6

**7.2 Percentage of students in the labour force according to current weekly activity status:** The magnitude of labour supply available for the production of goods and services by the students and non-students in the current weekly status approach have been presented in Table 8 and Table 9. As seen for the usual status approach, a higher proportion of students belonging to the higher age groups are in the labour force. Moreover, the proportions of non-students in the labour force are much higher than the proportion of students who are found to be in the labour force.

Table 8: Percentage of students in labour force in the current weekly status among students of age 5-29 years

category of persons	age groups					
	5-9	10-14	15-19	20-24	25-29	5-29
(1)	(2)	(3)	(4)	(5)	(6)	(7)
rural male	0.2	1.2	4.4	12.1	48.8	2.4
rural female	0.2	0.7	2.1	5.8	17.0	1.0
rural male+female	0.2	1.0	3.5	10.1	36.2	1.8
urban male	0.1	0.5	1.7	11.2	29.8	2.3
urban female	0.1	0.2	0.9	4.6	19.0	1.0
urban male+female	0.1	0.4	1.3	8.5	25.4	1.8
rural+urban male	0.2	1.0	3.6	11.7	39.2	2.4
rural+urban female	0.2	0.6	1.6	5.2	18.0	1.0
rural+urban male+female	0.2	0.8	2.8	9.3	30.7	1.8

Table 9: Percentage of non-students in labour force in the current weekly status among non-students of age 5-29 years

category of persons	age groups					
	5-9	10-14	15-19	20-24	25-29	5-29
(1)	(2)	(3)	(4)	(5)	(6)	(7)
rural male	0.7	38.6	88.1	95.9	97.9	84.6
rural female	0.6	19.1	30.9	28.9	34.7	28.8
rural male+female	0.7	27.5	59.2	59.5	64.6	55.2
urban male	0.4	36.0	83.7	95.6	97.9	89.0
urban female	0.1	12.7	23.2	23.5	21.5	21.4
urban male+female	0.2	25.7	55.5	58.9	60.1	55.7
rural+urban male	0.7	38.1	87.1	95.8	97.9	85.8
rural+urban female	0.5	18.2	29.4	27.6	30.9	27.0
rural+urban male+female	0.6	27.2	58.4	59.3	63.3	55.3

## 8 Student workers

**8.1 Magnitude of usual status workers among students:** Students of all the age groups are found to combine work with their study (ref: Table 10) with varying degrees. Even the

‘children’ (persons of age 5-14 years) are found to be have combined work with their study, though the magnitude of usual status workers among the children who are studying are low. Among students of age 10-14 years, nearly 1 per cent was usual status workers. The magnitude of workers are found to increase with the increase of ages of the students and for the male students of age 15-19 years, nearly 6 per cent in rural areas and 2 per cent in urban areas were workers, while for the female students of this age group nearly 3 per cent in rural areas and 1 per cent in urban areas were workers. The incidence of combination of work activities with study was even more prominent for the students of age groups 20-24 and 25-29 years. Among the male students of age 20-24 years nearly 15 per cent in rural areas and 9 per cent in urban areas were workers while among the female students of these age group nearly 7 per cent in rural areas and 5 per cent in urban areas, respectively, were workers. Among the students of age 25-29 years a very high proportions have carried on both the activity of work and study: among male students nearly 50 per cent in rural areas and 29 per cent in urban areas were workers while among the female students nearly 21 per cent in rural areas and 17 per cent in urban areas were workers. The propensity to be in the workforce are very high among the non-students of all the age groups (Ref: Table 11) compared to those of the students of the respective age groups and this is an indication of the participation in the work activities when they are not engaged in study. It is observed that even among the non-students of age below 15 years, a very high proportion are workers, indicating that the propensity for a child to be in the work force increases as their attachment is not with school. Among the male non-students of age 15 years and above, a very high proportion are workers while among the female non-students their participation in the work activities are lower compared to their male counterparts.

8.2 The proportion of workers among students separately for the age groups 15-19, 20-24 and 25-29 are presented in Table 10.1, at the end of the write-up, for each state and u.t.

Table 10: Percentage of usual status workers among students of age 5-29 years

category of persons	age groups					
	5-9	10-14	15-19	20-24	25-29	5-29
(1)	(2)	(3)	(4)	(5)	(6)	(7)
rural male	0.3	1.7	6.4	14.8	50.2	3.2
rural female	0.3	1.1	3.1	7.1	20.7	1.4
rural male+female	0.3	1.4	5.1	12.3	38.4	2.4
urban male	0.0	0.5	1.6	8.6	28.9	2.0
urban female	0.1	0.4	1.0	4.5	17.0	1.1
urban male+female	0.1	0.4	1.4	6.9	24.0	1.6
rural+urban male	0.3	1.4	5.0	12.0	39.4	2.9
rural+urban female	0.2	0.9	2.4	5.7	18.8	1.3
rural+urban male+female	0.3	1.2	3.9	9.7	31.1	2.2

Table 11: Percentage of usual status workers among non-students of age 5-29 years

category of persons (1)	age groups					
	5-9 (2)	10-14 (3)	15-19 (4)	20-24 (5)	25-29 (6)	5-29 (7)
rural male	0.8	36.5	81.5	91.3	96.9	81.4
rural female	0.7	21.0	33.3	31.7	39.4	31.9
rural male+female	0.7	27.7	57.1	58.9	66.6	55.3
urban male	0.4	34.0	74.7	87.6	94.0	83.1
urban female	0.1	13.1	22.0	19.8	19.7	19.2
urban male+female	0.3	24.8	50.2	53.1	57.3	51.6
rural+urban male	0.7	36.0	80.0	90.3	96.0	81.9
rural+urban female	0.6	19.9	31.1	28.6	33.8	28.8
rural+urban male+female	0.7	27.2	55.7	57.3	63.8	54.4

8.3 Magnitude of current weekly status workers among students: The estimates of workforce measured with a short reference period of a week for the students (Ref: Table 12) as well as for the non-students (Ref: Table 13) display similar pattern as was observed in the usual status approach.

Table 12: Percentage of current weekly status workers among students of age 5-29 years

category of persons (1)	age groups					
	5-9 (2)	10-14 (3)	15-19 (4)	20-24 (5)	25-29 (6)	5-29 (7)
rural male	0.2	1.2	3.9	10.2	47.4	2.2
rural female	0.2	0.7	1.9	4.9	14.3	1.0
rural male+female	0.2	1.0	3.2	8.5	34.2	1.7
urban male	0.1	0.5	1.2	7.9	25.5	1.8
urban female	0.1	0.2	0.7	3.8	13.0	0.8
urban male+female	0.1	0.4	1.0	6.2	20.4	1.4
rural+urban male	0.2	1.0	3.1	9.2	36.3	2.1
rural+urban female	0.2	0.6	1.5	4.3	13.6	0.9
rural+urban male+female	0.2	0.8	2.5	7.4	27.2	1.6

Table 13: Percentage of current weekly status workers among non-students of age 5-29 years

category of persons (1)	age groups					
	5-9 (2)	10-14 (3)	15-19 (4)	20-24 (5)	25-29 (6)	5-29 (7)
rural male	0.6	34.5	78.1	88.6	94.3	78.8
rural female	0.6	18.3	27.9	26.1	33.1	26.7
rural male+female	0.6	25.3	52.7	54.6	62.1	51.3
urban male	0.4	33.4	73.0	86.3	92.9	81.9
urban female	0.1	12.4	20.0	18.7	18.5	17.9
urban male+female	0.2	24.1	48.4	51.9	56.2	50.4
rural+urban male	0.6	34.2	77.0	87.9	93.9	79.6
rural+urban female	0.5	17.5	26.4	24.2	28.9	24.6
rural+urban male+female	0.6	25.1	51.8	53.9	60.3	51.1

## 9 Structure of the student workforce

9.1 Structure of the workforce, both for students and non-students, has been studied with respect to two aspects, namely the statuses of workforce and sectoral distribution of the workforce. In NSSO employment and unemployment surveys, the workforce is divided into three broad statuses, self-employment, regular wage/salaried employment and casual labours. The broad sectoral distribution of the workforce has been studied with respect to primary sector, secondary sector and tertiary sector.

9.2 Status of employment the students: A comparison of the employment status of the student workers (Ref: Table 14) and non-student workers (Ref: Table 15) of age 5-29 years shows distinct pattern for this two categories of workers. Among the student workers in both rural and urban areas, self-employment activity was the main provider of employment while among the non-student workers in rural areas self-employment activity and casual labour together provided employment to a majority of them and among the non-student workers in urban areas self-employment activity and regular wage employment provided employment to a majority of them. Casual labour emerged as a more important means of employment for the non-students workers than among the student workers. Moreover, for both the student workers and non-student workers in both rural and urban areas, gender differentials among the different statuses of employment were not prominent. Among the student workers in rural areas, nearly 80 per cent were engaged in self-employment activity and in urban areas nearly 50 per cent of the student workers were engaged in self-employment activity. Regular wage employment among the student workers in rural areas were very low (3-5 per cent) but the situation in urban areas is different with nearly 40 per cent of the student workers were engaged in regular wage employment. One distinct feature of the student workers, in both rural and urban areas, was the small share of the casual labour work activities in providing employment

to them: in rural areas nearly 17 per cent of the student workers were engaged in casual work activities while in urban areas nearly 11 per cent of them were engaged in casual work activities. The employment status of the non-student workers shows that in rural areas nearly 49 per cent of them were engaged in self-employment activities and another 43 per cent were engaged in casual labour activities. In urban areas among the non-student workers nearly 34 per cent were engaged in self-employment activities, nearly 44 per cent were engaged in regular wage employment activities and another 22 per cent were engaged in casual labour activities. The importance of casual labour as a means of employment was very low for the student workers but the reliance on casual labour as a means of employment for the non-student workers was comparatively higher. In rural areas nearly 17 per cent of the student workers against 43 per cent of non-student workers had casual work activity while in urban areas nearly 11 per cent of the student workers against 22 per cent of non-student workers had self-employment activity.

Table 14: Percentage distribution of student workers according to usual status of age 5-29 years in different employment statuses

category of persons (1)	employment statuses			
	self-employed (2)	regular wage/salaried (3)	casual labour (4)	all (5)
rural male	78.6	3.7	17.7	100.0
rural female	80.0	5.3	14.7	100.0
rural male+female	78.9	4.1	17.0	100.0
urban male	50.1	39.2	10.7	100.0
urban female	49.4	40.7	9.9	100.0
urban male+female	49.9	39.6	10.5	100.0
rural+urban male	73.1	10.5	16.4	100.0
rural+urban female	73.1	13.3	13.6	100.0
rural+urban male+female	73.1	11.2	15.7	100.0

Table 15: Percentage distribution of non-student workers according to usual status of age 5-29 years in different employment statuses

category of persons (1)	employment statuses			
	self-employed (2)	regular wage/salaried (3)	casual labour (4)	all (5)
rural male	46.2	9.3	44.5	100.0
rural female	54.3	5.3	40.4	100.0
rural male+female	48.7	8.1	43.2	100.0
urban male	33.0	44.4	22.6	100.0
urban female	37.2	44.6	18.2	100.0
urban male+female	33.8	44.4	21.8	100.0
rural+urban male	42.6	18.9	38.5	100.0
rural+urban female	51.6	11.6	36.8	100.0
rural+urban male+female	45.0	16.9	38.0	100.0

9.3 Broad industry of work of the student workers of age 5- 29 years: The sectoral distribution of the student workers (Ref: Table 16) and non-student workers (Ref: Table 17) have been studied here. In rural areas, nearly 77 per cent of both the male and female student workers were engaged in the primary sector, nearly 12 per cent were engaged in secondary sector and nearly 10 per cent were engaged in the tertiary sector. This shows that among the student workers in rural areas gender differentials in the sectoral distribution of workers did not exist and the primary sector was the main provider of employment. The sectoral distribution of the non-student workers in rural areas display completely different pattern with the reduced importance of the primary sector as a provider of employment for males and the increased share of both the secondary and tertiary sector, while for females the share of primary sector remained at the same level as that of the student workers but the share of the secondary sector increased with a commensurate reduction in the employment in the tertiary sector. It is seen that in rural areas, among the non-student male workers nearly 58 per cent were engaged in the primary sector, 24 per cent in the secondary sector and 18 per cent in the tertiary sector. Among the non-student female workers in the rural areas, nearly 77 per cent were engaged in the primary sector, 16 per cent in the secondary sector and 7 per cent in the tertiary sector. The distribution of the student workers and non-student workers in the urban areas among broad industry of work also display distinct pattern. Among the student workers in the urban areas slightly more than 70 per cent of the males and females were engaged in the tertiary sector, nearly 21 per cent were in secondary sector and the share of the primary sector was around 6 per cent. Among the non-student workers, the share of the tertiary sector as a provider of employment reduced for both males and females and the share of the secondary sector increased: for both the male and female non-student workers in the urban areas nearly 50 per cent were engaged in the tertiary sector and slightly more than 40 per cent were engaged in the secondary sector.

Table 16: Percentage distribution of student workers according to usual status of age 5-29 years in different broad industry of work

category of persons (1)	broad industry of work			
	primary (2)	secondary (3)	tertiary (4)	all (5)
rural male	77.0	12.0	10.9	100.0
rural female	77.4	12.3	10.3	100.0
rural male+female	77.1	12.1	10.8	100.0
urban male	6.4	22.1	71.5	100.0
urban female	5.5	21.1	73.4	100.0
urban male+female	6.1	21.8	72.1	100.0
rural+urban male	63.5	14.0	22.5	100.0
rural+urban female	61.1	14.3	24.6	100.0
rural+urban male+female	62.9	14.0	23.1	100.0

Table 17: Percentage distribution of non-student workers according to usual status of age 5-29 years in different broad industry of work

category of persons (1)	broad industry of work			
	primary (2)	secondary (3)	tertiary (4)	all (5)
rural male	58.2	23.9	17.9	100.0
rural female	77.1	15.7	7.2	100.0
rural male+female	64.0	21.4	14.6	100.0
urban male	4.4	42.3	53.2	100.0
urban female	10.2	40.5	49.4	100.0
urban male+female	5.5	42.0	52.5	100.0
rural+urban male	43.5	28.9	27.6	100.0
rural+urban female	66.3	19.7	14.0	100.0
rural+urban male+female	49.8	26.4	23.9	100.0

## 10 Work activities by the persons classified as students in the usual principal activity status

1.10.1 As has been discussed earlier, in the labour force framework in usual principal activity status, a person is classified as a student if in the major time criteria he/she is a student, irrespective of his status in current attendance in educational institutions. Such persons may be engaged in subsidiary economic activity<sup>6</sup> in the usual activity status. In this section, the engagement of the students in the usual status in the subsidiary activity is studied. Table 18 presents the percentage of students of different age groups engaged in an economic activities in subsidiary status. Evidence of engagement in subsidiary economic activity was present for all the age groups and the incidence of engagement in subsidiary economic activity is higher for persons belonging to the higher age groups.

Table 18: Percentage of students according to usual status with subsidiary economic activity

category of students (1)	age groups				
	5-9 (2)	10-14 (3)	15-19 (4)	20-24 (5)	25-29 (6)
rural male	0.3	1.6	4.8	8.5	7.0
rural female	0.3	1.0	2.9	3.4	3.3
rural male+female	0.3	1.3	4.1	6.9	5.7
urban male	0.0	0.4	0.9	3.4	2.8
urban female	0.0	0.3	0.6	1.7	3.8
urban male+female	0.0	0.3	0.8	2.7	3.2
rural+urban male	0.2	1.3	3.6	6.2	4.4
rural+urban female	0.3	1.6	4.8	8.5	7.0
rural+urban male+female	0.3	1.0	2.9	3.4	3.3

<sup>6</sup> Subsidiary economic activity: A person whose usual principal status was determined on the basis of the major time criterion could have pursued some economic activity for a shorter time throughout the reference year of 365 days preceding the date of survey or for a minor period, which is not less than 30 days, during the reference year. The status in which such economic activity was pursued was the subsidiary economic activity status of that person.

## **11 Discussion**

### **Students in the population**

11.1 Nearly 50 per cent of the Indian population belonged to the age group 5-29 years (50 per cent of rural male, 48 per cent of rural female, 49 per cent of urban male and 47 per cent of urban female). Persons of this age group are the future entrants to the labour market.

11.2 Nearly 54 per cent of persons in the age group 5-29 years were students, i.e. were currently attending educational institutions. Among the students of age 5-29 years, nearly 75 per cent in rural areas and 63 per cent in urban areas were children (persons of age below 15 years) while among the non-students, only 13 per cent in rural areas and 7 per cent in urban areas were children. Higher proportion of children among students compared to non-students points towards the possibility of lower participation in work activities by students compared to non-students.

### **Students in workforce**

11.3 Students of all the age groups are found to combine work with their study with varying degrees. Even the 'children' (persons of age 5-14 years) are found to be have combined work with their study. The propensity to combine work with study increased with the increase of age.

11.4 The incidence of combination of work activities with study was even more prominent for the students of age groups 20-24 and 25-29 years. Among the male students of age 20-24 years nearly 15 per cent in rural areas and 9 per cent in urban areas were workers while among the female students of these age group nearly 7 per cent in rural areas and 5 per cent in urban areas, respectively, were workers.

11.5 Among the students of age 25-29 years a very high proportions have carried on both the activity of work and study: among male students nearly 50 per cent in rural areas and 29 per cent in urban areas were workers while among the female students nearly 21 per cent in rural areas and 17 per cent in urban areas were workers.

11.6 The chances to be in the workforce are very high among the non-students of all the age groups compared to those of the students of the respective age groups. This is an indication to be in workplace when not in school.

### **Structure of Student workforce-statuses in employment**

11.7 For the student workers in both rural and urban areas, self-employment was the main provider of employment, though in urban areas the reliance on self-employment declined a bit: nearly four-fifths of the student workforce in rural areas and one-half in urban areas were self-employed.

11.8 Among the non-student workers in rural areas self-employment activity and casual labour together provided employment to a majority of them while among the non-student

workers in urban areas self-employment activity and regular wage employment provided employment to a majority of them.

11.9 The importance of casual labour as a means of employment was very low for the student workers but the reliance on casual labour as a means of employment for the non-student workers was comparatively higher. In rural areas nearly 17 per cent of the student workers against 43 per cent of non-student workers had casual work activity while in urban areas nearly 11 per cent of the student workers against 22 per cent of non-student workers had self-employment activity.

### **Structure of Student workforce-sectoral distribution**

11.10 Among the student workers in rural areas gender differentials in the sectoral distribution of workers did not exist and the primary sector was the main provider of employment.

11.11 The sectoral distribution of the non-student workers in rural areas display completely different pattern with the reduced importance of the primary sector as a provider of employment for males and the increased share of both the secondary and tertiary sector, while for females the share of primary sector remained at the same level as that of the student workers but the share of the secondary sector increased with a commensurate reduction in the employment in the tertiary sector.

11.12 In rural areas, nearly 77 per cent of both the male and female student workers were engaged in the primary sector, nearly 12 per cent were engaged in secondary sector and nearly 10 per cent were engaged in the tertiary sector.

11.13 In rural areas, among the non-student male workers nearly 58 per cent were engaged in the primary sector, 24 per cent in the secondary sector and 18 per cent in the tertiary sector. Among the non-student female workers in the rural areas, nearly 77 per cent were engaged in the primary sector, 16 per cent in the secondary sector and 7 per cent in the tertiary sector.

11.14 Among the student workers in the urban areas slightly more than 70 per cent of the males and females were engaged in the tertiary sector, nearly 21 per cent were in secondary sector and the share of the primary sector was around 6 per cent. Among the non-student workers, the share of the tertiary sector as a provider of employment reduced for both males and females and the share of the secondary sector increased: for both the male and female non-student workers in the urban areas nearly 50 per cent were engaged in the tertiary sector and slightly more than 40 per cent were engaged in the secondary sector.

11.15 Evidence of engagement in subsidiary economic activity was present for all the students (as per usual principal activity status) of age groups and the incidence of engagement in subsidiary economic activity is higher for persons belonging to the higher age groups.

Table 10.1: Percentage of usual status workers among students of different age groups

rural								
state/u.t./ all-India	male				female			
	age groups							
	10-14	15-19	20-24	25-29	10-14	15-19	20-24	25-29
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Andhra Pradesh	0.2	4.3	9.1	34.1	0.1	0.8	4.9	35.2
Arunachal Pradesh	0.7	1.2	16.9	14.7	0.0	0.0	1.0	7.6
Assam	2.9	3.6	21.0	99.3	0.6	0.8	0.5	0.0
Bihar	0.5	1.2	6.9	4.2	0.0	0.0	0.0	0.0
Chhattisgarh	0.1	4.7	5.4	58.1	0.7	3.7	20.6	62.0
Delhi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Goa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gujarat	2.6	5.7	1.7	80.7	0.6	0.0	0.0	0.0
Haryana	2.0	4.9	17.6	75.9	0.4	3.0	3.8	16.2
Himachal Pradesh	0.6	5.6	10.2	54.6	1.0	10.2	15.9	45.2
Jammu & Kashmir	1.5	14.4	20.1	69.9	0.6	11.2	21.0	24.8
Jharkhand	1.1	7.7	7.3	76.4	0.3	1.3	22.2	31.8
Karnataka	0.3	4.6	19.4	0.0	0.0	0.2	8.4	0.0
Kerala	0.1	1.5	12.8	73.4	0.0	0.7	7.2	9.6
Madhya Pradesh	0.0	5.1	24.2	77.8	0.0	1.9	19.4	32.4
Maharashtra	0.5	4.6	20.6	29.4	2.0	0.4	5.9	37.4
Manipur	0.1	0.4	21.0	35.4	0.0	1.5	0.8	0.0
Meghalaya	1.9	9.7	17.0	70.7	0.2	8.2	8.4	53.0
Mizoram	0.0	1.9	9.3	43.9	0.0	4.6	25.5	6.7
Nagaland	0.3	6.2	16.5	100.0	0.7	9.9	18.8	97.9
Orissa	0.1	1.1	5.8	24.5	0.0	0.4	9.1	0.0
Punjab	0.7	0.6	17.3	31.8	0.0	0.1	13.0	7.2
Rajasthan	1.9	2.4	4.9	3.3	2.3	0.2	0.0	0.0
Sikkim	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
Tamil Nadu	0.0	0.2	0.0	2.1	0.0	1.2	0.7	2.0
Tripura	0.0	2.3	14.6	99.7	0.0	2.6	1.6	0.0
Uttarakhand	3.3	13.9	2.9	90.0	1.6	8.4	14.3	24.5
Uttar Pradesh	4.5	15.0	30.4	51.5	2.7	7.2	2.8	4.7
West Bengal	2.7	9.1	21.5	58.0	1.7	7.6	2.4	2.1
A & N Islands	0.0	0.0	0.0	85.5	0.0	0.0	0.0	0.0
Chandigarh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dadra & Nagar Haveli	0.0	0.0	71.9	0.0	0.0	0.0	0.0	0.0
Daman & Diu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lakshadweep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Puducherry	4.7	6.6	0.0	100.0	0.0	0.0	0.0	0.0
all India	1.7	6.4	14.8	50.2	1.1	3.1	7.1	20.7

Table 10.1: Percentage of usual status workers among students of different age groups  
urban

state/u.t./ all-India	male				female			
	age groups							
	10-14	15-19	20-24	25-29	10-14	15-19	20-24	25-29
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Andhra Pradesh	0.0	1.6	9.9	18.6	0.2	0.5	4.1	27.8
Arunachal Pradesh	4.3	0.0	8.0	59.7	0.0	0.6	3.1	6.2
Assam	0.7	2.3	3.1	70.2	0.0	2.7	2.4	0.0
Bihar	0.0	0.8	17.0	6.2	0.0	0.2	10.8	4.6
Chhattisgarh	0.0	4.7	5.3	38.3	0.0	0.0	16.1	0.0
Delhi	0.0	0.0	3.1	11.2	0.0	0.0	6.5	0.0
Goa	0.0	1.0	0.0	54.7	0.0	0.0	0.0	0.0
Gujarat	0.5	1.9	9.8	0.0	0.0	0.2	2.4	26.6
Haryana	1.9	5.2	10.3	21.9	0.3	3.4	0.3	36.3
Himachal Pradesh	0.0	2.7	8.0	9.1	0.0	0.0	1.1	0.0
Jammu & Kashmir	0.0	0.6	4.1	9.3	0.0	1.4	5.0	20.3
Jharkhand	0.1	0.5	1.9	13.9	0.0	1.5	11.6	17.0
Karnataka	0.0	0.6	5.5	78.2	0.0	0.1	6.7	3.2
Kerala	0.0	0.1	6.6	59.8	0.4	1.9	5.0	29.4
Madhya Pradesh	1.0	2.2	10.2	14.9	0.9	0.0	1.9	7.5
Maharashtra	0.6	1.9	14.2	60.6	0.6	1.7	5.7	32.4
Manipur	0.0	0.3	4.8	50.7	0.0	0.0	3.9	10.6
Meghalaya	0.0	0.0	0.0	54.0	0.4	0.3	0.0	9.7
Mizoram	0.0	1.3	4.0	15.8	0.0	0.3	5.7	30.6
Nagaland	0.9	0.9	10.1	100.0	1.1	4.4	12.9	0.0
Orissa	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0
Punjab	0.1	0.4	15.6	30.6	0.0	0.2	2.4	22.7
Rajasthan	0.7	0.1	8.0	21.1	0.0	0.0	0.0	34.6
Sikkim	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tamil Nadu	0.0	0.4	6.9	42.6	0.0	0.6	2.8	10.6
Tripura	0.0	0.0	5.5	0.0	0.0	0.0	0.0	0.0
Uttarakhand	0.0	3.6	6.1	27.8	0.5	0.9	4.2	0.0
Uttar Pradesh	0.9	3.1	8.1	12.4	0.8	1.3	2.5	4.5
West Bengal	1.8	2.8	3.9	36.2	1.1	4.2	15.9	0.0
A & N Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chandigarh	0.0	0.5	13.8	0.0	0.0	0.0	0.0	21.7
Dadra & Nagar Haveli	0.0	0.0	50.1	0.0	0.0	0.0	0.0	0.0
Daman & Diu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lakshadweep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Puducherry	0.0	0.8	1.0	9.7	0.0	2.2	11.5	0.0
<b>all India</b>	<b>0.5</b>	<b>1.6</b>	<b>8.6</b>	<b>28.9</b>	<b>0.4</b>	<b>1.0</b>	<b>4.5</b>	<b>17.0</b>

**References:**

1. *Instructions to Field Staff, Volume 1 and Volume II, NSS 66<sup>th</sup> round.*
2. *NSS report no. 537, Employment and Unemployment Situation in India, 2009-10.*
3. *Working Paper No. 49, Earning While Learning: Labor Market Returns to Student Employment During Tertiary Education by Regula Geel and Uschi Backes-Gellner, February 2010*
4. *Earning While Learning: Maintaining Income While Upgrading Skills By Heath Prince, January 2004*

## Scenario of Employment in context of Female worker in Rural India (66th Round)

Hema Jaiswal

### Back ground & Introduction:

Employment is critical for poverty reduction and for enhancing women's status. However it is potentially empowering and liberating only if it provides women an opportunity to improve their wellbeing and enhance their capabilities. On the other hand, if it is driven by distress and is low-paying then it may only increase a woman's drudgery.

This paper will try to find out the Female workforce participation rate and their scenario in Rural India. It will try to analyses whether higher workforce participation rate of Females in rural India in comparison to their Urban counterpart is a significant indication of their well being or there are some other factors which needed to taken care of for their well being.

Workforce participation rate for women in rural India may not be only a significant indicator of their wellbeing but it is also to find out their outcome from employment for understanding their progress.

Paper will try to find out whether rural women's employment has grown over the decades, and their type of employment in the current round. The paper is organized in six sections. The next section analyses work participation rates for women by socio economic characteristics such as caste, religion, education, and economic status. Section 3 discusses the participation of women in the agricultural and nonagricultural sectors and their categorization by employment status. Section 4 examines some of the correlates of workforce participation including education and poverty. The determinants of women's work participation and the factors that influence their participation in employment are explored by means of logistic regression analysis in section 5. The last section concludes with an overview and suggestions for improving the position of women workers in rural areas.

### **Workforce participation over the round:**

Round	Rural			Urban			All		
	Male	Female	Person	Male	Female	Person	Male	Female	Person
66th	54.7	26.1	40.8	54.3	13.8	35.0	54.6	22.8	39.2
61st	54.6	32.7	43.9	54.9	16.6	36.5	54.7	28.7	42.0
55th	53.1	29.9	41.7	51.8	13.9	33.7	52.7	25.9	39.7
50th	55.3	32.8	44.4	52.1	15.5	34.7	54.5	28.6	42.0
43rd	53.9	32.3	43.4	50.6	15.2	33.7	53.1	28.5	41.2
38th	54.7	34.0	44.5	51.2	15.1	34.0	53.8	29.6	42.0
32nd	55.2	33.1	44.4	50.8	15.6	34.1	54.3	29.7	42.3
27th	54.5	31.8		50.1	13.4				

Over the round it is observed that Rural Female workforce participation is always greater (or double) than their Urban Counterpart. It maybe interpret without analyzing further where this workforce is engaged that Rural Females are better of than their Urban counterpart, but when their sectorial (Agriculture/Nonagricultural) and status of employment is analyzed, it may be seen that only workforce participation is not suitable indicator for their well being but it should be inclusive of Education and other skills, which will be found in the subsequent sections.

## **2. Workforce Participation by Socio-Economic Characteristics:**

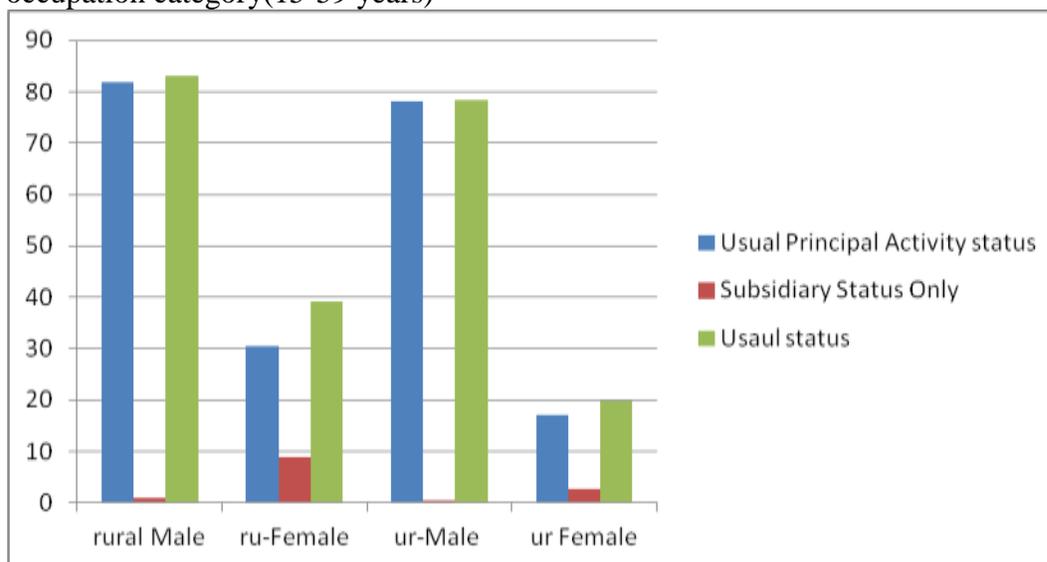
The notion of work and employment, especially for women, is complex. The reasons why women work (or do not work) in gainful activity, or whether they work part time or full time, can be diverse and is rooted in a complex interplay of economic, cultural, social and personal factors. In developing economies, workers combine multiple activities over different parts of the year. The NSSO defines a person who is employed (in gainful activity) for a major part of the year as being “Principal Status” employed. If gainfully employed only for a part of the year, she/he is described as being employed in the “Subsidiary status”. A person employed either in “Usual Principal Status (UPS)” or “Usual Subsidiary Status (SS)” is enumerated as being employed in the “Usual Status (also UPSS)”. The reference is to UPSS employment throughout this paper. The industry associated with her employment is the one which she is associated for a major part of the Employment. This paper will focus for the most part on rural employment, but also provide data on urban employment in order to highlight the contrasts.

Number of persons employed per 1000 persons (i.e., WFPR or WPR) according to Occupation category:

Employment status		RURAL		Urban	
		Male	Female	Male	Female
1	Usual Principal Activity status	54.00	20.27	53.98	11.97
2	Subsidiary Status Only	0.07	5.8	0.3	1.8
3	Usual status(UPA+SS)	54.7	26.07	54.28	13.77

for 15-59 years of age (Number of persons employed per 1000 persons)					
Employment status		RURAL		Urban	
		Male	Female	Male	Female
Usual Principal Activity status		81.90	30.38	78.08	17.19
Subsidiary Status Only		1.09	8.80	0.40	2.60
Usual status (UPA+SS)		83.00	39.18	78.48	19.79

Number of persons employed per 1000 persons (i.e., WFPR or WPR) according to occupation category(15-59 years)



As in most other parts of the world, fewer women participate in employment in India compared to men. In 2009-10, while in urban areas, 19.79 percent women and 78.48 percent men were employed, in rural areas, these percentages were 39.18 and 83.0 respectively. More women (proportionately) are employed only in the subsidiary status, than men, especially in rural areas. This can be explained by factors from the supply side as well as the demand side. Taking the former first, the rural economy has been largely stagnant over the years and employment opportunities have not grown. Most women, therefore, are able to get work for only a few months in the year. This keeps them employed only in the ‘Subsidiary Status’. On the supply side, women’s primary duties are supposed to be in the household. For economic reasons they have to work, but must do so in addition to their domestic responsibilities, and are therefore only able to enter the labourforce as subsidiary workers.

## **2 Socio economic analysis for participation of women in Employment In Rural India**

While mainly economic factors determine a man’s participation in employment, the forces that influence a woman’s participation in work are many and diverse and include demographic, reproductive, social, religious and cultural factors. In this section various factors associated will be discussed one by one.

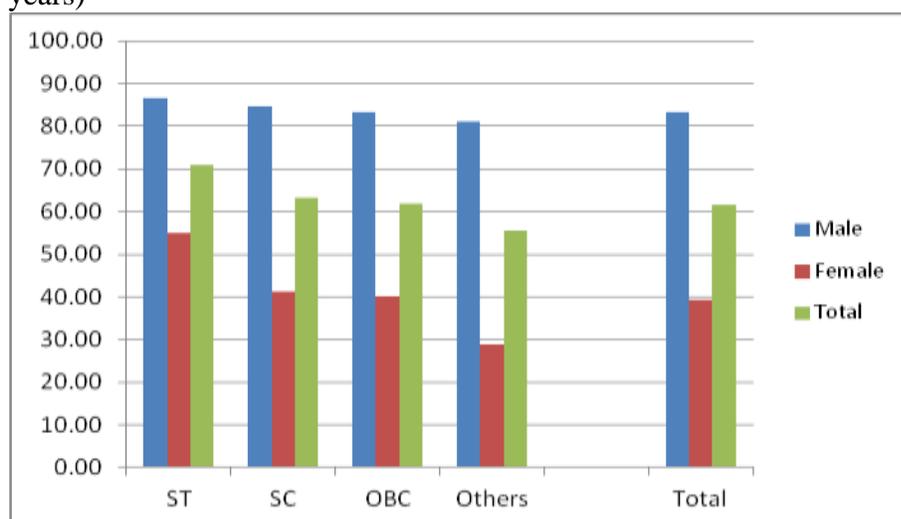
### **2.1) WFPR and social groups:**

It is revealed from the table below that WFPR is highest for Scheduled Tribe (ST) and Scheduled caste (SC) women and lowest for women from the ‘other’ caste. The SCs and STs are the most marginalized sections in the economy and the most impoverished. Women from these groups have higher WFPRs because extreme poverty leaves them with little choice but to work, and because they do not face social taboos that disapprove of work. The converse is true for women from ‘Other’ castes.

Social Group	Male	Female	Total
ST	86.61	54.92	70.89
SC	84.69	41.26	63.29
OBC	83.28	40.14	61.76
Others	80.94	28.81	55.58
Total	83.35	39.19	61.53

*Source:* Computed from Employment-Unemployment Survey NSSO 2009-10, Unit Level Data.

Workforce Participation (Rural India) Rate by Social Group and Sex, 2009-10(for age 15-59 years)



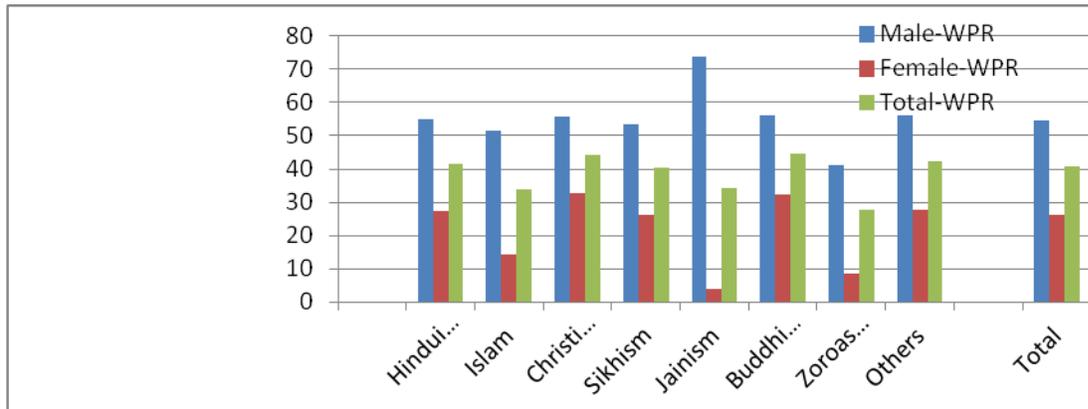
## 2.2) Religion and WFPR for women:

When religious background is considered, Muslim women in rural areas have a significantly low WFPR – nearly half the national rate for women of all religions. Once again it is social norms that restrict women's mobility and entry into the workforce that keep more Muslim women tied.

Table: 3

Religion	Male	Female	Total
Hinduism	83.53	41.28	62.67
Islam	83.47	21.70	52.98
Christianity	79.88	46.29	62.67
Sikhism	79.20	37.41	58.39
Jainism	89.65	3.65	37.57
Buddhism	81.29	48.24	65.05
Zoroastrianism	51.08	8.90	31.57
Others	82.15	46.10	65.73
Total	83.35	39.18	61.53

(Rural Workforce Participation Rate by Religion and Sex, 2009-10(for age group-15-59 years)

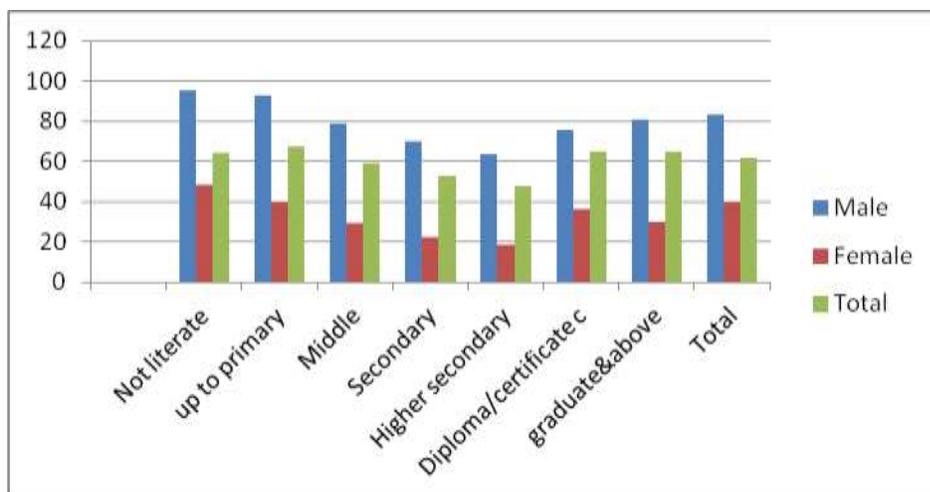


### **2.3) Work Force Participation Rate and General Education Level:**

Does education propel women into employment? The gender differences in this respect are interesting and stark. For male workers, higher levels of education are indeed associated with higher WFPR, both in rural areas. But for women, WFPR is higher for illiterate women than for women with higher levels of school education – a trend which reverses itself only for women with technical/vocational education or graduates. Thus 95.58 percent of illiterate men are employed but this percentage goes up to 63.29 percent among men who have passed their higher secondary .On the other hand, 48.19 percent illiterate women are employed, but this percentage declines to just 18.39 percent among women who have passed higher secondary. **Multiple factors such as the compulsion for men to earn, the greater availability of jobs for men and the restrictive social norms operating for women are associated with this observed from this trend.**

General education level	Male	Female	Total
Not literate	95.58	48.19	64.14
Up to primary	92.90	39.78	67.73
Middle	78.61	29.53	59.03
Secondary	69.93	22.26	52.61
Higher secondary	63.29	18.39	47.76
Diploma/certificate c	75.46	36.57	64.59
Graduate above	80.59	29.87	64.84
Total	83.36	39.18	61.53

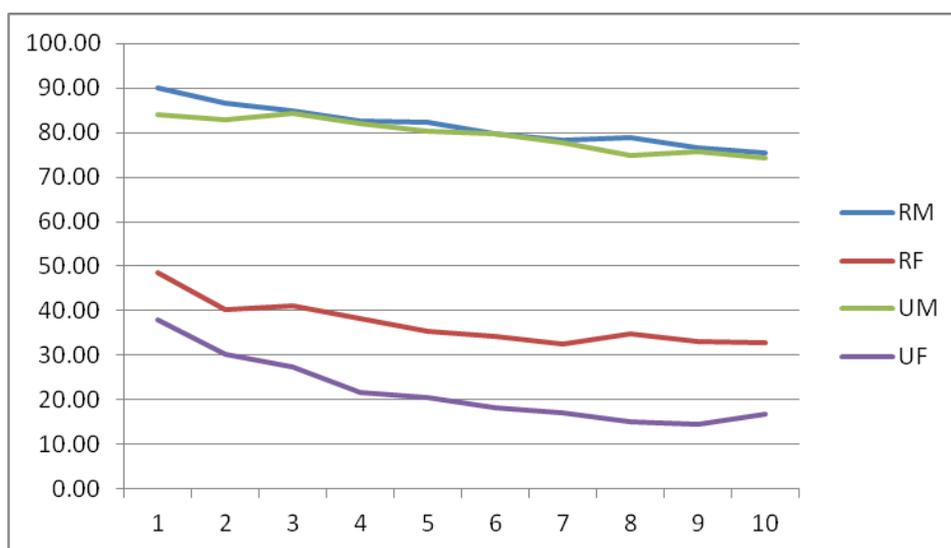
Rural work participation rate by level of education (15-59 years)



#### 2.4) WFPR and Income:

A question arises as economic status of women influence their participation in work? Indeed, the relationship between workforce participation and economic status of the household is critical for policy and programme interventions. While the NSSO does not collect data on incomes, it provides data on Monthly Per Capita Consumption Expenditure (MPCE); a measure that is widely used as a proxy for the economic status of households. Participation in employment across MPCE deciles groups from NSS unit records has been calculated. Workforce participation shows a consistently declining trend with rising economic status for rural women, **clearly reflecting on the economic distress that compels poor women to work.**

In contrast, for Urban women, work participation shows a skewed v-shape, declining as economic status improves, but rises again with the highest consumption decile. The latter reflects on higher educational attainments of women associated with higher incomes, and the greater availability of employment opportunities in urban areas.



WFPR across MPCE deciles by sector and sex (15-59 years), 2009-10

In brief:

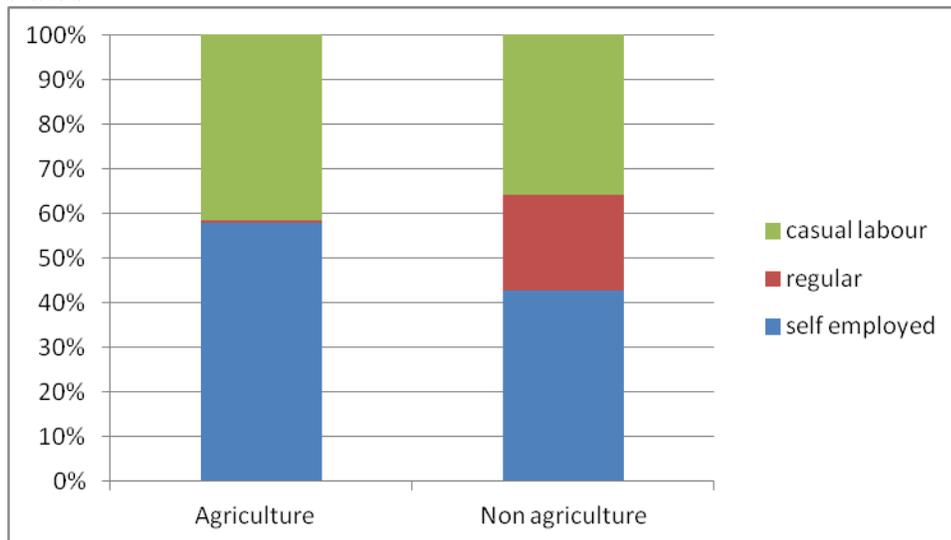
To conclude, women’s participation in gainful work is lower compared to men; it is higher for scheduled caste and scheduled tribe women who are less restricted by social norms; among religious groups, work participation is lowest for Muslim women; education impacts differentially for men and women, with level of participation increasing with educational levels for men, but declining for rural women; as economic status improves, work participation declines for rural women **suggesting that when there are no compelling economic reasons to earn, social taboos on women’s participation in work exercise a strong influence.** In general, while the gaps in work participation between men and women are clear and well recognized, the gaps between different classes of women hailing from different social and economic backgrounds are less well known and need to be understood for effective policy measures.

**3. Women’s Employment in the Agricultural and Non-Agricultural Sectors by Employment Status**

Within rural areas, work may be classified along two dimensions; a) by sector, viz., agriculture or non-agriculture, and b) by employment status, that is whether a person is in regular employment, is self employed or is casually employed. **An analysis of women’s employment by sector and employment status can tell us a great deal about the outcomes for women and if the work they do promotes their wellbeing or is low-end, low paying and driven by distress.** Table below shows the distribution of workers by these cross cutting categories.

Percentage distribution of total female worker in rural area (for age15-59)	
Non-Agricultural	Agricultural
19.04	80.96

**Percentage distribution of total female worker in rural area (for age15-59) by employment status:**



Combining these above two information reveals that in Rural India majority (80.96%) women participate in agriculture and with in agriculture sector majority of them are as casual labour where wages may be very low and the working condition is not even good for women.

#### **4. Correlates of Poverty and Vulnerability for Women Workers in Rural India:**

This paper has discussed various dimensions of employment of rural women in previous sections. This section will draw attention to the characteristics of women workers and poverty levels in rural India. For this purpose in this section the official poverty line (PL) is used as a benchmark, but has categorized the population into six groups following the methodology adopted by NCEUS (2007)(National Commission for Enterprises in the Unorganized Sector )

Consumption characteristics and social development levels, of households have been divided as follows: 1. Extremely Poor: up to 0.75 PL; 2. Poor: Between 0.75PL and PL; 3. Marginal Poor: Between PL and 1.25 PL; 4. Vulnerable: between 1.25 PL and 2 PL; 5. Middle: Between 2 PL and 4PL; 6. Higher Income: Above 4 PL. The four lower categories have together been characterized as “Poor and Vulnerable”.

#### **Percentage Distribution of Women Workers by Poverty and Other Correlates, 2009-10** Economic category and status of Employment

<b>Employment Status</b>	<b>Extremely poor</b>	<b>Poor</b>	<b>Marginal</b>	<b>Vulnerable</b>	<b>Vulnerable Middle</b>	<b>Higher income</b>	<b>All</b>
<b>Self employed</b>	<b>40.23</b>	<b>47.42</b>	<b>52.30</b>	<b>61.50</b>	<b>67.49</b>	<b>67.67</b>	<b>54.84</b>
<b>regular employed</b>	<b>1.97</b>	<b>2.32</b>	<b>3.40</b>	<b>4.88</b>	<b>10.52</b>	<b>23.27</b>	<b>4.68</b>
<b>casual labour</b>	<b>57.80</b>	<b>50.26</b>	<b>44.30</b>	<b>33.62</b>	<b>21.99</b>	<b>9.06</b>	<b>40.48</b>
	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	

#### Economic category and education level:

	<b>Extremely poor</b>	<b>Poor</b>	<b>Marginal</b>	<b>Vulnerable</b>	<b>Vulnerable Middle</b>	<b>Higher income</b>	<b>All</b>
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>Total</b>
<b>Not literate</b>	<b>70.00</b>	<b>61.68</b>	<b>57.92</b>	<b>52.15</b>	<b>38.78</b>	<b>30.28</b>	<b>55.59</b>
<b>up to primary</b>	<b>20.44</b>	<b>23.51</b>	<b>23.64</b>	<b>24.76</b>	<b>25.09</b>	<b>16.1</b>	<b>23.61</b>
<b>middle to diploma</b>	<b>9.43</b>	<b>14.37</b>	<b>17.42</b>	<b>21.82</b>	<b>30.46</b>	<b>36.96</b>	<b>19.11</b>
<b>graduate and above</b>	<b>0.13</b>	<b>0.44</b>	<b>1.03</b>	<b>1.26</b>	<b>5.67</b>	<b>16.65</b>	<b>1.69</b>
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

Above table shows that while the percentage of casual workers declines rapidly with improving economic status, the percentage of regular workers is only high in the last category. The Self-employed have a presence in all economic categories, but are more predominant as economic wellbeing improves. **It can also be seen that workers with higher levels of education are almost entirely present in the higher economic categories. This shows that Education plays a critical role.**

**5: Determinants of Women’s Workforce Participation:**

The analysis attempts an explanation of why women participate in the workforce, the independent variables used are: age group, marital status, education status, caste group, religion, land holding size category, monthly per capita consumption quartile.

Logistic Regression is used since the model does not make distributional assumptions on the predictors, which can be both continuous and discrete. The results are presented in below Table in the form of coefficients and their significance level, and are briefly discussed here:

*Formula used is as below:*

**Logistic Regression Analysis: (for determinants of Participation in Employment**

Logistic Regression: An attempt is to made to find out probability of women -employed by P(Y=1) regressing on different variables in rural area.

Logistic Regression Equation:

$$p = P(Y = 1) = \frac{e^{\alpha + \beta k - 1 X k - 1, i}}{1 + e^{\alpha + \beta k - 1 X k - 1, i}} = \frac{1}{1 + e^{-(\alpha + \beta k - 1 X k - 1, i)}}$$

Objective is to predict p=Probability(Y=1) when Xs are given.

**Variable:**

	<b>Dependent</b>	<b>Independent</b>
<b>1.</b>	<b>Employed/Unemployed</b>	<b>Age group</b>
		<b>Marital Status</b>
		<b>Education</b>
		<b>Social Group</b>
		<b>Religion</b>
		<b>MPCE Quartile, land possessed,</b>

**Table:** coefficient of Logistic Regression for Women/Women Workers, 15-59 Years, 2009-10 (NSSO)

<b>Education (Ref: Illiterate)</b>	
Up to primary	-.1723029
Middleto diploma	-.6579186
Graduate and above	-.4163724
<b>Religion (Ref: Hindu)</b>	
Islam	-.8426416
others	.0311951
Christian	.2853303
Sikh	.1282545
<b>Social Group (Ref: ST)</b>	
SC	-.5830551
OBC	-.4984799
Othercast	-.8318431
<b>Age (Ref: 15-29)</b>	
Age30to44	.4824502
Age45to59	.2555359
<b>Land Possessed (Ref: Landless)</b>	
Land having	.6003346
<b>Marital Status (Ref: Never Married)</b>	
Divorced	1.843536
Widow	1.197996
Currently married	.3978656
<b>MPCE Quartile (Ref: Lowest Quartile)</b>	
Mpcquartile2	-.0973499
Mpcquartile3	-.194906
Mpcquartile3	-.0819497
<b>_cons</b>	-.7081156

(Total number of observation: = 219291769) (Results are calculated using STATA software)  
Pseudo R2 = 0.0792

### **Statistical interpretation of the result:**

As one would expect, possession of land has a very important influence on a woman's participation in employment. The household's consumption level has a negative influence. Among the individual characteristics, it is seen that compared to women in the age group 15-29, older women have a higher probability of participating in work and women in the age group 30-44 have the highest coefficient. Compared to never married women, married, divorced and

separated women have a higher probability of participating in work, with divorced or separated women having the highest coefficient. Compared to illiterate women, women with higher levels of education have a lower probability of being in the workforce. The coefficient declines with rising levels of education, recouping somewhat only for women who are diploma holders or graduates. Compared to scheduled tribes, all other caste groups have lower probability of participating in work, with higher castes having the lowest probability. Muslim women have a much lower probability of being in the workforce compared to Hindu women.

### **Socio Economic Interpretation of the result:**

This of interesting relationships between individual, household and regional characteristics in rural India. First, possession of land is naturally a very strong determinant of the participation of women in work employed. It may be noted that these cases would require the worker to be employed outside the home where cultural and social roles begin to play a bigger role.

As far as social/caste groups are concerned, our reference is the Scheduled Tribes among whom access to land and common property resources is much higher than that for SCs (who have the least access to land) which accounts for their high WPR, the coefficient for this being the lowest among upper castes.

### **Conclusion and Policy Implications**

While women workers in general constitute a marginalized category within the class of workers, rural women workers occupy a lower position compared to their urban counterparts, and the lowest layer among them is constituted by those belonging to the bottom strata of the society i.e. SCs and STs.

An important finding of this paper is that higher work participation rates *per se* do not indicate a higher level of welfare. Only when higher work participation rates are accompanied by higher educational capabilities and/or asset and income, higher work participation rates become meaningful for welfare. We show that rural women workers are concentrated in agriculture. On the other hand, a much smaller proportion among them works in nonagricultural jobs, particularly the more valued regular/salaried jobs. The conditions of work, especially of women wage worker, are quite dismal. Women workers are also subjected to various forms of discrimination including job-typing which gives them a lower wage compared to men.

The overall picture that emerges is one of greater disadvantage for women workers in general and those belonging to rural as well as SCs/STs in particular. Apart from inherited social disadvantages in a patriarchal structure, the other important contributory factors are a limited access to assets and other resources, and low level of education and skills.

### **Suggestion for policy implication:**

A higher level of education and employable skills for women workers is a *sine qua non* for improving their levels of productivity and enabling them to move into nonagricultural vocations and improve their condition .The emphasis on universalizing elementary education has

undoubtedly narrowed the enrolment gap between men and women, but given the low levels of education and employable skills and the gap between men and women workers, initiatives should also focus on the exiting workforce.

**Annexure: Output from STATA for Logistic regression:**

sw , pr (0.05) : logit, employed up to primary, middle to diploma, graduate and above, Islam, Others, Christian, Sikh, SC, OBC, Other Casts, age 30 to 44, age 45 to 59, land having, divorced, widow, currently married, mcpcqua~2, mcpcqua~3, mcpcqua~4 [fw=weight]

Begin with full model

p < 0.05000 for all terms in model

Logistic regression

Number of OBC = 219291769

LR chi2(19) = 2.33e+07

Prob > chi2 = 0.0000

Log likelihood = -1.352e+08

Pseudo R2 = 0.0792

Employed	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
uptoprimary	-.1723029	.0003747	-459.81	0.000	-.1730373	-.1715684
middletodi~a	-.6579186	.0004142	-1588.56	0.000	-.6587304	-.6571069
graduatean~e	-.4163724	.0010725	-388.23	0.000	-.4184744	-.4142704
islam	-.8426416	.0005532	-1523.32	0.000	-.8437258	-.8415574
others	.0311951	.0014584	21.39	0.000	.0283366	.0340536
christian	.2853303	.0009998	285.40	0.000	.2833708	.2872898
sikh	.1282545	.0010989	116.71	0.000	.1261007	.1304083
sc	-.5830551	.0005307	-1098.72	0.000	-.5840952	-.582015
Obc	-.4984799	.0004934	-1010.23	0.000	-.499447	-.4975128
Otherscast	-.8318431	.0005596	-1486.47	0.000	-.8329399	-.8307463
age30to44	.4824502	.0003751	1286.26	0.000	.4817151	.4831853
age45to59	.2555359	.0004509	566.70	0.000	.2546521	.2564197
landhaving	.6003346	.0005982	1003.57	0.000	.5991621	.601507
divorced	1.843536	.0022132	832.96	0.000	1.839198	1.847874
widow	1.197996	.0008242	1453.56	0.000	1.196381	1.199611
currentlym~d	.3978656	.0005029	791.09	0.000	.3968799	.3988513
mcpcqua~2	-.0973499	.0003724	-261.44	0.000	-.0980797	-.0966201
mcpcqua~3	-.194906	.0004135	-471.38	0.000	-.1957164	-.1940956
mcpcqua~4	-.0819497	.000474	-172.87	0.000	-.0828788	-.0810206
_cons	-.7081156	.0008318	-851.32	0.000	-.7097458	-.7064853

# Household Consumer Expenditure Survey: A review of NSS 66<sup>th</sup> Round

## Divisional Paper of NSSO (SDRD)

### *Abstract*

*A novel feature of the quinquennial NSS 66<sup>th</sup> round was the canvassing of two schedules types. This gave rise to three (3) sets of MPCE estimates. In this paper, an attempt is made to make a comparative study of these three (3) sets across sector, state and deciles classes. For the purpose of this study, it is assumed that (a) there is no systematic variation in quality of data collected by the investigators of different states and (b) the behaviour of the informants is invariant over the two kinds of data collection mechanisms with respect to reference period. Since all the NSS reports planned on consumption expenditure are already out, in this paper, additionally, some other aspects of the data not presented in those reports have been examined.*

### 1. Introduction

1.1 The household consumer expenditure survey (CES) is generally covered as one of the main subjects of the NSS survey at quinquennial intervals. This provides a time series of CES's. The 66th round survey (July 2009 - June 2010) was the eighth such survey of this quinquennial series, the seventh having been conducted during the 61st round (July 2004 - June 2005). The NSS consumer expenditure survey aims at generating estimates of household monthly per capita consumer expenditure (MPCE) and its distribution separately for the rural and urban sectors of the country, for States and Union Territories, and for different socio-economic groups. These indicators are amongst the most important measures of the level of living of the respective domains of the population. The distribution of MPCE indicates the differences in level of living of the different segments of the population.

1.2 In the NSS 66<sup>th</sup> round, the schedules of enquiry were of two types. These two types of schedule had the same item break-up but differed only in the reference periods used to collect some of the items in the schedule. As far as reference periods were concerned, Schedule Type 1 was a repeat of the schedule used in the earlier quinquennial rounds. An important feature of this schedule was that for certain categories of relatively infrequently purchased items- including clothing and consumer durables- it collected information on consumption for the last 30 days as well as that for the last 365 days. For other categories of items, including all food and fuel and consumer services, it used a 30-days reference period. Schedule Type 2 used 'last 365 days' (only) for the infrequently purchased categories, 'last 7 days' for some categories of food items, as well as pan, tobacco and intoxicants, and 'last 30 days' for other food items, fuel, and the remaining items. The differences (in reference period) between Schedule Types 1 and 2 are shown in Table T1.

**Table T1: Reference periods used for collection of consumption data in Schedule 1.0, Type 1 and Type 2**

Cate- gory	Item groups	Reference period for	
		Schedule Type 1	Schedule Type 2
I	Clothing, bedding, footwear, education, medical (institutional), durable goods	'Last 30 days' and 'Last 365 days'	Last 365 days
II	Edible oil; egg, fish & meat; vegetables, fruits, spices, beverages and processed foods; pan, tobacco & intoxicants	Last 30 days	Last 7 days
III	All other food, fuel and light, miscellaneous goods and services including non-institutional medical; rents and taxes	Last 30 days	Last 30 days

## 2. Focus of the paper

2.1 A novel feature of the quinquennial NSS 66<sup>th</sup> round was the canvassing of two schedules types as stated earlier. This gave rise to three (3) sets of MPCE estimates. In this paper, an attempt is made to make a comparative study of these three (3) sets across sector, state and deciles classes. For the purpose of this study, it is assumed that (a) there is no systematic variation in quality of data collected by the investigators of different states and (b) the behaviour of the informants is invariant over the two kinds of data collection mechanisms with respect to reference period. Since all the NSS reports planned on consumption expenditure are already out, in this paper, additionally, some other aspects of the data not presented in those reports have been examined.

## 3. Methodology

3.1 From each sample household where Schedule Type 1 was canvassed, two (2) measures of MPCE emerged. This was because for each such household, there were two sets of data for Category I items (see Table T1) – “last 30 days” data and “last 365 days” data – unlike items of Categories II and III, for which only “last 30 days” was available. Thus, there were two ways of measuring household MPCE: one using “last 30 days” for all items, and, the other, using “last 365 days” data for Category I items and “last 30 days” for the rest. The first measure of MPCE is called  $MPCE_{URP}$  (Uniform Reference Period MPCE) and the second,  $MPCE_{MRP}$  (Mixed Reference Period MPCE). From data on  $MPCE_{URP}$  and  $MPCE_{MRP}$  (collected from households where Schedule Type 1 was canvassed), two alternative estimates of the distribution of MPCE and average MPCE can be built up.

3.2 From each sample household where Schedule Type 2 was canvassed, a single measure of MPCE emerged, since, for each item of consumption, data for only one reference period had been collected. Since the reference period system used for Schedule Type 2 was only a slight modification of the Mixed Reference Period (differing only in the reference period used for Category II items), this measure of MPCE was termed as  $MPCE_{MMRP}$  (Modified Mixed Reference Period MPCE). The estimates of the distribution of MPCE and average MPCE that can be built up from Schedule Type 2 data are therefore called the estimates of  $MPCE_{MMRP}$ .

3.3 It is believed that the purchase pattern of household consumption goods vary over rich and poor households. Poor households earn daily or weekly and, broadly speaking, frequency of purchase for their items of consumption is relatively more compared to those items of the rich households. Further, it is understood that the general experience of the NSSO investigators in collecting data on consumption from households is that response to consumption of different item groups by a typical household depends on the frequency of purchase for that item group. Thus, response may vary over rich and poor households for any type of reference period of data collection for these items. To explore this issue further, we have classified households over different decile groups of MPCE and examined the pattern of the above mentioned three sets of MPCE over different sector X state X decile groups. The notations used for this study are as follows:

$F1(i,j,k) = Av MPCE(URP)$  of  $i^{th}$  sector,  $j^{th}$  state and  $k^{th}$  decile group.

$F2(i,j,k) = Av MPCE(MRP)$  of  $i^{th}$  sector,  $j^{th}$  state and  $k^{th}$  decile group.

$F3(i,j,k) = Av MPCE(MMRP)$  of  $i^{th}$  sector,  $j^{th}$  state and  $k^{th}$  decile group.

$FM(i,j,k) = \max (F1, F2 \& F3)$  of  $i^{th}$  sector,  $j^{th}$  state and  $k^{th}$  decile group.

3.4 Thus, corresponding to two (2) sectors, 36 states (including all India) and 11 decile (including all classes) groups of MPCE, there will be 792 sets of estimates for each of the 3 types, viz. F1, F2 & F3. In this paper, five exercises have been carried out – these are outlined below.

3.5 In the first one, we will examine the percentage count of FM, where  $FM = F1$  or  $F2$  or  $F3$ . This will give an idea about the particular reference period of data collection for which MPCE is the highest across the different expenditure groups of the population.

3.6 As regards the second exercise, it may be noted that the choice of reference period of the Planning Commission is MRP for calculating Head Count Ratio of the Poverty

(HCR). In this paper, we try to make a comparative analysis of extent of divergence of MPCE (URP) and MPCE (MMRP) over MPCE (MRP). To this end, we try to find out the number of cases (out of 792 sets) of estimates for which average MPCE (URP) is higher by different extents (pre-determined) over MPCE (MRP). A similar exercise is done to find out the number of cases (out of 792 sets of estimates) of average MPCE (MMRP) being greater by the same pre-determined levels over MPCE (MRP).

3.7 One of the special features of MMRP is that there are many cases of over-reporting of consumption by the informant for the item groups like (i) edible oil and (ii) spices in canvassing Schedule Type 2 where reference period for these item groups is 7 days. Our third exercise is based on this observation. To do so, we calculate *MPCE adjusted* by segregating the above mentioned two item groups from the total MPCE (for all three types) and then examine the extent of divergence. In a similar vein to the earlier exercise, we try to find out the number of cases (out of 792 sets) of estimates for which average *MPCE (URP) adjusted* exceeds, by some given cut-off percentages over *MPCE (MRP) adjusted*. A similar exercise is done to find out the number of cases (out of 792 sets) of estimates of average *MPCE (MMRP) adjusted* exceeds, by certain percentages, the *MPCE (MRP) adjusted*.

3.8 It is known that certain groups of items have same reference period for both the schedule type 1 and 2. These item groups are: 101 to 189 (termed Food Group1), 340 to 359 (termed Fuel & Light) and 420 to 549 (termed Misc. Goods). In the fourth exercise, we examine the percentage of difference of Type 2 estimates from those of Type 1 for these item groups.

3.9 Lastly, a study is made on the type of informant response (in terms of their co-operation) to the two types of schedules and time spent by the investigator to the two types of schedules. This will show whether response of the informant is invariant or not over the two kind of data collection mechanisms with respect to reference period.

#### 4. Discussions on the results

4.1 From Table 1 it is observed that the estimated MPCE (MMRP) exceeds the other two estimates - MPCE (URP) and MPCE (MRP) - across different expenditure groups of households, States and Sectors. In about 91% of cases, estimated MPCE (MMRP) exceeds the other two estimates MPCE (URP) and MPCE (MRP).

Table 1: Percentage distribution of maximum MPCE count among three Different types of Average MPCE

Type of Average MPCE	count where it is maximum	Percentage count where it is maximum
MPCE (URP)	29	3.66
MPCE (MRP)	45	5.68
MPCE (MMRP)	718	90.66
Total	792	100

4.2 Next, the extent of divergence from Average MPCE (MRP) for the other two types of Average MPCE is examined. The results are presented in the Table 2R and Table 2U. It is clear from both Tables 2R and 2U that in about 5% of cases of different household decile groups of expenditure among different states sectors, estimated Av MPCE (URP) was higher than Av MPCE (MRP) by 5% or more and in about 85% of cases it was less than estimated Av MPCE (MRP). However, on the other hand, in case of Type 2 Schedule, more than 75% of cases of different household deciles group of expenditure among different states, sectors estimated Av MPCE (MMRP) exceeded Av MPCE (MRP) by more than 5% value and in about 90% of cases it is more than estimated Av MPCE (MRP).

Table 2R: Percentage distribution of extent of divergence of Av MPCE (URP & MMRP) from AV MPCE (MRP)

Sector: Rural

Av MPCE Type	difference from Av MPCE (MRP)								Total
	Less than 15%	-15% to -10%	-10% to -5%	-5% to 0%	0% to 5%	5% to 10%	10% to 15%	Above 15%	
MPCE (URP)	3	6	41	36	9	3	2	1	100
MPCE (MMRP)	1	0	1	2	8	28	33	26	100

Table 2U: Percentage distribution of extent of divergence of Av MPCE (URP & MMRP) over AV MPCE (MRP)

Sector: Urban

Av MPCE Type	difference from Av MPCE (MRP)								Total
	Less than -15%	-15% to -10%	-10% to -5%	-5% to 0%	0% to 5%	5% to 10%	10% to 15%	Above 15%	
MPCE (URP)	2	7	41	38	7	2	1	2	100
MPCE (MMRP)	1	1	2	6	15	37	25	13	100

4.3 The above results lead to examination of schedule Type 2 for those groups of items which could have been over-reported by the respondents. This case is examined from the unit level data. It is observed from the unit level data in schedule type 2, there may be over-reporting in edible oil and spices. Hence, we segregate these two item groups edible oil and spices, from total MPCE and term the MPCE so derived as the *adjusted MPCE*. This is done for all 3 sets of MPCE. In table 3R and 3U the extent of divergence of the *adjusted MPCE (URP and MMRP)* over *adjusted MPCE (MRP)* for different ranges of divergence are shown.

4.4 It is observed that in this table too as in Table 2 before, in almost all cases of different household deciles group of expenditure among different states and sectors *adjusted MPCE (URP)* is much less than *adjusted MPCE (MRP)*. On the other hand, in more than 70% of cases of different household deciles group of expenditure among different states and sectors, *adjusted Av MPCE (MMRP)* exceeded *adjusted Av MPCE (MRP)* by 5% or more and in around 90% of cases it exceeded *adjusted Av MPCE (MRP)*.

Table 3R: Percentage distribution of extent of divergence of Av *adjusted MPCE (URP & MMRP)* over AV *adjusted MPCE (MRP)*

Sector: Rural

Av <i>adjusted MPCE</i>	difference from Av <i>adjusted MPCE (MRP)</i>								Total
	Less than -15%	-15% to -10%	-10% to -5%	-5% to 0%	0% to 5%	5% to 10%	10% to 15%	Above 15%	
MPCE (URP)	3	7	43	32	9	3	2	1	100
MPCE (MMRP)	1	1	1	3	13	33	28	19	100

Table 3U: Percentage distribution of extent of divergence of Av *adjusted MPCE (URP & MMRP)* over AV *adjusted MPCE (MRP)*

Sector: Urban

Av <i>adjusted MPCE</i>	difference from Av <i>adjusted MPCE (MRP)</i>								Total
	Less than -15%	-15% to -10%	-10% to -5%	-5% to 0%	0% to 5%	5% to 10%	10% to 15%	Above 15%	
MPCE (URP)	3	8	43	34	7	2	1	2	100
MPCE (MMRP)	1	1	3	6	20	39	20	12	100

4.5 Next, our focus is on those groups of items that have same reference period for both the schedule type 1 and 2. Table 4.1 presents the sector and state wise estimated per capita consumption of item group 101 to 189 termed as *Food group 1*. It is observed that in a majority of states in both the sectors, Type 2 estimates are less than the corresponding Type 1 estimates - the extent of difference being largely between 1% to 5%.

Table 4.1: State wise Average per capita consumption Food group 1 (101 to 189)

State	Estimated Average per capita consumption Food group 1 (101 to 189)					
	Rural			Urban		
	Schedule Type 1	Schedule Type 2	% Difference over Schedule Type 1	Schedule Type 1	Schedule Type 2	% Difference over Schedule Type 1
Jammu & Kashmir	372.89	368.76	-1.1076	437.66	437.62	-0.0091
Himachal Pradesh	398.04	399.75	0.4296	477.06	482	1.0355
Punjab	483.75	473.07	-2.2078	512.46	487.52	-4.8667
Chandigarh	537.36	447.71	-16.6834	538.83	520.3	-3.4389
Uttarakhand	337.89	332.57	-1.5745	439.89	440.22	0.075
Haryana	519.91	509.1	-2.0792	495.99	514.7	3.7723
Delhi	372.45	404.3	8.5515	458.8	474.13	3.3413
Rajasthan	383.19	393.35	2.6514	428.57	421.68	-1.6077
Uttar Pradesh	281.06	280.5	-0.1992	354.98	351.54	-0.9691
Bihar	259.5	259.87	0.1426	320.38	327.63	2.2629
Sikkim	293.58	285.34	-2.8067	403.79	351	-13.0736
Arunachal Pradesh	291.63	294.56	1.0047	326.89	297.72	-8.9235
Nagaland	381.08	368.81	-3.2198	387.37	375.93	-2.9532
Manipur	336.2	334.56	-0.4878	327.09	316.07	-3.3691
Mizoram	244.64	237.32	-2.9922	320.11	305.65	-4.5172
Tripura	247.6	246.66	-0.3796	335.35	334.81	-0.161
Meghalaya	211.23	210.93	-0.142	261.56	251.44	-3.8691
Assam	283.96	289.64	2.0003	345.55	344.32	-0.356
West Bengal	242.48	237.85	-1.9094	299.04	298.54	-0.1672
Jharkhand	233.68	233.36	-0.1369	353	345.14	-2.2266
Odisha	214.7	216.78	0.9688	305.28	299.82	-1.7885
Chattisgarh	186.33	185.9	-0.2308	312.25	330.57	5.8671
Madhya Pradesh	265.55	265.66	0.0414	334.79	328.05	-2.0132
Gujarat	329.68	325.15	-1.3741	445.23	429.55	-3.5218
Daman & Diu	381.2	321.99	-15.5325	393.19	352.75	-10.2851
D & N Haveli	272.51	277.83	1.9522	413.92	412.9	-0.2464
Maharashtra	285.35	281.5	-1.3492	400.02	397.36	-0.665
Andhra Pradesh	299.48	296.23	-1.0852	406.68	409.51	0.6959
Karnataka	244.63	249.4	1.9499	373.73	364.47	-2.4777
Goa	343.71	337.53	-1.798	415.93	398.64	-4.1569
Lakshadweep	257.03	228.45	-11.1193	266.76	270.18	1.2821
Kerala	283.92	281.97	-0.6868	316.1	310.51	-1.7684
Tamil Nadu	228.32	223.14	-2.2687	340.48	336.11	-1.2835
Puducherry	339.89	322.72	-5.0516	433.06	430.77	-0.5288
A & N Island	297.82	287.82	-3.3577	372.73	358.57	-3.799
All India	286.3	285.35	-0.3318	381.12	377.56	-0.9341

4.6 Table 4.2 presents the sector and state wise estimated per capita consumption of item group 340 to 359 termed as *Fuel and Light*. It is observed that in a majority of states in both the sectors Type 2 estimates are less than the corresponding Type 1 estimates -the extent of difference being between 2% to 7%.

Table 4.2: State wise Average per capita consumption Fuel & Light (340 to 359)

State	Estimated Average per capita consumption Fuel & Light (340 to 359)					
	Rural			Urban		
	Schedule Type 1	Schedule Type 2	% Difference over Schedule Type 1	Schedule Type 1	Schedule Type 2	% Difference over Schedule Type 1
Jammu & Kashmir	99.63	96.65	-2.9911	119.05	113.13	-4.9727
Himachal Pradesh	114.27	113	-1.1114	122.3	125.62	2.7146
Punjab	156.19	157.07	0.5634	209.3	193.51	-7.5442
Chandigarh	247.6	185.62	-25.0323	225.28	213.81	-5.0914
Uttarakhand	111.92	106.95	-4.4407	117.95	113.68	-3.6202
Haryana	124.35	115.99	-6.723	172.3	170.93	-0.7951
Delhi	138.19	157.41	13.9084	204.68	193.46	-5.4817
Rajasthan	103.85	103.68	-0.1637	147.54	141.56	-4.0531
Uttar Pradesh	77.16	73.4	-4.873	121.35	119.76	-1.3103
Bihar	70.02	67.52	-3.5704	95.53	93.64	-1.9784
Sikkim	84.99	83.17	-2.1414	102.87	100.17	-2.6247
Arunachal Pradesh	153.2	146.43	-4.4191	147.9	134.86	-8.8168
Nagaland	119.91	109.27	-8.8733	129.12	120.15	-6.947
Manipur	101.49	98.43	-3.0151	105.21	97.88	-6.967
Mizoram	122.11	110.55	-9.4669	125.53	116	-7.5918
Tripura	76.1	74.51	-2.0894	126.97	122.86	-3.237
Meghalaya	95.05	90	-5.313	123.17	119.29	-3.1501
Assam	81.68	79.75	-2.3629	124.69	130.58	4.7237
West Bengal	86.03	79.62	-7.4509	149.81	143.92	-3.9316
Jharkhand	74.97	71.34	-4.8419	99.38	96.38	-3.0187
Odisha	83.89	80.52	-4.0172	115.15	112.12	-2.6314
Chattisgarh	67.87	62.12	-8.4721	110.08	110.9	0.7449
Madhya Pradesh	90.23	87.58	-2.9369	140.57	136.46	-2.9238
Gujarat	101.66	99.11	-2.5084	166.96	151.59	-9.2058
Daman & Diu	114.15	100.53	-11.9317	138.6	118.28	-14.6609
D & N Haveli	57.21	53.76	-6.0304	107.06	103.27	-3.5401
Maharashtra	100.93	95.77	-5.1125	176.5	168.04	-4.7932
Andhra Pradesh	83.92	81.27	-3.1578	118.81	120.52	1.4393
Karnataka	83.94	83.64	-0.3574	136.28	130.79	-4.0285
Goa	117.18	113.55	-3.0978	152.02	147.12	-3.2233
Lakshadweep	82.74	70.96	-14.2374	114.57	115.9	1.1609
Kerala	99.4	97.96	-1.4487	128.72	125.47	-2.5249
Tamil Nadu	78.03	74.46	-4.5752	112.83	112.07	-0.6736
Puducherry	89.43	88.8	-0.7045	108.03	106.39	-1.5181
A & N Island	103.51	96.79	-6.4921	162.28	148.32	-8.6024
All India	87.79	84.6	-3.6337	142.76	137.72	-3.5304

4.7 Table 4.3 presents the sector and state wise estimated per capita consumption of item group 420 to 549 termed as *miscellaneous group*. It is observed that in a majority of states in both the sectors Type 2 estimates are less than the corresponding Type 1 estimates - the extent of difference being between 1% to 5%.

Table 4.3: State wise Average per capita Expenditure Miscellaneous group (420 to 549)

State	Estimated Av per capita Expenditure on Miscellaneous group (420 to 549)					
	Rural			Urban		
	Schedule Type 1	Schedule Type 2	% Difference over Schedule Type 1	Schedule Type 1	Schedule Type 2	% Difference over Schedule Type 1
Jammu & Kashmir	226.74	226.72	-0.0088	395.26	376.07	-4.855
Himachal Pradesh	297.82	301.54	1.2491	671	718.97	7.149
Punjab	345.73	331.03	-4.2519	556.04	530.28	-4.6328
Chandigarh	691.34	663.16	-4.0761	1383.48	1334.14	-3.5664
Uttarakhand	293.41	277.57	-5.3986	396.81	423.14	6.6354
Haryana	256.64	249.28	-2.8678	516.64	551.08	6.6662
Delhi	484.58	502.3	3.6568	796.46	820.79	3.0548
Rajasthan	184.01	202.45	10.0212	378.32	366.33	-3.1693
Uttar Pradesh	150.6	149.68	-0.6109	364.8	355.32	-2.5987
Bihar	104.53	101.67	-2.7361	246.43	242.01	-1.7936
Sikkim	278.72	260.24	-6.6303	657.31	644.1	-2.0097
Arunachal Pradesh	236.13	226.47	-4.091	385.76	404.98	4.9824
Nagaland	282.5	256.33	-9.2637	450.37	446.85	-0.7816
Manipur	158.2	143.25	-9.4501	226.05	198.84	-12.0372
Mizoram	190.11	181.05	-4.7657	450.02	424.7	-5.6264
Tripura	143.71	145.5	1.2456	413.1	395.25	-4.321
Meghalaya	189.62	183.85	-3.0429	468.01	467.02	-0.2115
Assam	116.89	120.2	2.8317	395.81	380.85	-3.7796
West Bengal	132.99	123.87	-6.8577	511.05	509.27	-0.3483
Jharkhand	116.38	122.54	5.293	392.21	365.5	-6.8101
Odisha	108.74	107.01	-1.591	409.62	369.26	-9.853
Chattisgarh	130.14	120.2	-7.6379	351.51	370.78	5.4821
Madhya Pradesh	155.87	160.21	2.7844	433.08	426.21	-1.5863
Gujarat	190.54	188.14	-1.2596	553.99	482.31	-12.9389
Daman & Diu	465.7	389.91	-16.2744	484.02	399.18	-17.5282
D & N Haveli	168.16	151	-10.2046	445.16	498.07	11.8856
Maharashtra	234.73	232.45	-0.9713	751.7	742.75	-1.1906
Andhra Pradesh	222.91	221.25	-0.7447	685.51	657.65	-4.0641
Karnataka	188.65	186.36	-1.2139	674.06	674.57	0.0757
Goa	521.74	507.52	-2.7255	731.79	766.86	4.7924
Lakshadweep	328.96	294.05	-10.6122	500.37	480.24	-4.023
Kerala	444.71	418.92	-5.7993	670.16	641.38	-4.2945
Tamil Nadu	261.35	251.93	-3.6044	618.21	594.54	-3.8288
Puducherry	392.67	374.5	-4.6273	818.2	773.2	-5.4999
A & N Island	439.04	416.2	-5.2023	840.48	924.86	10.0395
All India	182.58	180.41	-1.1885	556.65	541.97	-2.6372

4.8 Next, the results of the exercise on the respondent response to the two types of schedules canvassed in the field are presented in Table 5.1R and 5.1U for the Schedule Type 1. In the Table 5.2R and 5.2U the same are presented for schedule Type 2. The findings are presented in the form of State-wise percentage distribution of households with respect to type of informant response of schedule Type 1 and schedule Type 2. It is clear from these tables that in a majority of states, for both types of schedule, more than 90% of the informants are co-operative, while about 70% of the informants are co-operative as well as capable.

Table 5.1R: Percentage distribution of Households for each household's response towards schedule type 1

Sector: Rural

State	household's response towards schedule type 1					
	Co-operative and capable	Co-operative but not Capable	Busy	Reluctant	others	Total
Jammu & Kashmir	70	26	2	0	2	100
Himachal Pradesh	74	22	3	1	0	100
Punjab	90	9	0	0	0	100
Chandigarh	100	0	0	0	0	100
Uttarakhand	63	36	1	0	0	100
Haryana	90	9	0	1	0	100
Delhi	44	46	9	1	0	100
Rajasthan	85	14	1	0	0	100
Uttar Pradesh	58	37	4	1	0	100
Bihar	62	29	8	1	0	100
Sikkim	86	7	7	0	0	100
Arunachal Pradesh	79	16	2	2	0	100
Nagaland	86	8	5	1	0	100
Manipur	99	1	0	0	0	100
Mizoram	91	7	1	0	1	100
Tripura	99	1	0	0	0	100
Meghalaya	85	14	0	0	0	100
Assam	60	37	2	1	0	100
West Bengal	83	15	1	1	0	100
Jharkhand	51	42	5	2	0	100
Odisha	83	17	0	0	0	100
Chattisgarh	82	18	0	0	0	100
Madhya Pradesh	75	24	1	1	0	100
Gujarat	73	27	0	0	0	100
Daman & Diu	100	0	0	0	0	100
D & N Haveli	100	0	0	0	0	100
Maharashtra	80	19	1	0	0	100
Andhra Pradesh	80	20	0	0	0	100
Karnataka	70	29	0	0	0	100
Goa	98	2	0	0	0	100
Lakshadweep	87	9	0	4	0	100
Kerala	88	10	1	1	0	100
Tamil Nadu	94	5	1	0	0	100
Puducherry	100	0	0	0	0	100
A & N Island	85	14	1	0	0	100
All India	75	23	2	1	0	100

Table 5.1U: Percentage distribution of Households for each household's response towards schedule type 1

Sector: Urban

State	household's response towards schedule type 1					
	Co-operative and capable	Co-operative but not Capable	Busy	Reluctant	others	Total
Jammu & Kashmir	60	29	7	3	0	100
Himachal Pradesh	78	16	5	1	0	100
Punjab	85	13	1	1	0	100
Chandigarh	99	0	0	0	0	100
Uttarakhand	56	37	5	2	0	100
Haryana	90	8	1	1	0	100
Delhi	36	53	10	1	0	100
Rajasthan	86	11	1	1	0	100
Uttar Pradesh	76	19	3	2	0	100
Bihar	52	39	6	3	0	100
Sikkim	99	0	0	0	0	100
Arunachal Pradesh	79	17	2	1	0	100
Nagaland	83	11	5	1	0	100
Maniupur	100	0	0	0	0	100
Mizoram	98	2	0	0	0	100
Tripura	99	1	0	0	0	100
Meghalaya	95	4	0	0	0	100
Assam	71	25	2	2	0	100
West Bengal	83	12	2	2	0	100
Jharkhand	52	44	4	1	0	100
Odisha	75	21	2	1	0	100
Chattisgarh	89	11	0	0	0	100
Madhya Pradesh	80	18	1	1	0	100
Gujarat	82	15	3	0	0	100
Daman & Diu	100	0	0	0	0	100
D & N Haveli	100	0	0	0	0	100
Maharashtra	79	15	3	2	1	100
Andhra Pradesh	81	17	1	0	0	100
Karnataka	81	17	1	1	0	100
Goa	96	3	1	0	0	100
Lakshadweep	81	19	0	0	0	100
Kerala	91	7	1	1	0	100
Tamil Nadu	88	10	1	1	0	100
Puducherry	99	1	0	0	0	100
A & N Island	87	11	2	0	0	100
All India	79	17	2	1	0	100

Table 5.2R: Percentage distribution of Households for each household's response towards schedule type 2

Sector: Rural

State	household's response towards schedule type 1					
	Co-operative and capable	Co-operative but not Capable	Busy	Reluctant	others	Total
Jammu & Kashmir	70	25	3	0	3	100
Himachal Pradesh	73	24	3	0	0	100
Punjab	90	9	0	0	0	100
Chandigarh	100	0	0	0	0	100
Uttarakhand	65	34	1	0	0	100
Haryana	90	9	0	0	0	100
Delhi	49	50	1	0	0	100
Rajasthan	86	13	1	0	0	100
Uttar Pradesh	58	35	5	1	0	100
Bihar	62	29	7	2	0	100
Sikkim	86	10	4	0	0	100
Arunachal Pradesh	80	16	2	2	0	100
Nagaland	85	11	3	1	0	100
Maniupur	99	1	0	0	0	100
Mizoram	91	7	0	1	1	100
Tripura	99	1	0	0	0	100
Meghalaya	87	13	0	0	0	100
Assam	60	37	2	1	1	100
West Bengal	85	14	1	0	0	100
Jharkhand	53	43	2	2	0	100
Odisha	82	17	0	0	0	100
Chattisgarh	82	18	0	0	0	100
Madhya Pradesh	75	24	1	0	0	100
Gujarat	72	28	0	0	0	100
Daman & Diu	100	0	0	0	0	100
D & N Haveli	100	0	0	0	0	100
Maharashtra	81	18	0	0	0	100
Andhra Pradesh	78	22	0	0	0	100
Karnataka	72	28	0	0	0	100
Goa	94	6	0	0	0	100
Lakshadweep	92	4	0	4	0	100
Kerala	89	10	1	0	0	100
Tamil Nadu	94	5	0	1	0	100
Puducherry	100	0	0	0	0	100
A & N Island	83	17	0	0	0	100
All India	75	23	2	1	0	100

Table 5.2U: Percentage distribution of Households for each household's response towards schedule type 2

Sector: Urban

State	household's response towards schedule type 1					
	Co-operative and capable	Co-operative but not Capable	Busy	Reluctant	others	Total
Jammu & Kashmir	61	27	9	3	0	100
Himachal Pradesh	77	20	3	0	0	100
Punjab	86	13	1	1	0	100
Chandigarh	98	1	0	1	0	100
Uttarakhand	55	39	4	1	0	100
Haryana	91	7	2	0	0	100
Delhi	37	52	10	1	0	100
Rajasthan	87	12	1	0	0	100
Uttar Pradesh	77	19	2	1	0	100
Bihar	53	36	8	3	0	100
Sikkim	100	0	0	0	0	100
Arunachal Pradesh	78	18	2	2	0	100
Nagaland	85	10	4	1	0	100
Manipur	99	1	0	0	0	100
Mizoram	99	1	0	0	0	100
Tripura	99	1	0	0	0	100
Meghalaya	89	11	0	0	0	100
Assam	73	22	3	2	0	100
West Bengal	81	14	3	2	0	100
Jharkhand	53	40	5	1	0	100
Odisha	75	21	3	2	0	100
Chattisgarh	88	11	0	0	0	100
Madhya Pradesh	81	17	1	1	0	100
Gujarat	82	14	4	0	0	100
Daman & Diu	100	0	0	0	0	100
D & N Haveli	100	0	0	0	0	100
Maharashtra	79	15	3	3	1	100
Andhra Pradesh	81	16	3	0	0	100
Karnataka	80	19	0	1	0	100
Goa	96	3	1	0	0	100
Lakshadweep	78	21	0	0	0	100
Kerala	91	7	1	1	0	100
Tamil Nadu	88	11	1	1	0	100
Puducherry	99	1	0	0	0	100
A & N Island	87	12	0	1	0	100
All India	79	17	3	1	0	100

4.9 Finally, we examine whether there is any significant difference in average canvassing time between the two types of schedule. From Table 6 it is observed that there is no such significant difference in average canvass time of schedule type 1 & type 2. The average time was less than 2 hours 45 minutes in most of the states for both types of Schedules.

Table 6: State wise average canvass time (in minutes) for Schedule Type 1 & 2.

State	Average Canvass time (in minutes)			
	Rural		Urban	
	Schedule Type 1	Schedule Type 2	Schedule Type 1	Schedule Type 2
Jammu & Kashmir	119	118	118	117
Himachal Pradesh	133	130	124	118
Punjab	116	117	116	114
Chandigarh	139	133	126	124
Uttarakhand	124	123	122	121
Haryana	114	111	112	110
Delhi	95	94	113	109
Rajasthan	91	89	88	87
Uttar Pradesh	117	115	127	126
Bihar	170	168	150	149
Sikkim	94	92	142	128
Arunachal Pradesh	93	88	79	76
Nagaland	113	111	110	109
Maniupur	104	104	116	117
Mizoram	104	102	96	95
Tripura	127	127	117	117
Meghalaya	161	161	160	157
Assam	180	178	172	170
West Bengal	158	157	154	153
Jharkhand	162	161	161	160
Odisha	136	135	143	143
Chattisgarh	114	114	118	122
Madhya Pradesh	112	111	120	116
Gujarat	137	135	127	127
Daman & Diu	72	71	101	99
D & N Haveli	130	129	112	112
Maharashtra	100	99	99	99
Andhra Pradesh	127	125	127	125
Karnataka	129	127	121	121
Goa	90	90	96	94
Lakshadweep	171	173	144	135
Kerala	154	153	147	146
Tamil Nadu	138	138	124	124
Puducherry	173	172	159	159
A & N Island	114	111	118	118
All India	131	130	123	122

## 5. Some salient findings

5.1 The first exercise reveals that schedule type 2 estimates of average MPCE (MMRP) are higher than schedule Type 1 estimates of average MPCE (MRP & URP) across different expenditure groups of households in almost all states and sectors.

5.2 In about 85% of cases (out of 792 sets) of estimates MPCE (URP) was less than estimated average MPCE (MRP). In case of Type 2 Schedule, more than 75% of cases of different household decile groups of expenditure among different states/ sectors, average MPCE (MMRP) exceeded average MPCE (MRP) by more than 5% value and, in about 90% of cases, it is more than average MPCE (MRP).

5.3 In a majority of states, in both rural and urban areas, for those item groups having the same reference period, Type 2 estimates are less than Type 1 estimates- the extent of difference being largely between 1% to 7%.

5.4 The last exercise reveals that there is no significant difference in time taken to canvass the Type 1 and Type 2 schedule. Thus, from the view point of data collection Type 2 schedule does not appear to add any additional burden the investigator as well as the informant vis-a-vis Type 1 schedule. The analysis also shows that co-operation of informant is very high at the level of 90% of households for both types of schedules.

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# Experience of Data Processing, NSS 66<sup>th</sup> Round

Data Processing Division, NSSO

## 0. Overview

0.1 Each survey has its own distinctive feature. The NSS 66<sup>th</sup> round survey, coming at a time when the fruits of economic liberalization might be expected to be visible both in people's living standards and in the employment-unemployment scene, was eagerly awaited by policy makers and research workers alike. Obviously, the quality of data had to be first-rate. All the divisions of NSSO made efforts towards this goal. Needless to say, each division has its own experiences.

0.2 The experience of the Data Processing Division, in a nutshell, is that certain features embedded in our survey system appear to be persistent and we are yet to develop a system to get rid of such ailments. This is reflected in the fact that the errors in data followed the same patterns, and processing personnel faced the same difficulties in tackling them, as in earlier rounds. Clearly, the various types of non-sampling error, including inadequate understanding of concepts and definitions on the part of the data of collector, lack of adequate clarity in the instructions to the field staff, unavailability of data at the required level of detail, respondent resistance, and so on, have remained unchanged over time.

## 1. Schedule 0.0: List of Households

1.0 The organisation of this schedule was similar to that of the previous quinquennial survey, which had a similar sampling design.

### 1.1 Frame population and 66<sup>th</sup> round survey experience

In the listing schedule, wide variations between Frame Population and Approximate Present Population of sample villages – in most cases not supported by proper remarks – were frequent. The larger the number of such discrepancies, the greater is the likelihood of the estimates being off-target, that is, not close to the true population parameter.

Instances are found where approximate present population was at least 5 times the frame population FSUs.

### 1.2 Other errors capable of affecting second-stage sampling

1.2.1 In some cases, number of hamlet-groups formed was not in tune with the present population but no explanatory remarks were provided. One the hamlet groups formed and samples are selected as per actual hamlet groups, DPD had to accept the actual hamlet group formation.

1.2.2 Households were often placed in the wrong second-stage stratum. This may be possibly due to time constraint for detail enquiry at the time of listing the households. In some cases

number of frame households in SSS-1 was found to be more than 10 in rural FSU. DPD had no alternative but to accept the actual second stage stratification made by the field officials and the samples drawn.

### 1.3 Other failures in adhering to instructions

1.3.1 Total number of children in the household was often not recorded in Block 5, or not copied from Block 5 to Block 6. There were 128 schedules where the column for 'number of children' in Block 6 was blank. The table below shows estimated total number of households and persons, number of children, and estimated no. of child workers from Schedule 0.0.

#### From Schedule 0.0

Table-C1

Sector	EST_HH(00)	EST_POP(00)	EST_CHL(00)	EST_CHLWR(00)	% of child population
Rural	1624790	8122352	1806156	105514	22.24
Urban	681158	2847697	513346	7025	18.03
All	2305948	10970049	2319502	112539	21.14

#### From schedule 10

Table-C2

Sector	EST_HH(10)	EST_POP(10)	EST_CHL(10)	EST_CHLWR(10)	% of child population
Rural	1628347	7147380	2393653	2393654	33.50
Urban	682755	2787755	733082	733082	26.30
All	2311102	10205136	3126735	3126736	30.36

Information given in Table C1 is based on the information collected in the listing schedule where as information given in Table C2 is based on data collected in schedule 10. Differences in the population estimates EST\_POP(00) and EST\_POP(10) are due to multiplier effect arising out of differences in subsample counts ( $n_s$ ). The above tables show that child population as well as child worker was not properly recorded in the listing schedule. There were instances where this information was not correctly transferred from the detailed block or some time not even recorded. There were 128 FSUs where these columns were left blank. This type of information requires detail enquiry and is better taken from detail schedule enquiry instead of one-shot question at the time of listing the households.

1.3.2 The area of cultivable/irrigated land in hectares was frequently reported in 3 places of decimals instead of one.

1.3.3 The number of cattle, buffaloes, etc. owned was to be reported in number of heads only when in excess of certain specified numbers. But finding this column filled for all households, with entries as small as 1 or 2, was a common occurrence.

1.3.4 Invalid codes were frequent in the village facilities block.

1.3.5 Schedules canvassed in Ley and Kargil districts of urban sector of J&K state by State DES official for central sample had to be dispensed with as quality of data collected in the schedule were very poor including the multiplier information collected in schedule 0.0.

## 2. Schedule 1.0: Consumer Expenditure

### 2.1 Special new feature of sch.1.0: Schedule Type 2

2.1.1 The special feature of this round, repeated in the 68<sup>th</sup> round, was Schedule Type 2 of Sch.1.0, which used a 7-day reference period for edible oil, egg, fish and meat, vegetables, fruits, spices, beverages and processed food, pan, tobacco and intoxicants.

2.1.3 For all these items, data were collected in the usual way, with quantity of consumption recorded first, followed by value of consumption.

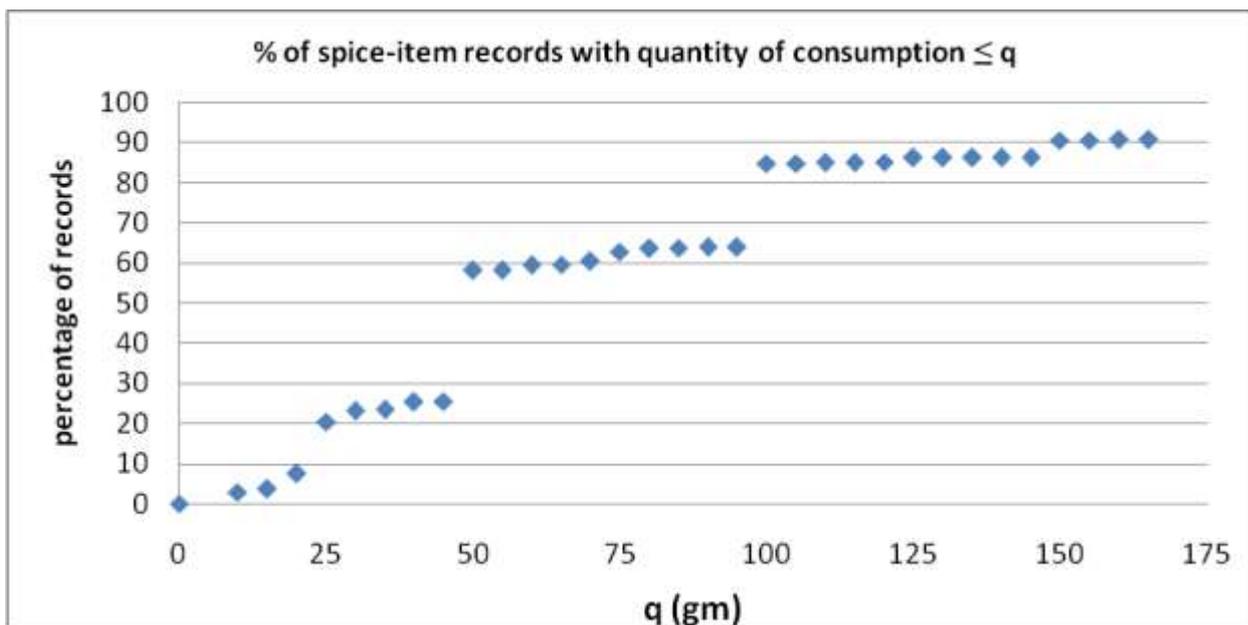
#### 2.1.1 Case study: How consumption of spices was reported in Schedule Type 2

2.1.1.1 The table below how estimates of consumption of spices from Schedule Type 2, NSS 66<sup>th</sup> Round, differed from estimates from the 61<sup>st</sup> and 55<sup>th</sup> rounds, when a 30-days reference period was used.

year	per capita consumption of spices in 30 days			
	quantity (gm)		value (Rs.)	
	R	U	R	U
1999-2000	246.17	279.92	13.32	17.86
2004-05	241.25	271.40	12.78	16.21
2009-10 (sch. Type 2)	379.65	439.31	35.37	43.86

2.1.1.2 An examination of Schedule Type 2 records with item codes 280-288 (*spice items, excluding sub-total*) revealed the following:

- 83.5% (a little more than five-sixths) of the reported quantity figures (in grams) were multiples of 25.
- 32.7% of the reported quantity figures were “50 g” entries.
- 21.0% were “100 g” entries.
- 12.8% were “25 g” entries.



The chart shows the very high frequency, among records with item codes 280-288 (spice items excluding sub-total), of records with quantity figure 50g or 100g.

2.1.1.3 Thus, there may be two alternative explanations for the higher estimates of spice consumption obtained from Schedule Type 2:

Explanation 1: The informants forgot to report a great deal of spice consumption when a 30-days reference period was used but remembered much more with a 7-days reference period.

(The above explanation assumes that informants actually attempted to *recall* their spice consumption over the last 7 days. Field experience suggests, however, that informants try to *calculate* (rather than recall) their weekly consumption of spices using their own knowledge of how much they use per day, or per month, or per 3 days, depending on their frequency of purchase.)

Explanation 2: The informants were unused to numbers other than 25, 50 and 100 in respect of quantities of spices. Quantity of consumption in 7 days was usually reported as 50 g (or, when exceeding 50g, as 100g) even when it was much less. For minor spices, consumption of 10-15 g was probably reported as 25 g . With this *over-reporting taking place for every item of spices reported by a household*, the total over-reporting could be as high as 150-200 g per 7 days for a household. This would explain why *per capita* consumption per *month* was 130-170 g higher than in the last two quinquennial rounds.

2.1.1.4 In any case, the tendency of the reported quantity figures to cluster around 25, 50 and 100 does not suggest that very accurate reporting was achieved by using the 7-day reference period. A similar tendency of clustering might be present in data collected with data collected with a 30-day reference period. But this would not cause such a clustering in the estimated distribution of *monthly* spice consumption as the clustering in 7-day data would cause.

## 2.1.2 Case study: How consumption of edible oil was reported in Schedule Type 2

2.1.2.1 Quantity of edible oil was recorded in kilograms and grams. Items 190-194 were the 5 different edible oil items (e.g. groundnut oil, mustard oil), while item 199 represented edible oil: sub-total.

year	per capita consumption of edible oil in 30 days			
	quantity (kg)		value (Rs.)	
	R	U	R	U
1999-2000	0.50	0.72	18.16	26.81
2004-05	0.484	0.663	25.72	36.37
2009-10 (sch. Type 2)	0.636	0.818	38.92	52.85

2.1.2.2 A study of quantity reported in Schedule Type 2 records with item codes 190-194 revealed that

- There were 116662 such records;
- 29030 of these records – about 25% – had “500 g” in the quantity column.
- 19976 records – about 17% – had quantity = 1000 g.
- 15242 records – about 13% – had quantity = 250 g.
- 7521 – about 6.5% – had quantity = 750 g.
- Thus the four figures 250, 500, 750 and 1000 (in g) accounted for over 61% of the quantities reported.
- While the single figure “1000” had a frequency of 17% and the single figure “1500” had a frequency of 3.2%, the entire intervening *range* 1001-1499 had a frequency of only 2.3%. Again, this suggests that using a reference period of 7 days did not result in very careful reporting.

It is important to note that use of the Schedule Type 2 estimates from NSS for 2009-10 has reduced the NSS-NAS divergence for item groups with 7 days reference period (such as fruits and vegetables and meat-fish-egg), as well as for food as a whole substantially. But for edible oil and spices, the NSS estimates for 2009-10 are much higher than NAS estimates (the direction of the difference is reversed), and the magnitude of divergence has actually increased (see table below).

Year	Reference period used by NSS	Divergence (%) of NSS estimates of Private Final Consumption Expenditure from NAS estimates				
		milk & milk products	fruits and vegetables	meat, fish & egg	edible oil	spices
1999-2000	30 days	-39.7%	-53.7%	-54.1%	-15.2%	-4.7%
2004-05	30 days	-40.0%	-55.8%	-58.9%	-28.7%	-28.4%
2009-10 (Sch. Type 2)		-42.1%	-38.3%	-37.3%	<b>+44.1%</b>	<b>+80.1%</b>
Reference period in Sch. Type 2		<b>30 days</b>	<b>7 days</b>	<b>7 days</b>	<b>7 days</b>	<b>7 days</b>

## 2.2 Problems faced in processing Sch.1.0 data

### 2.2.1 Problems avoidable through better schedule design

2.2.1.0 Better schedule design is schedule design that brings in better data. In data processing, one is also able to identify certain item break-ups that create better possibilities of data validation than others.

#### 2.2.1.1 Where misleading schedule design caused wrong data entry

1. Against the item “knitting wool, cotton yarn” of Schedule 1.0 (both Type 1 and Type 2), cells for decimal part entry should have been shaded, as is done for all items where the unit of quantity is “gm”, but were left unshaded. This led to a data interpretation problem of massive proportions. As different investigators had filled the quantity cells in different ways, some using the integer-part cell, some the decimal-part cell, and some had used both cells, there was no edit rule that could correct the data after data entry. It was attempted to correct the data through computer scrutiny and manual editing, but the volume of work was so large that it took up a huge share of the total time of the validation process. This was all the more incongruous as “knitting wool, cotton yarn” was a very insignificant item of the schedule, contributing only 7 paise to average rural MPCE and 6 paise to average urban MPCE<sup>1</sup>.
2. The source code cell in Blocks 5.1, 5.2 and 6 were marked with an asterisk for several items to indicate that certain source codes (codes for full and partial consumption from home-grown stock and consumption from free collection) were not permissible for these items. This should have been done for all items which were processed items and not capable of growing naturally. But it was not done for several such items, such as cooked meals, salted refreshments, kerosene, matches, LPG, petrol and diesel. This allowed meaningless source codes to be entered against these items.

#### 2.2.1.2 Inappropriate itemization

**Item 117: Maize and its products:** One food article falling in this category is cornflakes. The price per kg of cornflakes is typically much higher (often 10 times higher) than the price per kg of other maize products. This creates a problem of price checking, as no price limits appropriate for other maize products other than cornflakes is suitable for cornflakes, and vice versa. Up to the 64<sup>th</sup> round, cornflakes was a separate item, and this problem did not exist. In the 66<sup>th</sup> round, it was inexplicably dropped. An even more serious consequence of dropping the item is that cornflakes may not be reported at all by many consuming households, as the words “maize and its products” may not suggest cornflakes to the interviewer or the respondents.

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<sup>1</sup> Schedule Type 2 estimates, NSS Report No.541

**Item 152: Other pulse products:** “Soyabean” (usually sold in India as chunks suitable for curry preparation) was a separate item up to the 64<sup>th</sup> round. It was then removed and instructions issued that soyabean should be reported against the item “other pulse products”. The following table shows estimates of monthly per capita consumption of soyabean and “other pulse products” from the 61<sup>st</sup> round, and of “other pulse products” (supposed to include soyabean) from the 66<sup>th</sup> round in two States, Assam and West Bengal, both of which have a considerably higher consumption of soyabean than the all-India average.

State	quantity of per capita consumption (gm) of soyabean in 30 days						
	round	rural			urban		
		soyabean	other pulse products (o.p.p.)	soyabean + o.p.p.	soyabean	other pulse products (o.p.p.)	soyabean + o.p.p.
West Bengal	61	5	3	8	5	6	11
	66*		8	8		8	8
Assam	61	9	5	14	24	7	31
	66*		7	7		7	7

\*based on Sch. Type 2

In urban West Bengal, and in rural and urban Assam, consumption of soyabean plus other pulse products has undergone a drastic fall in the 66<sup>th</sup> round, which means soyabean has not been included in “other pulse products” in the 66<sup>th</sup> round, as it should have been, and in fact, practically gone unreported. From the estimated percentages it is evident that the term “other pulse products” does not suggest soyabean to the respondent, or perhaps even to the investigator. Three solutions are possible: (a) making special efforts to see that respondents do not forget to report soyabean even though there is no item with that description, (b) restoring the item “soyabean” in the schedule, (c) adding the words “including soyabean” in the item description “other pulse products” in the schedule. Of these, the third appears to be the simplest and most effective.

**Item 520: House rent, garage rent:** House rent is a very important expense for rent-paying households. Therefore the value of reported house rent needs to be properly validated. Unfortunately, the possibilities of validation are restricted by clubbing house rent with garage rent. A household may pay garage rent even though it does not stay in a rented house. Conversely, a household may stay in a rented house but pay no garage rent. Therefore it is difficult, firstly, to set up a check linking item 520 with item 18 of Block 3, which is dwelling unit code (owned/hired/no dwelling unit/other), and secondly, to set a lower limit to the value reported in item 520. Both problems can be solved by the simple expedient of splitting item 520 into two items: “house rent” and “garage rent”. This would also allow checking of “garage rent” against information on vehicle possession.

## 2.2.2 Inadequate editing instructions

2.2.2.1 In Block 13 (perception of households regarding insufficiency of food), households reporting (item 1) that all members did not get two square meals every day throughout the year were asked to report (item 2) which months of the year two square meals were not available every day. As is usual, there were schedules where the answers to item 1 and item 2 were inconsistent. But no editing procedure to make the two items consistent was specified. This resulted in the tables generated from item 1 and the tables generated from item 2 being inconsistent.

### **3. Schedule 10: Employment and Unemployment**

3.0.1 Though the structure of the schedule was very similar to that of the previous rounds, there were some notable differences, such as collection of information on

- a) possession of NREGA job card and work obtained in NREGA, if any, by household members
- b) holding of certain kinds of Post Office accounts and use of specific postal services
- c) whether the household is a beneficiary of specific Government assistance schemes: Annapurna, ICDS, Midday Meal and Food for Work
- d) whether members aged 15-45 are registered with employment exchanges.

There were also certain additions and modifications in data collected on vocational training, and special questions to help identify home-based workers. In this round, NIC-2004 and NCO-2004 were used for classifying the household and its members by industry and occupation.

3.0.2 The main difficulties encountered in processing work are summarised below.

#### **3.1 Missing data**

3.1.1 A data item that should be compulsorily recorded may be unavailable owing to non-response by informants. Most cases of missing data, however, are not of this kind. They occur more systematically. A common missing-data pattern is where several items of information (in Schedule 10, a group of specified columns of certain blocks) are required to be recorded for persons of a particular category but not for others. Here it is very common to find that the columns have been left blank for all persons, including those of the target category for whom the data was sought. If this was due to non-response, one would have expected this to be mentioned in a remark. It is difficult to avoid the conclusion that such errors were the result of careless work, with lack of proper supervision. Conceptual errors cannot be blamed for this – the column headings of each block make it very clear which columns are to be entered for which category of persons.

3.1.2 Unless the problem is caused by wrong data entry, missing-data situations are the most difficult to deal with. One may refer the matter to the field, but expecting the concerned field worker to remember the facts relating to the sample household in question is hardly a sensible position to take. Filling in the required field with the “most likely” value is one alternative,

but such data construction raises ethical issues. This leaves one with the alternative of keeping the data just as it is, as one more member of the “not recorded” category.

3.1.3 The most frequent missing-data patterns found in the 66<sup>th</sup> round Schedule 10 data were the following:

- a) For persons with industry group 012, 014 and 015, and divisions 02-99, columns 8-11 (details of enterprise) and 16-20 (details of work done under given specifications by the self-employed) of Block 5.1, frequently found blank.
- b) For the status codes 31, 41, 42, 51, 71 and 72 in column 4, details of earnings and modes of payment not reported in the related columns of Block 5.3.
- c) Industry-occupation description missing for some persons having status code 11-51.
- d) Reporting not done in Block 5.2 for all those engaged in work in subsidiary capacity as per Block 5.1.
- e) 2-digit NIC code not recorded in Block 5.2 for all those having status codes 11-72.
- f) Intensity of activity not recorded for any of the 7 days for some persons.
- g) Information on amount regarded as remunerative often missing for persons who reported their current earning from self-employment as remunerative<sup>2</sup>.
- h) Current status of registration with Employment Exchange often not recorded.

## 3.2 Salient inconsistencies

3.2.1 We use the term inconsistency here to mean conflicting data – two or more data items which are valid by themselves but taken together represent an impossible situation which cannot be retained in the data set. Ultimately, the conflict may have to be resolved by a mechanical edit rule, changing one of the contradictory elements to restore consistency. But before that, all efforts have to be made to unravel the truth. Even here the field may have to be referred to if deadlines permit. An inordinate amount of time may be spent in trying to get to the root of a single inconsistency, and still not yield the answer. Technical prowess is ineffective here; alertness and dedication in field work is worth far more than the most sophisticated software.

3.2.2 Some of the most frequently occurring inconsistency types in the 66<sup>th</sup> round data were as follows:

- a) Age of same member not tallying across blocks.
- b) Age inconsistent with relation to head or marital status.
- c) Current attendance status inconsistent with age.
- d) Household industry code not consistent with industry codes of household members.

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<sup>2</sup> The amount regarded as remunerative is no doubt a matter of perception rather than a fact. But if the question is properly put to the informant it is not as difficult to obtain as many financial data which are matters of fact, but fall under the heading of sensitive subjects, as, for example, savings data.

- e) Number of days a person was reported as having had nominal work inconsistent with intensities of work reported for individual days.
- f) Recorded household size inconsistent with list of household members.
- g) Presence of remarks in the schedule not as reported in Block 2.
- h) Time taken to canvass Block 9 exceeding time taken to canvass the whole schedule.

### **3.3 Unsought data**

3.3.1 In Schedule 10, unsought data was created when cells of the schedule which were not meant to be recorded for persons satisfying a certain condition were nevertheless filled in. Such errors may appear to be inconsequential because the unwanted data can easily be deleted. The problem, however, is that in NSS data processing work, data cannot be deleted unless one is sure that the error does not lie elsewhere. One entry in one cell tells us that a certain person is ineligible for reporting certain data items. If that entry is wrong, it would mean that the other items are correctly entered. Therefore care has to be exercised and all possibilities have to be kept in mind. In fact, deletion of a lot of such data is often done only at the computer edit stage, which means the unwanted data are carried along through various stages of scrutiny, adding to the volume of error records coming out for inspection at each stage.

3.3.2 Frequent cases of unsought data included the following:

- a) Current attendance (in educational institution) status of persons aged 30 years or more (Block 4)
- b) Registration (with employment exchange) status of persons below 15 or over 45 (Block 4)
- c) Period of availability for work of children under 5 (Block 5.1)
- d) Details of formal vocational training of persons reported to have received non-formal vocational training (Block 4)
- e) Details of self-employment recorded for salary earners and casual labourers (Block 5.1)

### **3.4 Important conceptual errors**

3.4.1 There were cases where every household in the surveyed village, irrespective of household occupation, was reported as having NREGA job cards and having worked in NREGA.

3.4.2 There were instances where status code 41 (worked as wage labour in public works other than NREG works) and status code 42 (worked as casual wage labour in NREG works) were not properly recorded due to inability to distinguish between persons who had worked in NREGA and those who had worked in other works.

3.4.3 Principal and subsidiary status: The usual principal activity status code was not taken from block 5.1 but a '×' was put when it was other than 11-51 and the subsidiary activity status code was 11-51.

***Examples:***

- i) The usual principal activity status code = 93 in block 5.1 and subsidiary activity status code=21 in block 5.2. But a '×' was put in column 3 of block 7.1.
- ii) Only the usual principal activity status code was found copied from block 5.1, but the subsidiary activity status code was not taken from block 5.2.
- iii) There were schedules where data for NREG job has been recorded in block 3 (item 10-14) for all the 8 households. Every household has got job under NREGA in the range of 71-73 days. But there is no subsidiary activity of any of the household members.
- iv) Though the status codes of the persons were within 81-97 and their age is below 75 yrs, no NCO codes were reported in col-22 for some or all of them. In some cases, '×' has been recorded. Sometimes this column has been filled up for employed persons only. As this column was not filled up following the necessary instructions, it had to be edited with 'X99' (worker not reporting any occupation) for further processing.
- v) The industry-occupation description is missing for some persons.
- vi) Reporting has not been done in block 5.2 for all of those persons who were found engaged in work in subsidiary capacity as per block 5.1.

3.4.4 Data collected through this block is vital for determining important parameters of employment and unemployment situation based on current daily status (CDS) and (CWS). But there were certain obvious conceptual errors found in block 5.3.

- i) It was very often found that operation code was not recorded in column 6.
- ii) The entry in column 19 for 'no. of days with nominal work' was found inconsistent with the intensities recorded on last 7 days for different status codes.
- iii) Status code recorded in column 20 did not match the codes given in column 4.
- iv) NIC & NCO codes remained blank. Though NIC & NCO were recorded, the description of industry-occupation was not written in the box space provided.

### **General**

At the howler stage, it was found that a number of FSUs were reported as having outliers. At that juncture, special efforts were taken to contact the field offices to make enquiries regarding these. When the values were confirmed by the field, the programs were modified incorporating the statewide/ regionwise limits.

**Analysis of urban poverty in India with special reference to West Bengal:  
Evidences from NSS 66<sup>th</sup> round consumption data**

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***Abstract***

*Issue of urban poverty and its various aspects have become great concern for the researchers in developing nations owing to rapid growth in urban population as witnessed by the twentieth century. The objective of the present paper is to analyse the pattern of urban poverty in India's states from 1980- 2010 with special emphasis on inter-regional study of urban poverty in the state of West Bengal **with special attention on some issues arising out of the result of the NSS 66<sup>th</sup> round survey of consumer expenditure.***

*The study is based on the unit level Consumption expenditure data ( monthly per capita expenditure) from National Sample Survey Organisation for the years 1983-84, 1987, 1993-94, 1999-00, 2004-05 and 2009-10 .Here the estimates of HCR for urban areas of India and W.B are based on uniform reference period (URP) of the consumption expenditure unit level data of NSS for different NSS rounds. However for 1993, 2004 and 2009 the urban HCR is estimated using both URP and MRP data. We have tried to see whether there exists any difference in the estimate of urban HCR during 2004 using the two methodologies .In this paper Head Count Ratio (HCR) following Parameterized Lorenz curve method for estimating the poverty measure have been used as a poverty measure to find the pattern of urban poverty.*

*The result of the study show that between the periods 1980-2010 there has been a significant achievement in reducing poverty at the state , region and district level. The decline in the urban poverty had accelerated in the 1990s.*

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## **I. Introduction:**

Issue of urban poverty and its various aspects have become great concern for the researchers in developing nations owing to rapid growth in urban population as witnessed by the twentieth century. Urban poverty however poses the problems of shelter, water, sanitation, health, education, social security and livelihoods.

The objective of the present paper is to analyse the pattern of urban poverty in India's states from 1980- 2010 with special emphasis on inter-regional study of urban poverty in the state of West Bengal **with special attention on some issues arising out of the result of the NSS 66<sup>th</sup> round survey of consumer expenditure.**

Utsa Patnaik (2010) while showing the trend in urban poverty under economic reforms at the all India level and the individual states showed that Urban poverty has fallen between 1983 and 1993-94, but it has increased between 1993-94 and 2004-05. N.R. Bhanumurthy and Arup Mitra (2004) studied the trend in poverty and their incidence in the 80s and 90s. The decomposition exercise showing change in the incidence of poverty into growth and distribution effect shows that growth effect dominates over the inequality and population shift effects that caused poverty to fall both in 80s and 90s. Kakwani (1993) uses growth & inequality components where residual has been allocated to the redistribution component. Tendulkar & Jain (1991) decomposes changes in poverty into growth effect, distribution effect and population shift effect. Gaurav Datt & Martin Ravallion (1992) do the decomposition exercise into growth & inequality and a residual component using parameterized poverty measures and Lorenz curves.

## **II a. Data**

The study is based on the unit level Consumption expenditure data ( monthly per capita expenditure) from National Sample Survey Organisation for the years 1983-84, 1987, 1993-94, 1999-00, 2004-05 and 2009-10. We use state specific poverty lines (in Rs monthly per capita) from Planning Commission estimates of different years. In this paper 'Head Count Ratio (HCR)' has been used as a measure to find the pattern of urban poverty. The different MPCE classes of W.B for each year are taken as the MPCE classes for the regions and the districts for that respective year.

Until 1993-94, National Sample Survey Organisation (NSS) collected information on consumption expenditure from households on a uniform 30-day recall period for all items of consumption. Since 1999-00, NSSO has used a Mixed Recall Period (MRP) for collecting information on the same. Under Mixed Recall Period (MRP), information on five broad item groups of household consumer expenditure with low frequency of purchase namely, clothing, footwear, education, institutional medical care and durables is collected on a year or 365 days recall basis while information on consumption expenditure on all other items is collected on a month or 30 days recall period. In the case of Uniform Recall Period (URP), all information on consumption expenditure is collected on a month-long recall period basis.

In our present work the estimates of HCR for urban areas of India, W.B, its regions and its districts for all years are based on uniform reference period (URP) of the consumption expenditure unit level data of NSS. For the years 1983, 1987, 1993 and 1999, for estimating urban HCR we have used the urban poverty line for the state of W.B calculated on the basis of Modified Expert Group methodology (using URP data) .For the year 1993 and 2004 we have estimated the urban HCR for the year using two values of urban poverty line, one estimated using Modified Expert Group methodology (based on URP data) and the other estimated using Tendulkar methodology (based on MRP data). For the year 2009 the urban HCR is calculated using poverty line based on Tendulkar methodology. We have tried to see whether there exist any difference in the estimate of urban HCR during 2004 using URP data and the other estimate using MRP data.

Prior to 2004-05, all the districts were clubbed together into different groups depending on the geographical, social and economic characteristics of the districts where these groups are termed as NSS regions. From NSSO robust district level estimates are available for 61<sup>st</sup> and 66<sup>th</sup> rounds only. The data available are comparable for all the years 1983, 1987, 1993, 1999, 2004 and 2009 in case of the regions. So for West Bengal we compare region level estimates of urban poverty and analyse different issues at the region level for all these years for West Bengal.

## II b. Methodology

We use **Parameterized Lorenz curve methods** (General Quadratic (GQ) Lorenz curve) following Gaurav Dutt's methodology for constructing poverty measures. The implementation of parameterized Lorenz curve (PLC) curve methodology is discussed below

Let  $L = (p; \pi)$  and  $P = P(\mu/z, \pi)$  be the Lorenz curve and poverty measures functions respectively where L is the share of the bottom p percent of population in aggregate consumption,  $\pi$  is a vector of (estimable) parameters of the Lorenz curve, P is a poverty measure defined as a function of the ratio of the mean consumption  $\mu$  to the poverty line z and  $\pi$ , the parameters of the Lorenz curve.

The Head count index H is derived by using the relationship between the Lorenz curve and the distribution function.

Now  $L(p; \pi) = x/\mu$  where L is the slope of the Lorenz curve.

Evaluated at the poverty line z this becomes,

$$L(H; \pi) = z/\mu$$

Solving for H yields the formulas for the head count index.

### **Poverty measure for GQ Lorenz curve:**

Equation of the Lorenz curve:

$$L(1-L) = a(p^2 - L) + bL(p-1) + c(p-L)$$

$$L(p) = -1/2((bp + e + (mp^2 + np + e^2))^{1/2})$$

Where,  $e = -(a+b+c+1)$

$$m = b^2 - 4a$$

$$n = 2be - 4c$$

We calculate poverty line /mean consumption for all the states for different years. We try to construct the poverty measures for the states of India for different years by constructing cumulative proportion of population (p) and cumulative proportion of consumption expenditure (L).

Using the values of p and L from the survey data we regress  $L(1-L)$  on  $(p^2-L)$ ,  $L(p-1)$  and  $(p-L)$  to estimate GQ Lorenz curve parameters a, b and c. The regression should not contain any intercept term. The last observation for p and L having the value (1,1) is

excluded since the functional form for the Lorenz curve already forces it to pass through the point (1,1),  $R^2$  is already unity.

Then we can construct H estimate of poverty measure by a formula using the values of  $z/\mu$  and coefficients a, b, c as obtained above.

$$\text{Head count index (H)} = -1/2m (n+r(b+2z/\mu) ((b+2z/\mu)^2-m)^{-1/2})$$

Where  $e = -(a+b+c+1)$

$$M = b^2-4a$$

$$N = 2be-4c$$

$$R = (n^2-4me^2)^{1/2}$$

Though it is difficult to get comparable estimates of the distribution of living standards for different time periods for most of the developing countries but for India we get time series data of consumption distribution from the national household survey conducted by NSSO. From these data we get an overview of the living conditions of the poor and can study the relationship between poverty and growth and examine the related aspects.

### III. Discussion and Result

Here we try to analyse the pattern of urban poverty in India from 1980-2010 and study inter-state variation in urban poverty in states of India.

Between the periods 1980-2010 there has been a significant achievement in reducing poverty both at the national and state level. During this period poverty has fallen in all the states with substantial differences in all the states. Urban India fared a little better under economic reforms. This decline in poverty may be attributed to the high growth rate achieved by the states. The regional differences in poverty reduction have also been quite substantial.

From table1, it is seen that between 1983-87 urban poverty has fallen in almost all the states except Andhra Pradesh, Bihar, Karnataka, Rajasthan and West Bengal. Between 1987 and 1993 significant decline in HCR occurred in almost all the states except Andhra Pradesh, Madhya Pradesh, Maharashtra and Delhi. The decline in the urban poverty had accelerated in the 1990s. Significant fall in urban poverty could be experienced in Andhra Pradesh, Gujarat, Haryana, Karnataka, Punjab, Rajasthan,

Tamilnadu and Delhi. Orissa seemed to be the only state where there has been no reduction in poverty ratio during the years.

However the computation of HCR for the year 1993-94 and 2004-05 has been done on the basis of two poverty lines as estimated by the Modified expert group and next by the Tendulkar committee. So we get two estimated values of HCR in my analysis. The estimates of urban HCR are much higher in 1993 and 2004 in case of MRP compared to URP for the same years. For 2009 urban HCR as estimated using MRP shows that urban poverty has declined from 2004 in all the states except Delhi and Jharkhand. Thus we find that based on the type of methodology in estimating urban poverty line the results vary.

However, the rank of states in 1993 and 2004 in both URP and MRP as observed from table 2, remains more or less same indicating that the pattern of urban poverty has been same in both the cases though the magnitudes of the same vary. For 2009 the states showing significant improvement in their rank are Andhra Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan and West Bengal. Higher is the value of rank lower is the urban HCR for the states.

### **Pattern of Urban Poverty in the Regions of West Bengal**

Between the periods 1980-2010 there has been a significant achievement in reducing poverty both at the state and regional level. Also the regional differences in poverty reduction have been quite substantial.

In case of West Bengal, based on the Modified Expert Group estimate of poverty line it is seen from table 3 that the urban HCR increases from 32.3 percent to 32.6percent between 1983-87 and decreases to 23.4percent in 1993 and then again decreases to 16.8percent in 1999 and then to 15.7 percent in 2004-05. And based on Tendulkar estimate of poverty line, the urban head count ratio for West Bengal falls from 34.1 percent in 1993 to 27.9 percent in 2004-05 and then finally to 19.5 percent in 2009-10.

If we consider Modified Expert Group estimate of poverty line, between the periods 1983-1987 urban HCR has increased for all the regions by a substantial amount. Between 1987-93 urban HCR decreases for Eastern and Central region and increases for

Himalayan and Western region. Between 1993-99 and between 1999-2004 urban HCR shows a decreasing pattern for all the regions. Thus we find significant variations in the pattern of changes in the urban poverty across regions.

If we consider Tendulkar estimate of poverty line, the urban head count ratio have shown a decreasing trend for all the regions between the years 1993-94, 2004-05 and 2009-10.

Now if we consider the same period 1993-2009 for modified expert group methodology we will observe the same results, that is a fall in the urban poverty for all the regions. But we see that the percentage changes in urban HCR are different for these years in case of the two methodologies for the state itself and the regions.

From our table an interesting thing could be noticed for the urban HCR for the year 2004 in case of two methodologies. The estimate of urban HCR is much higher in case of Tendulkar estimate compared to the Modified group estimate in all the regions and the state. Thus we see that the urban poverty estimates vary depending upon the choice of poverty line.

Figure 1

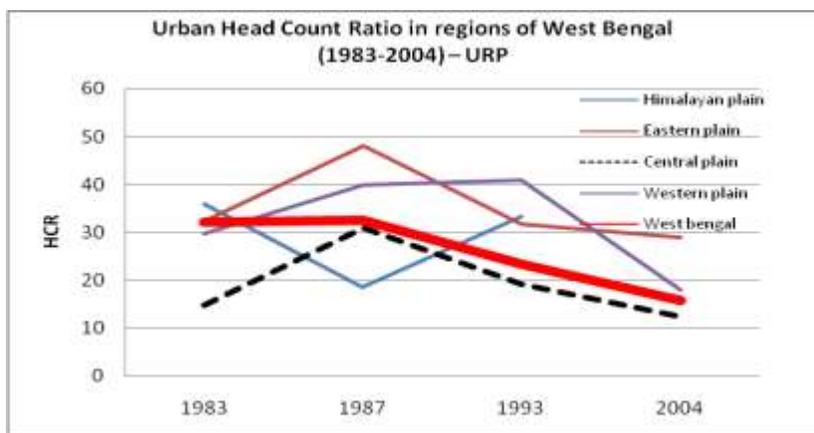


Figure 2

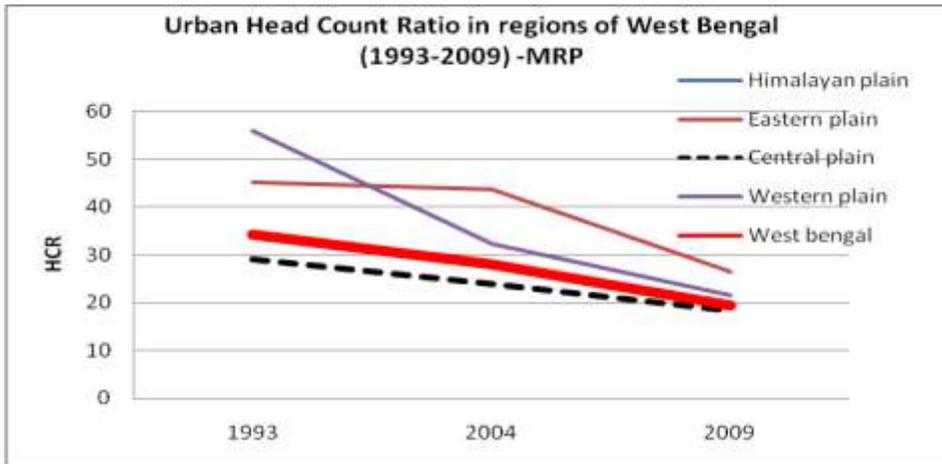


Figure 3

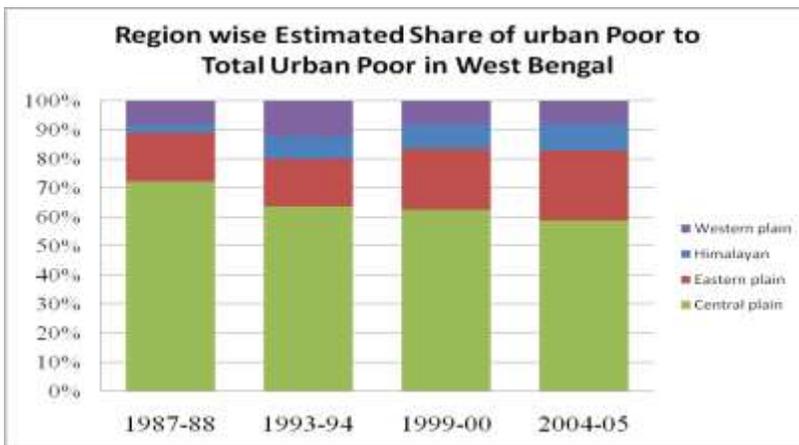
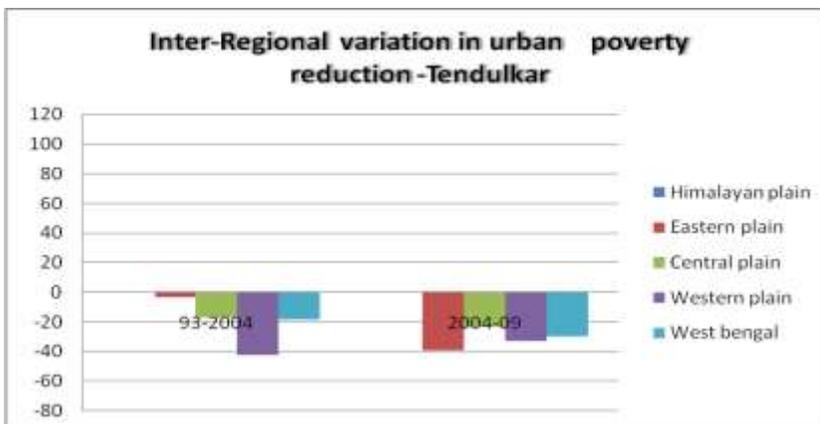


Figure 4 *Inter-regional Variations in Urban Poverty in West Bengal*



When we rank the regions of West Bengal in terms of maximum HCR, we find from table 4 that in most of the years, the Eastern region accounts for highest HCR (rank 1). Among the regions of West Bengal, the urban HCR is noticed to be comparatively low in the Central region which ranks between 3 and 4 in all the years. The same result in the ranking of the regions is being noticed whether we consider the Modified expert group methodology or Tendulkar methodology for the years 1993 and 2004. This shows that the use of two different methodology of estimating urban poverty line does not alter the result of occurrence of urban poverty in the regions and the state for different years. Only the magnitude of urban poverty and their changes over different years vary. The rankings in urban poverty and rankings in the percentage change in urban poverty however remains same whatever methodologies are being used.

#### **IV. Urban Poverty in West Bengal and access to PDS: some results from NSS 66<sup>th</sup> round survey**

The major difference between rural and urban Indian income poor population is that even when a rural household has severe shortage of income earning opportunities they can have some access to food through subsistence farming and can be out of severe poverty through such access. The growing urban population in India lacks such opportunity. And here lies the importance of public distribution system. The urban population, on the other hand, is largely dependent on the market, making the urban poor in particular more vulnerable to price shocks and food and nutrition insecurity (Report on the state of food insecurity in urban India, 2010). In any event, PDS has been an extremely important instrument of food security.

Using the 66<sup>th</sup> round unit level data on household consumption expenditure of urban West Bengal we have tried to relate probability of being urban poor with access to PDS. From the data of MPCE of each member of the sample data we have calculated the poverty status of an individual comparing with the official poverty line of urban West Bengal as provided by the Planning Commission 2009. The variable poverty status (*pov\_status*) is a dichotomous variable taking value equals to '1' if individual's MPCE is less than Poverty line and is equal to '0' if MPCE greater than poverty line.

We have calculated Percentage of Household Accessing PDS items by MPCE class wise and poverty status wise in urban West Bengal for 2009( 66<sup>th</sup> round), ( table 5a and 5b ) .It is found that percentage of households purchasing PDS items is quite **high (60.7%)**, percentage of households purchasing food items is also significant (17.1%) of which poor households are quite **high (37.9%)** and among food items percentage of poor households purchasing **wheat is very high (13.5% )** compared to rice and sugar and MPCE class wise access to PDS by households show that the proportion of households purchasing PDS food items mainly rice and wheat mainly belong to the **lower mpce classes** of which proportion of wheat consumption is very high. Whereas a small proportion of households from **higher mpce class** purchase these PDS items.

We have also calculated proportion of PDS items consumed by the urban household to total Consumption (QTY) among those who accessed PDS items (table 5c and 5d). Out of the total consumption (Qty) proportion of PDS items consumed is quite significant (35% for rice, 78% for wheat, 65% for sugar ).among all class of people both poor and non poor (proportion of wheat is quite high). And lower classes household are being benefited most.

One of the important questions is **what is the impact of PDS on urban poverty?** Or the question can be put into this way – **how many income poor household achieve calorie sufficiency due to cheap supply from Public distribution system?**

The NSSO estimated monthly per capita consumption expenditure given the item wise quantity consumed and the value of each item separately. They took the actual expenditure incurred by the household. The PDS items like rice, wheat sugar and kerosene (in 66<sup>th</sup> round and some other item in earlier rounds) are itemized according to sources of consumption. For example –rice purchased from PDS and rice purchased from other sources (home and other market sources) are two separate consumption items. In both the cases quantity and value of rice from PDS item and quantity and value of rice from other sources (home and market etc) given separately. In the case of rice from PDS the value of consumption is taken at PDS (subsidized) price whereas for value of rice from other sources is at market price. It implies that real consumption value by the

household is higher by the amount of subsidy provided by the Govt in terms of lower price for PDS items than the reported consumption by NSSO.

So it can be said that Real per capita consumption Expenditure = Reported MPCE by NSSO + Per capita Subsidy value of PDS items consumed

The subsidy value provided by the govt. is calculated as follows –

Estimated Market Price = (Value of item consumed by HH from other sources/ Qty consumed by HH from other sources)

Estimated PDS Price = (Value of item consumed from PDS/ Qty consumed from PDS)

Subsidy per Unit = Estimated Market Price - Estimated PDS Price

Subsidy value per Household = Subsidy per Unit X Qty consumed from PDS by HH

Per capita Subsidy = Subsidy value per Household/ HH size

**Real per capita consumption Expenditure = Reported MPCE by NSSO + Per capita Subsidy value of PDS items consumed**

Table 5e and 5f give Percentage of Average per capita Subsidy value (PDS item Wise) to total MPCE in WB by MPCE class wise and poverty status wise in 2009.

On the basis of Real per capita consumption Expenditure the poverty status of each member are recalculated. This adjusted poverty status can be used to find the estimated number of income poor household who have achieved calorie sufficiency due to cheap supply from PDS . At the time of this recalculation it is assumed that as the PDS item are all very essential items in nature they are price inelastic; i.e. in the absence of PDS people will consume the same amount of commodities at market price as earlier.

The estimated percentage of urban poor in West Bengal is 25.2% when it is directly calculated from unit level data of NSS 66<sup>th</sup> round on the basis of reported MPCE by NSSO. The poverty status of each member is taken as BPL if reported MPCE is less than the urban poverty line for West Bengal as provide by the Planning Commission (Tendulkar) where as if reported MPCE is higher than poverty line then poverty status is APL (0). On the other after calculating the per capita real consumption expenditure including subsidy the poverty status is recalculated, which is termed as **Adjusted poverty status** where if per capita real consumption expenditure is less than poverty line then the adjusted poverty status of the individual is BPL (1) and if per capita real

consumption expenditure is greater than poverty line then the adjusted poverty status is APL.

Table 5g shows that due to PDS actually there is less number of poor in urban West Bengal. The fall is nearly 2 percentage point (1.72). So it can be concluded that without such intervention a large section of marginal and vulnerable group who have limited access to market would suffer tremendously given the context of high food inflation and both local and global food price fluctuation.

## **V .Conclusion:**

From the above study we find that

- there occurred significant reduction of urban poverty at state, region and district level during 1980-2010 with substantial inter state and inter-regional variations in both India and West Bengal
- estimates of urban HCR are much higher in 1993 and 2004 in case of MRP compared to URP for the same years for India and WB.
- for 2009 urban HCR as estimated using MRP shows that urban poverty has declined from 2004 in all the states except Delhi and Jharkhand.
- for 2009 the states showing significant improvement in their rank are Andhra Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan and West Bengal.
- however the pattern of urban poverty in the regions and the state of India and West Bengal remains same for different years for both methodologies and only the magnitude of urban poverty over different years changes.
- thus it can be said that that urban poverty estimates vary depending upon the choice of poverty line.
- urban head count ratio for West Bengal has fallen from 27.9 percent in 2004-05 to 19.5 percent in 2009-10 under MRP.
- while studying access to PDS as an instrument for solving food security problem it has also emerged using 66<sup>th</sup> round survey data that this kind of govt. support is helping the urban poor in West Bengal.

The future scope of the study involves identification of various socio- economic factors determining urban poverty and suggesting necessary measures for effective performance of existing policies of urban poverty reduction.

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## Appendix

**Table 1. Urban Head Count Ratio in India and its States during 1983-2009**

States/Year	Modified expert group methodology(URP)					Tendulkar methodology(MRP)		
	1983	1987	1993	1999	2004	1993	2004	2009
<b>Andhra Pradesh</b>	36.4	40.0	45.8	27.5	27.8	46.9	30.2	23.5
<b>Bihar</b>	47.6	49.1	35.6	33.2	33.5	44.4	47.2	43.1
<b>Gujarat</b>	38.7	36.6	28.8	16.4	14.8	34.7	25.7	20.0
<b>Haryana</b>	22.5	20.6	17.3	11.4	16.3	29.2	27.5	27.5
<b>Karnataka</b>	42.5	46.8	39.5	25.4	33.3	37.7	32.1	24.1
<b>Kerala</b>	45.5	41.5	26.2	20.5	21.3	28.1	23.5	16.8
<b>Madhya Pradesh</b>	52.0	44.4	48.0	37.5	41.7	36.6	37.3	26.9
<b>Maharashtra</b>	39.5	32.7	34.8	27.4	32.9	34.9	29.9	22.2
<b>Orissa</b>	49.0	42.7	41.2	42.6	42.2	36.6	38.5	30.2
<b>Punjab</b>	23.6	16.3	12.2	5.6	7.6	30.4	24.1	23.7
<b>Rajasthan</b>	37.2	42.4	31.0	21.3	32.6	35.9	33.6	24.4
<b>Tamil Nadu</b>	45.7	<b>38.6</b>	39.4	23.8	24.0	37.3	25.3	18.4
<b>Uttar Pradesh</b>	50.2	41.5	35.6	30.9	30.6	41.6	36.9	34.2
<b>Delhi</b>	27.0	14.6	17.1	10.2	16.2	18.3	18.7	25.4
<b>West Bengal</b>	32.3	34.1	23.4	16.8	15.8	34.1	28.0	22.0
<b>Chhattisgarh</b>	-	-	-	-	39.0	-	34.1	28.2
<b>Jharkhand</b>	-	-	-	-	19.0	-	26.5	35.4
<b>Uttarakhand</b>	-	-	-	-	34.3	-	30.4	29.1
<b>All-India</b>	40.6	37.8	32.7	24.2	26.0	31.8	30.0	24.8

**Source:** Authors calculation from NSS consumer expenditure survey of different rounds.

**Note:** 1. Planning Commission's data is taken for Tamil Nadu (1987) due to some problems in the computation.

2. For years 1983 to 2004 Bihar includes Jharkhand, M.P includes Chhattisgarh and U.P includes Uttarakhand.

3. For Assam, Himachal Pradesh and Jammu & Kashmir, poverty estimates are relatively weak since the sample sizes for the NSS data are small. Also there has been a problem of coverage of remote areas of these states. So we exclude H.P and J&K from our analysis.

**Table 2: Rank in urban poverty in India and its States during 1983-2009**

States/Year	Modified expert group methodology (URP)					Tendulkar methodology (MRP)		
	1983	1987	1993	1999	2004	1993	2004	2009
Andhra Pradesh	11.0	8.0	2.0	5.0	10.0	1.0	9.0	13.0
Bihar	4.0	1.0	7.0	3.0	5.0	2.0	1.0	1.0
Gujarat	9.0	10.0	10.0	12.0	17.0	10.0	14.0	16.0
Haryana	15.0	13.0	13.0	13.0	14.0	13.0	12.0	7.0
Karnataka	7.0	2.0	4.0	7.0	6.0	4.0	7.0	11.0
Kerala	6.0	6.0	11.0	10.0	12.0	14.0	17.0	18.0
Madhya Pradesh	1.0	3.0	1.0	2.0	2.0	6.0	3.0	8.0
Maharashtra	8.0	12.0	8.0	6.0	7.0	9.0	10.0	14.0
Orissa	3.0	4.0	3.0	1.0	1.0	7.0	2.0	4.0
Punjab	14.0	14.0	15.0	15.0	18.0	12.0	16.0	12.0
Rajasthan	10.0	5.0	9.0	9.0	8.0	8.0	6.0	10.0
Tamil Nadu	5.0	9.0	5.0	8.0	11.0	5.0	15.0	17.0
Uttar Pradesh	2.0	7.0	6.0	4.0	9.0	3.0	4.0	3.0
Delhi	13.0	15.0	14.0	14.0	15.0	15.0	18.0	9.0
West Bengal	12.0	11.0	12.0	11.0	16.0	11.0	11.0	15.0
Chhattisgarh	–	–	–	–	3.0	–	5.0	6.0
Jharkhand	–	–	–	–	13.0	–	13.0	2.0
Uttarakhand	–	–	–	–	4.0	–	8.0	5.0

Source: Authors calculations Note: Rank exclude H.P and J&K Rank 1 given to states with highest HCR

**Table 3: Urban Head Count Ratio in the regions of West Bengal during 1983-2009**

Regions	URP					MRP		
	1983	1987	1993	1999	2004	1993	2004	2009
Himalayan plain	35.8	18.5	33.2	25.8	-	49.5	-	19.4
Eastern plain	32.5	48.1	31.7	30.5	29.0	45.1	43.7	26.5
Central plain	14.9	31.0	19.2	14.6	12.5	29.0	24.0	18.3
Western plain	29.8	39.9	41.0	21.1	18.1	56.0	32.4	21.6
West Bengal	32.3	32.6	23.4	16.8	15.7	34.1	27.9	19.5

Source: Author's calculation from unit level data of different rounds of survey of NSS consumption expenditure.

**Table 4: Rank in urban poverty in regions of West Bengal during 1983-2009**

Regions	URP					MRP		
	1983	1987	1993	1999	2004	1993	2004	2009
Himalayan plain	1	4	2	2		2		3
Eastern plain	2	1	3	1	1	3	1	1
Central plain	4	3	4	4	3	4	3	4
Western plain	3	2	1	3	2	1	2	2

Source: Author's calculation from unit level data of different rounds of survey of NSS consumption expenditure.

Table 5 a: Percentage of Household Accessing PDS items by MPCE class West Bengal (Urban)- 2009

mpce_urb_final_cd	Percentage of Household Accessing PDS items by MPCE class West Bengal (Urban)- 2009					
	Rice	Wheat	Sugar	Food	Kerosene	All PDS
1	28.7	40.7	15.8	45.6	87.7	88.5
2	19.2	28.0	8.9	32.1	77.9	78.4
3	13.8	31.7	9.0	35.3	87.0	89.0
4	11.2	15.7	7.3	21.9	68.7	69.9
5	7.9	13.6	3.7	16.5	73.9	74.1
6	2.4	9.9	5.2	13.4	70.1	70.3
7	1.0	8.3	4.3	12.4	54.7	56.2
8	0.9	3.9	2.8	5.7	49.6	49.8
9	0.6	5.4	4.2	10.0	39.4	43.2
10	0.3	1.2	0.9	2.2	23.4	23.7
11					100.0	100.0
All Classes	7.0	13.5	5.5	17.1	59.6	60.7

Table 5 b: Percentage of Household Accessing PDS items poverty status in West Bengal (Urban)- 2009

	is_pds_food			PDS Kerosene			PDS ALL Item		
	Non poor Percent	poor percent	All	Non Poor	Poor	All	Non poor Percent	poor percent	All
State	Accessed	Accessed	Accessed	Accessed	Accessed	Accessed	Accessed	Accessed	Accessed
<b>WB</b>	<b>12.1</b>	<b>37.9</b>	<b>17.1</b>	<b>54.1</b>	<b>82.7</b>	<b>59.6</b>	<b>55.1</b>	<b>84.0</b>	<b>60.7</b>

Source : Author's calculation from NSSO Unit Level data on consumption Expenditure 66 round

**Table : 5 c :** Proportion of PDS items consumed to total Consumption (QTY) among those who accessed PDS items WB Urban 2009

Proportion of PDS items consumed to total Consumption (QTY) among those who accessed PDS items WB Urban 2009			
	pov_st		
	Non poor	Poor	ALL
RICE	39.4	32.7	35.3
WHEAT	73.4	84.2	78.5
SUGAR	61.2	70.5	65.2
KEROSINE	92.6	90.4	92.0

Source : Author's calculation from NSSO Unit Level data on consumption Expenditure 66 round

**Table : 5d** MPCE class wise Proportion of PDS items consumed to total Consumption (QTY) among those who accessed PDS items

MPCE class (URP)	Mean			
	proportion pds rice to total	proportion pds wheat to total	proportion pds sugar to total	proportion pds kerosene to total
1	34.8	88.6	72.8	92.5
2	29.8	85.7	69.9	90.9
3	30.9	80.0	69.4	88.1
4	38.9	71.1	70.3	90.2
5	37.0	74.6	54.6	90.2
6	36.5	64.6	55.4	92.0
7	70.1	75.7	69.4	92.5
8	53.1	83.8	60.8	93.7
9	83.0	52.3	45.5	97.0
10	45.2	73.0	70.3	98.4
11	0.0	0.0	0.0	100.0
All class	<b>35.3</b>	<b>78.5</b>	<b>65.2</b>	<b>92.0</b>

**Table : 5e** Percentage of Average per capita Subsidy value (PDS item Wise) to total MPCE in WB -2009

MPCE class (URP)	Percentage of Average per capita Subsidy value (PDS item Wise) to total MPCE					
	rice	wheat	Sugar	food	all_pds	kerosene
1	7.50	3.35	.94	8.09	5.98	2.03
2	4.51	2.27	.68	4.93	3.47	1.66
3	4.07	1.86	.76	3.35	2.75	1.46
4	4.90	1.50	.52	3.52	2.16	1.14
5	4.13	1.44	.59	3.22	1.86	1.10
6	3.35	.92	.32	1.23	1.27	1.02
7	4.84	.93	.44	1.23	1.18	.91
8	3.23	1.43	.37	1.52	.95	.76
9	2.22	.45	.22	.48	.57	.49
10	1.59	.25	.19	.44	.33	.28
11					.03	.03
All Classes	<b>5.39</b>	<b>2.00</b>	<b>.62</b>	<b>4.05</b>	<b>2.40</b>	<b>1.22</b>

Source : Author's calculation from NSSO Unit Level data on consumption Expenditure 66 round

**Table: 5f** Percentage of Average per capita Subsidy value (PDS item Wise) to total MPCE in WB -2009 (Poverty status wise )

	Percentage of Average per capita Subsidy value (PDS item Wise) to total MPCE																	
	rice			wheat			sugar			kerosene			food_pds_			all_pds_		
	Non Poor	Poor	ALL Mean	Non Poor	Poor	ALL Mean	Non Poor	Poor	ALL Mean	Non Poor	Poor	ALL Mean	Non Poor	Poor	ALL Mean	Non Poor	Poor	ALL Mean
WB	4.2	6.0	5.4	1.3	2.7	2.0	0.4	0.8	0.6	1.0	1.8	1.2	2.2	6.3	4.0	1.5	4.4	2.4

Source: Author's calculation from NSSO Unit Level data on consumption Expenditure 66 round

**Table: 5g.** Percent of Income poor person achieve calorie sufficiency due to PDS in Urban West Bengal 2009

	Poverty	Adjusted Poverty	Decrease in Poverty due to PDS intervention
Estimated Percentage of Poor	25.15683	23.43555	1.721278

Source: Author's calculation from NSSO Unit Level data on consumption Expenditure 66 round

# **A Study on Impact of Urbanisation on Monthly Per Capita Household Consumer Expenditure in India**

By

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**Abstract:** *In India decennial population census provides list of government notified statutory towns and many other newly declared small towns which are called census towns. Like statutory towns, the census declared towns do not have urban like characteristics. In fact the census declared towns were villages in the previous census. In the recently conducted population census 3894 villages have been taken as census towns, whereas only 1362 census towns were identified in 2001 population census. This shows an increase of 2532 census towns during the ten years period. This large increase in census towns is due to significant increase of census towns in a few States - Andhra Pradesh, Assam, Jharkhand, Kerala, Tamil Nadu, Tripura and West Bengal. Many survey agencies, including NSSO, use this town list for sample selection for conducting socio-economic surveys in urban areas of different States. Obviously the census declared towns, which were villages till recently and which do not have urban like features, are also included in the sampling frame for urban areas. Obvious question arises what would be the impact of inclusion of large number of census towns in the urban sampling frame on the overall estimates of socio-economic parameters of urban areas of different States in general and those States in particular which have large number of census declared towns. In this paper we have made an attempt to see the impact on average monthly per person consumer expenditure of different States by analyzing household consumer expenditure survey data contained in schedule 1.0, both type 1 & type 2, of NSS 66<sup>th</sup> round. It has been observed that inclusion of large number of sample blocks from census towns in the urban sampling frame would have a pulling down impact on the overall average monthly per capita consumer expenditure of the States which have large number of sample blocks from the census towns.*

## **Introduction :**

Urbanisation is a key word in Indian Context. In fact urbanisation is picking up in India as can be seen from the Census 2011 figures that urban population has increased from 27.82% of total population in 2001 Census to 31.16% in 2011 Census. In India magnitude of urbanisation is measured by the areas covered in a decennial population census as urban areas. In a Census of India all places with a municipality, corporation, cantonment board or notified town area committee, etc. are treated as urban areas. These types of urban units are

known as Statutory Towns (ST). These towns are notified under law by the concerned State/Union Territory Government and have local bodies like municipal corporations, municipalities, municipal committees, etc., irrespective of their demographic characteristics. At the time of census, the Census Authority declares many other places as towns which satisfy the following criteria:

- i) A minimum population of 5000;
- ii) At least 75 per cent of the male main working population engaged in non-agricultural pursuits (those who worked 6 months or more are called main workers); and
- iii) A density of population of at least 400 persons per square kilometer.

These types of towns are known as Census Towns (CT). Before conducting the population census the concerned authority identifies these types of towns based on the information collected in the previous population census. To put the things in more simpler way, it can be said that for census 2011 the concerned Authority (Registrar General of India) as on 31<sup>st</sup> December, 2009 finalised the list of CTs (based on 2001 census data) and STs to be taken as urban areas in 2011 population census. It may be noted here that these CTs are actually villages in the sense that that declaration of these places as urban areas do not ensure that these places possess the urban features in terms of infrastructure and amenities such as pucca roads, electricity, tap water, drainage system for disposal of waste water etc., educational institutions, post offices, medical facilities, banks, etc.

In the 2001 Census out of a total of 5161 towns, 3799 were STs and remaining 1362 towns were CTs. In other-words these 1362 CTs were taken as villages in Census 1991. But in Census 2001 these villages were taken as CTs as each of these villages satisfied condition of being CTs based on the Census 1991 information. In December 2011 Registrar General of India identified additional 2532 villages satisfying the condition of being Census Town based on the information of Census 2001. Accordingly Population Census 2011 treated these villages as CTs. This shows the pace of urbanization in India which can be seen from Table 1 given below which gives the increase in number of towns in India in recent Censuses.

Type of town	Number of towns in Census		Increase
	2001	2011	
Total town	5161	7937	2774
Statutory Town	3799	4041	242
Census Town	1362	3894	2532

This increase in CTs and STs is not same in different States. Urbanization, in that concept, is more in some States as can be seen from Table 2.

Table 2 : Number of Census Towns and Statutory Towns in different States in the recent Censuses						
State/ UT	Number of CTs in Census		Increase	Number of STs in Census		Increase
	2001	2011		2001	2011	
Andhra Pradesh	93	228	135	117	125	8
Arunachal Pradesh	17	1	-16	0	26	26
Assam	45	126	81	80	88	8
Bihar	5	60	55	125	139	14
Chattisgarh	22	14	-8	75	168	93
Delhi	59	110	51	3	3	0
Goa	30	56	26	14	14	0
Gujarat	74	153	79	168	195	27
Haryana	22	74	52	84	80	-4
Himachal Pradesh	1	3	2	56	56	0
Jammu & Kashmir	3	36	33	72	86	14
Jharkhand	108	188	80	23	40	17
Karnataka	44	127	83	226	220	-6
Kerala	99	461	362	60	59	-1
Madhya Pradesh	55	112	57	339	364	25
Maharashtra	127	279	152	251	256	5
Manipur	5	23	18	28	28	0
Meghalaya	6	12	6	10	10	0
Mizoram	0	0	0	22	23	1
Nagaland	1	7	6	8	19	11
Orissa	31	116	85	107	107	0
Punjab	18	74	56	139	143	4
Rajasthan	38	112	74	184	185	1
Sikkim	1	1	0	8	8	0
Tamil Nadu	111	376	265	721	721	0
Tripura	10	26	16	13	16	3
Uttar Pradesh	66	267	201	638	648	10
Uttarakhand	12	42	30	74	74	0
West Bengal	252	780	528	123	129	6
A & N Islands	2	4	2	1	1	0
Chandigarh	0	5	5	1	1	0
Dadra & N. Haveli	2	5	3	0	1	1
Daman & Diu	0	6	6	2	2	0
Lakshadweep	3	6	3	0	0	0
Puducherry	0	4	4	6	6	0
All India	1362	3894	2532	3799	4041	242

It can be seen from Table 2 that the pace of urbanization is faster in the States of Andhra Pradesh, Assam, Kerala, Uttar Pradesh, Tamil Nadu and West Bengal at least in terms of number of CTs.

The lists of villages and towns (wards) released by Registrar General of India are used as sampling frame by many survey agencies. In fact the National Sample Survey Office (NSSO) uses this list of villages along with village level primary data as sampling frame for drawing of rural samples for different socio-economic surveys. Since Towns (wards) are of varying sizes, NSSO does not directly use this list as sampling frame. Each of these Census identified / listed towns is further divided into smaller geographical areas, called blocks, by undertaking a special survey known as Urban Frame Survey (UFS). Thus generated list of blocks for all the towns, both STs and CTs, is used as sampling frame for drawing of urban samples for socio-economic surveys.

Accordingly, the urban sampling frame generated through UFS using list of 2001 Census towns maintained in NSSO contains urban frame survey block level data for each of the 5161 towns including CTs. To keep pace with the urbanization, NSSO also updates its urban sampling frame by inclusion of the UFS block level data for the newly declared towns, both STs and CTs, of the latest Population Census. To avoid duplication in the frame the villages, which have been taken as towns, are also dropped from the rural sampling frame of villages. As mentioned above 2532 new CTs and 242 new STs have been identified in 2011 Census. For obvious reasons NSSO is in the process of conducting Urban Frame Survey for these newly declared towns so that the updated latest sampling frame can be used for drawing of urban samples in the forthcoming socio-economic rounds.

**Now the obvious question arises - what would be the impact of inclusion of large number of Census Towns, which were villages till recently and which do not have urban like characteristics, on the monthly per capita household consumer expenditure for urban sector of different States. In this paper we have made an attempt to see this impact by analyzing the household consumer expenditure survey data of NSS 66<sup>th</sup> round.**

### **Extent of involvement of Census Towns in NSS 66<sup>th</sup> round**

In NSS 66<sup>th</sup> round survey urban sampling frame based on town list of 2001 Population Census was used for drawing of urban samples. As discussed above, UFS block level data of 1362 census towns were also included in the sampling frame used for sampling of 66<sup>th</sup> round. In 66<sup>th</sup> round out of a total of 5252 sample UFS blocks surveyed for all States taken together, 538 sample blocks were surveyed from these 1362 CTs and remaining from STs. Following table gives state wise total number of sample UFS blocks surveyed and number of sample blocks surveyed from Census Towns.

Table 3 : Total number of sample blocks surveyed and number of sample blocks surveyed from Census Towns in different States in NSS 66 <sup>th</sup> round					
State	Total No. of UFS blocks surveyed In 66 <sup>th</sup> round	Sample no. of blocks from CTs in 66 <sup>th</sup> RD.	State	Total No. of UFS blocks surveyed In 66 <sup>th</sup> round	Sample no. of blocks from CTs in 66 <sup>th</sup> RD.
Andhra Pradesh	372	51	Manipur	148	5
Assam	104	22	Meghalaya	51	14
Bihar	159	1	Nagaland	40	3
Chattisgarh	92	8	Orissa	132	7
Delhi	118	27	Punjab	195	4
Goa	36	14	Rajasthan	196	9
Gujarat	216	19	Sikkim	20	2
Haryana	148	9	Tamil Nadu	415	31
Jammu & Kashmir	160	2	Tripura	68	24
Jharkhand	124	32	Uttar Pradesh	387	18
Karnataka	255	7	Uttarakhand	92	8
Kerala	232	62	West Bengal	344	42
Madhya Pradesh	248	12	A & N Islands	36	5
Maharashtra	502	24	All India	5252	538
			States with no surveyed sample blocks from CTs not included here		

It can be seen that for some of the States more than 10 percent of total blocks {Andhra Pradesh (18%), Assam (21%), Delhi (23%), Goa (39%), Jharkhand (26%), Kerala (27%), Meghalaya (27%), Tamil Nadu (7%), Tripura (35%), West Bengal (12%)} surveyed are from the CTs.

## Data Analyzed

To study the urban average monthly household consumer expenditure per person for these States we have divided all 5252 sampled UFS blocks of 66<sup>th</sup> round in four classes depending on the population of the towns as shown below:

All sampled UFS blocks from Census Towns	Town Class 1
All sampled UFS blocks from Towns with Population less than 5 lakhs (excluding CTs)	Town Class 2
All sampled UFS blocks from Towns with population 5 lakhs to less than 10 lakhs	Town Class 3
All sampled UFS blocks from Towns with population 10 lakhs or more	Town Class 4

These town class types have been used as classificatory variables in the unit level data contained in schedule 1.0, both type 1 and type 2, of NSS 66<sup>th</sup> round for generation of Town Class-wise average monthly consumer expenditure per person for different items of consumption for the States which have large proportion of bocks surveyed from Census

Towns. Number of UFS blocks surveyed in different Town Classes for these States is given in Table 4.

States	Town Class				ALL
	1	2	3	4	
Andhra Pradesh	51	217	48	56	372
Assam	22	78	4	-	104
Goa	14	22	-	-	36
Jharkhand	33	73	18	-	124
Kerala	62	132	38	-	232
Meghalaya	14	37	-	-	51
Tamil Nadu	31	303	37	44	415
Tripura	24	44	-	-	68
West Bengal	42	226	-	76	344
All India	593	3614	390	654	5251

## Study

As mentioned earlier the Statutory Towns are State Government declared towns and these towns have self or local Government bodies (Municipalities, etc.) which provide certain services. But in the Census Towns local bodies do not exist. Here towns with Class Codes 2, 3 & 4 are Statutory Towns. Town class wise per capita household consumer expenditure would help us to see not only the differences in household consumption expenditures of various items of consumption of the people of non-government Census declared towns (Census Towns) and other relatively small State government declared towns (Statutory Towns covered in Town Class 2) but also the differences in the consumption expenditures of people of small, medium, large and million-plus types of Statutory Towns. As per the State Government Records the Census Towns belong to rural areas. So it would be interesting to see how the item-level per capita household consumption expenditures of the people of Census Towns differ from the item level per capita consumption expenditures of the people of rural areas of different States.

## Comparison using Schedule type 1 Uniform Reference Period (URP) data

Table 5 gives average monthly household consumer expenditure on total food items per person using URP data for different Town Classes of some of the States identified above as having large proportion of blocks surveyed from census towns. It can be seen that per person average monthly expenditures on food items for the census towns are significantly less than the same obtained from the State government declared smaller towns (Town Class 2) for the States of Andhra Pradesh, Goa, Tripura and West Bengal. There is not much difference for the other States (Assam, Jharkhand, Kerala Meghalaya and Tamil Nadu). Interestingly the average monthly per person consumption figures of total food items of all these nine States, excepting Meghalaya, generated for census towns are lower than the State level average figures for per person consumption of food items. So far as per person consumption of non-food items are concerned, it can be seen from Table 6 that the expenditures coming from census towns for the States of Andhra Pradesh, Goa, Kerala, Tripura and West Bengal are far

less than the corresponding expenditures obtained from the smaller statutory towns covered in town class 2, whereas for the States of Assam, Jharkhand, Meghalaya and Tamil Nadu census town based average monthly per person expenditures are more than the corresponding average expenditures based on smaller towns taken together in town class 2. The most striking point is that Andhra Pradesh, Kerala and West Bengal are the three major States where more than 12 percent of the surveyed UFS blocks are from the census towns and consumption expenditures per person for both food and non-food items obtained from these blocks are far less than the consumption expenditures obtained from the blocks surveyed from the State government declared smaller towns (covered in Town Class 2) as well as State level average consumption figures based on the data of all urban blocks of the States. In fact average monthly per capita consumer expenditures for food and non-food items taken together obtained from the census town based blocks for these States are much less than the same obtained from the State government declared smaller towns based blocks as well as obtained from all blocks taken together as can be seen from Table 7. **It can be said that inclusion of more and more blocks in the urban sampling frame based on census declared towns would have a pulling down impact on overall per capita household consumption expenditure of at least three major States – Andhra Pradesh, Kerala and West Bengal.**

States	Town Class				ALL
	1	2	3	4	
Andhra Pradesh	653.96	766.14	885.51	862.46	787.24
Assam	742.08	648.49	1176.53	-	776.82
Goa	889.65	930.17	-	-	914.09
Jharkhand	642.39	607.78	790.73	-	663.01
Kerala	752.55	737.07	1109.51	-	826.59
Meghalaya	595.38	572.79	-	-	580.60
Tamil Nadu	710.94	676.21	752.21	870.69	716.53
Tripura	708.21	887.10	-	-	816.29
West Bengal	599.20	706.44	-	910.32	737.87
All India	690.04	669.10	792.89	859.02	727.49

States	Town Class				ALL
	1	2	3	4	
Andhra Pradesh	844.06	1228.54	1280.72	1248.86	1194.99
Assam	816.28	597.13	1150.97	-	763.45
Goa	1040.20	2358.74	-	-	1835.47
Jharkhand	635.45	597.91	1098.97	-	727.86
Kerala	1099.68	1390.01	3686.80	-	1836.86
Meghalaya	885.02	870.24	-	-	875.35
Tamil Nadu	926.52	861.33	885.63	1473.71	962.16
Tripura	555.41	937.23	-	-	786.08
West Bengal	656.97	865.67	-	1583.95	997.99
All India	894.60	877.16	1301.25	1463.52	1058.32

States	Town Class				ALL
	1	2	3	4	
Andhra Pradesh	1498.02	1994.67	2166.23	2111.32	1982.23
Assam	1558.36	1245.62	2327.50	-	1540.27
Goa	1929.85	3288.91	-	-	2749.55
Jharkhand	1277.83	1205.69	1889.70	-	1390.87
Kerala	1852.23	2127.07	4796.31	-	2663.45
Meghalaya	1480.40	1443.03	-	-	1455.95
Mizoram					
Tamil Nadu	1637.46	1537.54	1637.84	2344.40	1678.69
Tripura	1263.62	1824.33	-	-	1602.37
West Bengal	1256.17	1572.11	-	2494.27	1735.66
All India	1584.64	1546.27	2094.14	2322.53	1785.81

### Comparison using Schedule type 1 Mixed Reference Period (MRP) data

Expenditures on certain items like durable goods, clothing and footwear, etc. are generally better reported in MRP based estimates. It can be checked from Table 8 that, like URP, the MRP based estimates of average monthly expenditure on food items per person for the States of Andhra Pradesh, Goa, Tripura and West Bengal obtained from census towns are much lesser from the similar estimates obtained from State government declared smaller towns as covered in town class 2. Table 9 reveals that the differences in average per person estimates of consumption expenditures on non-food items are far more convincing between the census declared towns and State government declared smaller towns for the States of Andhra Pradesh, Goa, Kerala, Tripura and West Bengal. The estimate of average non-food consumption expenditure per person for the country as a whole obtained from census towns is less than the estimate obtained from the data of smaller statutory towns as can be seen from Table 9.

States	Town Class				ALL
	1	2	3	4	
Andhra Pradesh	653.96	766.14	885.51	862.46	787.24
Assam	742.08	648.49	1176.53	-	776.82
Goa	889.65	930.17	-	-	914.09
Jharkhand	642.39	607.78	790.73	-	663.01
Kerala	752.55	737.07	1109.51	-	826.59
Meghalaya	595.38	572.79	-	-	580.60
Tamil Nadu	710.94	676.21	752.21	870.69	716.53
Tripura	708.21	887.10	-	-	816.29
West Bengal	599.20	706.44	-	910.32	737.87
All India	690.04	669.10	792.89	859.02	727.49

Because of this, as is evident from Table 10, the average monthly Per Capita Expenditure of all items (food and non-food taken together) for All India is less in census declared towns than the same in the smaller statutory towns. **This clearly indicates that inclusion of more samples from census towns would have downward impact on estimates of average monthly per capita expenditure in urban areas of at least major States Andhra Pradesh, Kerala & West Bengal even if MRP approach is followed.**

States	Town Class				ALL
	1	2	3	4	
Andhra Pradesh	791.06	1162.59	1504.36	1505.72	1228.20
Assam	839.00	638.35	1331.71	-	827.24
Goa	1129.46	1420.49	-	-	1304.99
Jharkhand	688.39	654.18	1138.65	-	779.05
Kerala	1140.69	1216.24	2285.69	-	1440.57
Meghalaya	952.61	909.79	-	-	924.60
Tamil Nadu	1039.76	967.28	1001.38	1634.06	1077.98
Tripura	619.27	1015.73	-	-	858.79
West Bengal	631.02	918.51	-	1738.76	1063.17
All India	917.97	941.24	1289.58	1609.86	1128.52

States	Town Class				ALL
	1	2	3	4	
Andhra Pradesh	1445.02	1928.73	2389.87	2368.18	2015.44
Assam	1581.08	1286.84	2508.25	-	1604.06
Goa	2019.10	2350.65	-	-	2219.07
Jharkhand	1330.77	1261.95	1929.39	-	1442.06
Kerala	1893.24	1953.31	3395.20	-	2267.16
Meghalaya	1547.98	1482.58	-	-	1505.20
Tamil Nadu	1750.71	1643.48	1753.59	2504.76	1794.52
Tripura	1327.48	1902.83	-	-	1675.07
West Bengal	1230.22	1624.95	-	2649.08	1801.03
All India	1608.00	1610.35	2082.47	2468.88	1856.01

### Comparison using Schedule type 2 Modified Mixed Reference Period (MMRP) data

In NSS 66<sup>th</sup> Round for the first time single reference period for data collection of one group of items of consumption was introduced in schedule 1.0 (called schedule type 2) along with dual reference period in another version of schedule 1.0, called schedule type 1. This single reference period is referred to as modified mixed reference period or MMRP in the literature. Table 11 gives the town class wise average estimate of household consumer expenditure of

food items per month per person for some of the States following MMRP data. It can be seen from Table 11 that, unlike URP and MRP approaches, the per person average monthly consumer expenditure on food items following MMRP approach is less in the census declared towns than the same in the State government declared smaller towns ( as covered in towns class 2) in almost all the identified States except Assam. The expenditures on food items are significantly less in the census declared towns of Andhra Pradesh, Goa, Tripura and West Bengal than in the smaller State government notified towns. The average monthly consumer expenditures per person for non-food items are also significantly less in the census declared towns of these four States, and also in Kerala, than the smaller statutory towns coming under town class 2 (please see Table 12). Because of this average monthly per capita consumer expenditure for all items taken together, following MMRP approach, is much less in the census declared towns of the States of Andhra Pradesh, Goa, Jharkhand, Kerala, Tripura and West Bengal than the same in the smaller statutory towns of these States. **This clearly shows that, even if MMRP approach is followed, inclusion of more samples from census towns would have downward impact on estimates of average monthly per capita expenditure in urban areas of at least major States Andhra Pradesh, Kerala & West Bengal.**

States	Town Class				ALL
	1	2	3	4	
Andhra Pradesh	836.91	971.64	1136.49	1088.08	1002.30
Assam	983.09	779.68	1326.43	-	928.99
Goa	1160.08	1364.81	-	-	1277.78
Jharkhand	759.52	777.08	964.69	-	816.04
Kerala	899.35	917.67	1163.07	-	969.76
Meghalaya	680.64	697.49	-	-	691.14
Tamil Nadu	841.37	845.78	879.86	1026.08	876.21
Tripura	839.03	1123.92	-	-	1011.72
West Bengal	728.90	884.71	-	1069.41	906.81
All India	842.07	815.28	960.69	1020.70	880.83

States	Town Class				ALL
	1	2	3	4	
Andhra Pradesh	783.50	1167.24	1560.66	1457.02	1235.30
Assam	829.45	634.34	1434.54	-	825.71
Goa	1147.88	1528.34	-	-	1366.60
Jharkhand	703.87	729.53	925.99	-	767.71
Kerala	1192.88	1350.62	1929.91	-	1442.81
Meghalaya	1001.92	898.70	-	-	937.57
Tamil Nadu	1049.57	944.64	951.85	1715.05	1071.40
Tripura	581.82	1039.70	-	-	859.37
West Bengal	614.73	964.93	-	1573.80	1057.97
All India	907.14	933.66	1274.47	1520.01	1103.63

States	Town Class				ALL
	1	2	3	4	
Andhra Pradesh	1620.42	2138.87	2697.15	2545.10	2237.60
Assam	1812.54	1414.02	2760.96	-	1754.70
Goa	2307.96	2893.15	-	-	2644.38
Jharkhand	1463.39	1506.61	1890.67	-	1583.75
Kerala	2092.24	2268.29	3092.99	-	2412.58
Meghalaya	1682.56	1596.19	-	-	1628.72
Tamil Nadu	1890.94	1790.42	1831.70	2741.13	1947.61
Tripura	1420.85	2163.62	-	-	1871.09
West Bengal	1343.63	1849.64	-	2643.22	1964.78
All India	1749.21	1748.95	2235.16	2540.71	1984.46

So far we have seen the differences in the monthly consumer expenditures obtained from the census towns and smaller statutory towns for total food items, total non-food items and all items taken together. But it would be interesting to see the differences at item level for major groups of items of consumption.

## Food items

Monthly per capita consumer expenditure on milk & milk products is less in the census declared towns of all the identified states excepting Assam and Tamil Nadu in comparison to the smaller statutory towns included in town class 2. All India expenditure per person per month on milk & milk products is also less (Rs.115.64) in the census towns than in the towns of town-class 2 (Rs. 127.86). Similarly average per person monthly expenditure on the item egg, fish & meat is less in the census declared towns of the major States - Andhra Pradesh, Tamil Nadu and West Bengal - than the same in the smaller statutory towns. Another important item in the food group is 'beverages', in which case the census declared towns have shown less expenditure per person per month than the smaller statutory towns almost in all the States excepting Assam and Meghalaya. Details of town-class wise average monthly per person expenditures on milk & milk-products, egg, fish & meat and beverages for the identified States are available in the Tables 14, 15 & 16.

States	Town Class				ALL
	1	2	3	4	
Andhra Pradesh	92.83	113.34	128.75	118.46	114.34
Assam	52.27	47.52	110.71	-	59.81
Goa	109.83	136.68	-	-	125.27
Jharkhand	83.20	95.45	92.31	-	90.28
Kerala	72.94	75.39	110.88	-	82.98
Meghalaya	27.62	31.04	-	-	29.75
Tamil Nadu	110.59	102.66	117.09	134.19	109.67
Tripura	42.66	71.85	-	-	60.35
West Bengal	48.79	62.49	-	84.68	65.76
All India	115.64	127.86	154.23	159.25	137.01

States	Town Class				ALL
	1	2	3	4	
Andhra Pradesh	91.48	99.50	108.34	115.56	102.70
Assam	209.95	141.73	370.78	-	199.78
Goa	244.32	298.60	-	-	275.53
Jharkhand	83.78	64.26	86.07	-	76.55
Kerala	169.53	161.84	200.52	-	172.90
Meghalaya	127.52	154.06	-	-	144.07
Tamil Nadu	82.44	98.09	83.94	107.69	96.63
Tripura	208.18	306.55	-	-	267.81
West Bengal	125.99	178.83	-	239.65	185.92
All India	87.57	69.56	66.02	75.55	71.98

States	Town Class				ALL
	1	2	3	4	
Andhra Pradesh	130.83	199.35	262.36	240.54	208.57
Assam	153.90	103.58	114.17	-	118.75
Goa	172.12	204.91	-	-	190.97
Jharkhand	105.08	116.91	202.46	-	133.30
Kerala	183.58	209.91	262.45	-	215.04
Meghalaya	145.07	113.29	-	-	125.26
Tamil Nadu	157.72	166.43	186.51	208.32	174.08
Tripura	74.24	97.41	-	-	88.28
West Bengal	100.67	148.55	-	231.83	161.28
All India	140.07	137.78	180.96	210.27	159.37

## Non-food items

Fuel & light, clothing, education, consumer services, conveyance and durable goods are some of the major sub-groups of non-food group of items for which we can see the difference in average consumer expenditure per person per month obtained from the census declared towns and smaller statutory towns. Fuel & light is the only sub-group where Assam has recorded little less consumer expenditure in the census declared towns than the smaller statutory towns. This is true for the States of Andhra Pradesh, Goa, Jharkhand, Kerala, Tripura and West Bengal as well as for the country as a whole. It can be seen from the Tables given below that the States of Andhra Pradesh, West Bengal and Tripura have shown significant less average monthly expenditure per person on almost all the non-food items such as clothing, education, conveyance, consumer services and durable goods obtained from the census declared towns in comparison to the same obtained from the State Government notified towns in general and smaller statutory towns taken in town-class 2 in particular. Among the other States, Kerala has recorded the average monthly expenditure per person on durable goods in the census declared towns as Rs. 127.40, which is even less than the half of

the same of the smaller statutory towns (Rs.282.59). Interestingly the average monthly per capita expenditures on the other non-food sub-groups of items for the census declared towns of Kerala are less than the same of the smaller statutory towns of Kerala but differences are not much. In the case of Tamil Nadu the census declared towns and the other smaller towns do not differ much so far as the average monthly per capita consumer expenditures on the major sub-groups of non-food items are concerned.

States	Town Class				ALL
	1	2	3	4	
Andhra Pradesh	104.39	119.07	137.71	119.85	120.52
Assam	121.94	123.38	166.81	-	130.58
Goa	133.71	157.04	-	-	147.12
Jharkhand	80.60	93.62	124.46	-	96.38
Kerala	110.95	116.53	161.48	-	125.47
Meghalaya	122.56	117.31	-	-	119.29
Tamil Nadu	116.51	102.00	103.11	159.08	112.07
Tripura	103.56	135.40	-	-	122.86
West Bengal	102.26	137.52	-	185.57	143.92
All India	119.19	124.95	149.73	170.79	137.72

States	Town Class				ALL
	1	2	3	4	
Andhra Pradesh	87.98	102.87	129.16	123.98	108.94
Assam	90.01	63.25	122.64	-	80.70
Goa	97.49	113.98	-	-	106.97
Jharkhand	86.54	85.93	98.43	-	89.17
Kerala	105.51	108.50	126.18	-	111.81
Meghalaya	83.23	84.28	-	-	83.89
Tamil Nadu	86.61	80.78	82.26	122.00	87.70
Tripura	67.03	91.34	-	-	81.77
West Bengal	70.75	94.79	-	132.68	100.30
All India	86.86	89.56	102.65	113.19	96.20

Table 19 : Town-Class wise estimated MPCE(MMRP) for the item education in NSS 66 <sup>th</sup> round in different States					
States	Town Class				ALL
	1	2	3	4	
Andhra Pradesh	66.65	140.55	304.06	180.30	165.09
Assam	128.68	64.02	176.04	-	100.70
Goa	62.79	105.64	-	-	87.42
Jharkhand	113.18	116.44	152.37	-	123.94
Kerala	138.10	104.73	230.82	-	142.99
Meghalaya	141.66	97.82	-	-	114.33
Tamil Nadu	135.69	121.46	73.54	195.91	128.97
Tripura	97.27	155.48	-	-	132.56
West Bengal	83.72	118.22	-	202.86	132.90
All India	113.23	120.01	213.86	253.35	160.51

Table 20 : Town-Class wise estimated MPCE(MMRP) for the item consumer services in NSS 66 <sup>th</sup> round in different States					
States	Town Class				ALL
	1	2	3	4	
Andhra Pradesh	77.62	121.38	152.28	149.77	126.11
Assam	112.25	77.42	235.02	-	114.16
Goa	132.76	217.11	-	-	181.25
Jharkhand	67.02	69.12	114.32	-	79.27
Kerala	144.99	147.12	189.84	-	156.47
Meghalaya	109.33	96.34	-	-	101.23
Tamil Nadu	88.68	93.72	88.03	174.20	104.83
Tripura	50.09	132.85	-	-	100.26
West Bengal	54.09	110.87	-	233.59	131.33
All India	96.53	102.31	134.70	184.14	124.09

Table 21 : Town-Class wise estimated MPCE(MMRP) for the item conveyance in NSS 66 <sup>th</sup> round in different States					
States	Town Class				ALL
	1	2	3	4	
Andhra Pradesh	59.52	105.59	168.44	192.65	125.03
Assam	68.68	45.74	119.68	-	64.72
Goa	181.39	225.47	-	-	206.73
Jharkhand	66.04	56.87	129.97	-	77.82
Kerala	148.80	154.97	219.78	-	168.37
Meghalaya	135.38	91.67	-	-	108.13
Tamil Nadu	97.15	101.33	86.42	181.82	111.54
Tripura	46.86	71.43	-	-	61.76
West Bengal	40.22	88.54	-	192.87	105.92
All India	88.94	92.46	129.91	159.81	111.75

States	Town Class				ALL
	1	2	3	4	
Andhra Pradesh	60.50	72.35	85.30	69.23	72.56
Assam	60.98	43.41	79.34	-	54.33
Goa	93.47	97.51	-	-	95.79
Jharkhand	38.77	52.32	34.81	-	43.22
Kerala	127.40	282.59	382.94	-	264.20
Meghalaya	38.63	37.93	-	-	38.19
Tamil Nadu	119.41	60.6	40.54	142.97	76.31
Tripura	13.05	42.89	-	-	31.14
West Bengal	41.48	78.19	-	105.72	79.82
All India	70.45	73.58	96.2	97.49	81.36

### Comparison between estimates of Census declared towns and rural areas

So far we were trying to see the status of newly declared census towns in comparison to the state government declared statutory towns taking per capita average monthly expenditure of different food and non-food items of household consumption as base. At the outset we have mentioned that till recently these towns were rural areas and these newly declared census towns do not have standard urban like characteristics. Then obviously the question arises how far the estimates of average per capita monthly expenditure of different food and non-food items obtained from these towns differ from the estimates obtained from the rural areas of these States. Table 23 presents the average monthly consumer expenditure per person on different major food and non-food items for newly declared census towns and rural areas of different states.

It can be seen from the estimates presented in Table 23 that the people of census declared towns spend more per person on an average on both food and non-food items in comparison to rural areas of the same States. But the difference is less in the case of food items than the difference in the case of non-food items. Among the food items 'cereals' has the least difference. The census town average expenditures per person for Andhra Pradesh, Kerala & West Bengal are 192.07, 147.98 & 173.63 and the corresponding expenditures for rural areas are 168.36, 146.42 & 174.32 respectively. The average monthly expenditures per person on egg, fish & meat also do not differ much in the census town and rural areas of the States of Andhra Pradesh, Kerala, Tamil Nadu and West Bengal. The expenditures are 91.48, 169.53, 82.44, 125.99 in the census towns and 80.77, 159.94, 80.29, 101.91 in the rural areas of these States respectively.

Among the non-food items the rural people spend much less on clothing and durable goods than their counterpart in the census declared towns in general. Only exceptions are Kerala and Tripura where average monthly expenditure per person on durable goods is less in the census towns than the rural areas. The expenditures are 127.40, 13.05 and 168.74, 25.11 in these two States for census towns and rural areas respectively.

Table 23 : Comparison of estimated average monthly expenditure per person on major groups of items obtained from NSS 66<sup>th</sup> round from Census Towns (CT) and Rural areas of some States

State	Milk & milk products		Egg, fish & meat		beverages	
	Census Town	Rural area	Census Town	Rural area	Census Town	Rural area
Andhra Pradesh	92.83	66.76	91.48	80.77	130.83	120.74
Assam	52.27	36.15	209.95	115.51	153.90	64.57
Goa	109.83	85.33	244.32	238.99	172.12	167.21
Jharkhand	83.20	32.36	83.78	47.43	105.08	62.60
Kerala	72.94	65.67	169.53	159.94	183.58	164.09
Meghalaya	27.62	19.68	127.52	144.19	145.07	82.35
Tamil Nadu	110.59	59.58	82.44	80.29	157.72	128.02
Tripura	42.66	27.31	208.18	192.72	74.24	59.41
West Bengal	48.79	25.09	125.99	101.91	100.67	74.83
All India	115.64	80.55	87.57	49.89	140.07	77.92

Table 23 (Contd.): Comparison of estimated average monthly expenditure per person on major groups of items obtained from NSS 66<sup>th</sup> round from Census Towns (CT) and Rural areas of some States

State	Fuel & light		clothing		education	
	Census Town	Rural area	Census Town	Rural area	Census Town	Rural area
Andhra Pradesh	104.39	81.27	87.98	62.56	66.65	47.19
Assam	121.94	79.75	90.01	50.49	128.68	23.67
Goa	133.71	113.55	97.49	96.16	62.79	50.31
Jharkhand	80.60	71.34	86.54	47.40	113.18	19.69
Kerala	110.95	97.96	105.51	85.20	138.10	89.71
Meghalaya	122.56	90.00	83.23	61.10	141.66	40.34
Tamil Nadu	116.51	74.46	86.61	51.85	135.69	55.56
Tripura	103.56	74.51	67.03	59.50	97.27	50.81
West Bengal	102.26	79.62	70.75	47.71	83.72	29.24
All India	119.19	84.60	86.86	55.82	113.23	37.79

Table 23 (Contd.): Comparison of estimated average monthly expenditure per person on major groups of items obtained from NSS 66<sup>th</sup> round from Census Towns (CT) and Rural areas of some States

State	Consumer services		Conveyance		Durable goods	
	Census Town	Rural area	Census Town	Rural area	Census Town	Rural area
Andhra Pradesh	77.62	47.11	59.52	35.51	60.50	27.03
Assam	112.25	33.29	68.68	23.83	60.98	31.03
Goa	132.76	86.93	181.39	144.44	93.47	76.01
Jharkhand	67.02	26.66	66.04	25.78	38.77	20.36
Kerala	144.99	99.30	148.80	112.73	127.40	168.74
Meghalaya	109.33	45.74	135.38	56.67	38.63	28.31
Tamil Nadu	88.68	50.67	97.15	58.51	119.41	29.13
Tripura	50.09	34.64	46.86	28.84	13.05	25.11
West Bengal	54.09	23.74	40.22	19.92	41.48	24.63
All India	96.53	44.33	88.94	36.39	70.45	36.47

Table 23 (Contd.): Comparison of estimated average monthly expenditure per person on major groups of items obtained from NSS 66<sup>th</sup> round from Census Towns (CT) and Rural areas of some States

State	Cereals		Food items		Non-food items	
	Census Town	Rural area	Census Town	Rural area	Census Town	Rural area
Andhra Pradesh	192.07	168.36	836.91	716.52	783.50	517.24
Assam	234.04	207.31	983.09	646.38	829.45	356.91
Goa	179.51	175.63	1160.08	1145.65	1147.88	919.36
Jharkhand	189.18	158.13	759.52	502.81	703.87	322.34
Kerala	147.98	146.42	899.35	843.00	1192.88	992.22
Meghalaya	190.67	155.82	680.64	605.80	1001.92	504.07
Tamil Nadu	147.10	104.44	841.37	634.52	1049.57	525.17
Tripura	205.72	181.28	839.03	734.36	581.82	441.81
West Bengal	173.63	174.32	728.90	604.20	614.73	348.12
All India	162.47	144.44	842.07	600.36	907.14	453.29

## Conclusions

Average monthly per capita expenditures on different food and non-food items of consumption differ depending on the size of the towns. In other-words people of larger towns spend more than the people of relatively smaller towns on different food and non-food items of consumption per person per month. Census declared towns are small non-government towns. Obviously average per capita monthly expenditures on different items of consumption of the people of these towns are expected to be less than the people of State government declared statutory types of towns. At the same time people of the census towns spend more per person per month at least on non-food items of consumption than the people of the rural areas of the same State. This shows that the census towns are somewhat different from the

rural areas because of involvement of the main male workforce in the non-agricultural pursuits. But considering average monthly expenditure per person on different items of consumption as a measure it can be safely said that the census declared towns are far behind in comparison to the smaller size State government notified statutory towns of the States of Andhra Pradesh, Kerala, Tripura and West Bengal which have large number of census identified towns. In the urban sampling frame used for drawing of 66<sup>th</sup> round samples UFS blocks of only 1362 census towns were included. Inclusion of all 3894 census towns identified in 2011 census in the urban sampling frame of future NSS rounds would mean occurrence of large proportion of sample blocks from census towns. **Considering the difference in the estimates obtained from census town blocks and blocks of small statutory towns it can be said that inclusion of UFS blocks of large number of census towns in the urban sampling frame would mean selection of more number of sample blocks from these census towns. This would have a pulling down impact on the average monthly per capita expenditures on different items of consumption in general irrespective of the approach – URP, MRP or MMRP. This pulling down impact would be more or significant for the States of West Bengal, Andhra Pradesh, Kerala, Tamil Nadu, Jharkhand and Tripura as these States have recorded large number of census declared towns in 2011 decennial population census.**

## **Recommendations**

It is to be noted that extent of involvement of census towns in the sampling frame of 66<sup>th</sup> round was not much as number of census towns was not too high. But because of identification of large number of census towns in the recent census extent of involvement of census towns would be much more in the sampling frame of the future rounds. Considering these issues following recommendations are made:

1. To minimize the impact of census declared towns a separate strata of census towns should be formed at State level, at least for the States for which large number of census towns have been identified in the recent censuses. This would be similar to the formation of State level special strata, consisting of villages with less than 50 and more than 15000 populations, in rural areas till NSS 60<sup>th</sup> round. Of course this would make little problem of generating district level estimates as districts are generally taken as strata.
2. The census towns identified in 2011 census should be treated as villages till the 2011 census lists of villages and towns are available for using as rural and urban sampling frame. This is different from the present approach of inclusion of these towns in the urban sampling frame of 2001 census and deletion of these town areas from the 2001 rural list of sampling frame of villages. The benefit of this would be to avoid the problem of pulling down impact for some future rounds and by that time census declared towns may get changed in terms of availability of urban like characteristics.
3. Only statutory towns may be taken in the urban sampling frame and the census declared towns may be treated as rural villages and may be included in the rural sampling frame.

**APPENDIX TABLES**

Detail estimates for all States for different items of consumption are given below as Appendix Tables.

Table A : Average value of monthly consumption of broad groups of food and non-food items per person for a uniform reference period (URP) of 30 days in different types of towns in India

Items of consumption	Towns of different types				All
	Census	Small & medium	large	Million plus	
cereal	162.73	156.39	169.16	172	161.88
gram	2.08	2.16	2.64	1.95	2.16
cereal substitutes	0.67	0.60	1.08	1.26	0.81
pulses & pulse prdcts	44.10	43.50	53.23	56.67	47.61
milk & milk products:	117.44	129.14	152.28	164.5	138.71
sugar	23.81	26.76	29.62	30.12	27.6
salt	2.43	2.31	2.52	2.36	2.35
edible oil	41.59	42.52	48.74	55.7	46.1
egg fish & meat	60.03	45.29	48.10	50.58	48.03
vegetables	73.55	70.94	83.85	88.94	76.66
fruits (fresh)	28.74	25.6	37.46	35.87	29.53
fruits (dry)	5.75	6.33	9.55	11.65	7.84
spices	24.98	23.83	26.42	28.38	25.24
beverages etc.	102.15	93.72	128.23	159.03	112.97
<b>TOTAL : Food Group</b>	<b>690.04</b>	<b>669.1</b>	<b>792.89</b>	<b>859.02</b>	<b>727.49</b>
pan	3.31	2.90	3.30	2.52	2.89
tobacco	12.18	11.01	9.68	11.66	11.10
intoxicants	8.72	7.35	9.82	8.10	7.92
Pan, tobacco & intoxicants	24.22	21.26	22.8	22.28	21.91
fuel and light	122.7	130.23	149.35	179.4	142.76
clothing	78.45	72.2	109.67	99.84	83.23
footwear	13.54	15.32	20.69	19.48	16.72
education	71.6	83.17	105.52	119.66	92.91
medical (institutional)	39.88	17.38	19.93	41.99	25.04
medical (non-inst.)	55.44	57.16	74.65	82.75	64.74
entertainment	28.34	26.58	36.47	42.89	31.5
minor durable-type goods	5.37	3.54	6.03	5.03	4.31
toilet articles	39.11	37.99	51.07	57.57	43.96
other household consumables	34.27	32.34	37.91	44.28	35.81
Consumer services	96.31	103.31	140.67	194.39	127.33
Conveyance	92.74	93.16	131.18	172.58	115.21
rent	85.66	84.51	151.87	198.57	117.81
Taxes and cesses	8.72	12.06	19.16	27.22	15.98
Durable goods total	98.24	86.95	224.28	155.56	119.09
<b>TOTAL : NON-Food Group</b>	<b>894.6</b>	<b>877.16</b>	<b>1301.25</b>	<b>1463.52</b>	<b>1058.32</b>
<b>TOTAL EXPENDITURE</b>	<b>1584.64</b>	<b>1546.27</b>	<b>2094.14</b>	<b>2322.53</b>	<b>1785.81</b>

Table B: Average value of monthly consumption of broad groups of food and non-food items per person for a mixed reference period (MRP) of 30 days in different types of towns in India

Items of consumption	Towns of different types				All
	Census	Small & medium	large	Million plus	
cereal	162.73	156.39	169.16	172	161.88
gram	2.08	2.16	2.64	1.95	2.16
cereal substitutes	0.67	0.6	1.08	1.26	0.81
pulses & pulse prdcts	44.1	43.5	53.23	56.67	47.61
milk & milk products:	117.44	129.14	152.28	164.5	138.71
sugar	23.81	26.76	29.62	30.12	27.6
salt	2.43	2.31	2.52	2.36	2.35
edible oil	41.59	42.52	48.74	55.7	46.1
egg fish & meat	60.03	45.29	48.1	50.58	48.03
vegetables	73.55	70.94	83.85	88.94	76.66
fruits (fresh)	28.74	25.6	37.46	35.87	29.53
fruits (dry)	5.75	6.33	9.55	11.65	7.84
spices	24.98	23.83	26.42	28.38	25.24
beverages etc.	102.15	93.72	128.23	159.03	112.97
TOTAL : Food Group	690.04	669.10	792.89	859.02	727.49
pan	3.31	2.90	3.30	2.52	2.89
tobacco	12.18	11.01	9.68	11.66	11.10
intoxicants	8.72	7.35	9.82	8.10	7.92
Pan, tobacco & intoxicants	24.22	21.26	22.8	22.28	21.91
fuel and light	122.7	130.23	149.35	179.40	142.76
clothing	88.7	90.72	107.07	118.32	98.59
footwear	17.05	18.08	21.63	24.13	19.75
education	115.06	121.48	197.13	267.38	162.19
medical (institutional)	25.49	27.99	34.75	52.61	34.05
medical (non-inst.)	55.44	57.16	74.65	82.75	64.74
entertainment	28.34	26.58	36.47	42.89	31.5
minor durable-type goods	5.37	3.54	6.03	5.03	4.31
toilet articles	39.11	37.99	51.07	57.57	43.96
other household consumables	34.27	32.34	37.91	44.28	35.81
Consumer services	96.31	103.31	140.67	194.39	127.33
Conveyance	92.74	93.16	131.18	172.58	115.21
rent	85.66	84.51	151.87	198.57	117.81
Taxes and cesses	8.72	12.06	19.16	27.22	15.98
Durable goods total	78.78	80.84	107.84	120.45	92.61
TOTAL : NON-Food Group	917.97	941.24	1289.58	1609.86	1128.52
TOTAL EXPENDITURE	1608	1610.35	2082.47	2468.88	1856.01

TableC : Average value of monthly consumption of broad groups of food and non-food items per person for a modified mixed reference period (MMRP, schedule type 2) of 30 days in different types of towns in India

Items of consumption	Towns of different types				All
	Census	Small & medium	large	Million plus	
cereal	162.47	156.24	167.71	169.89	161.17
gram	2.06	2.05	2.6	1.82	2.06
cereal substitutes	0.69	0.59	0.88	1.19	0.77
pulses & pulse prdcts	44.04	43.09	51.89	55.77	47.06
milk & milk products:	115.64	127.86	154.23	159.25	137.01
sugar	23.88	26.51	29.65	28.74	27.16
salt	2.46	2.29	2.42	2.36	2.33
edible oil	48.52	48.66	55.58	63.7	52.85
egg fish & meat	87.57	69.56	66.02	75.55	71.98
vegetables	112.8	105.05	122.24	126.05	112.44
fruits (fresh)	49.95	43.92	65.19	59.11	50.33
fruits (dry)	9.2	10.13	16.65	17.32	12.43
spices	42.74	41.56	44.68	49.7	43.86
beverages etc.	140.07	137.78	180.96	210.27	159.37
<b>TOTAL : Food Group</b>	<b>842.07</b>	<b>815.28</b>	<b>960.69</b>	<b>1020.7</b>	<b>880.83</b>
pan	5.3	4.02	3.82	3.88	4.07
tobacco	14.53	15.03	14.25	15.75	15.06
intoxicants	12.59	10.11	17.93	10.55	11.32
Pan, tobacco & intoxicants	32.42	29.15	36	30.18	30.45
fuel and light	119.19	124.95	149.73	170.79	137.72
clothing	86.86	89.56	102.65	113.19	96.2
footwear	16.39	17.61	20.76	22.85	19.06
education	113.23	120.01	213.86	253.35	160.51
medical (institutional)	32.61	35.31	31.05	43.18	36.37
medical (non-inst.)	55.71	55.54	73.57	77.83	62.69
entertainment	28.68	26.78	35.23	43.53	31.7
minor durable-type goods	5.04	3.63	5.62	4.72	4.22
toilet articles	38.22	36.95	48.78	55.13	42.54
other household consumables	32.96	31.35	36.17	41.61	34.36
Consumer services	96.53	102.31	134.7	184.14	124.09
Conveyance	88.94	92.46	129.91	159.81	111.75
rent	80.8	82.66	141.14	196.26	114.98
Taxes and cesses	9.1	11.82	19.12	25.95	15.64
Durable goods total	70.45	73.58	96.2	97.49	81.36
<b>TOTAL : NON-Food Group</b>	<b>907.14</b>	<b>933.66</b>	<b>1274.47</b>	<b>1520.01</b>	<b>1103.63</b>
<b>TOTAL EXPENDITURE</b>	<b>1749.21</b>	<b>1748.95</b>	<b>2235.16</b>	<b>2540.71</b>	<b>1984.46</b>

Table A1 : Average value of monthly consumption of broad groups of food and non-food items per person for a uniform reference period (URP) of 30 days in different types of towns in Andhra Pradesh

Items of consumption	Towns of different types				All
	Census	Small & medium	large	Million plus	
cereal	191.28	209.13	235.43	224.13	213.56
gram	0.45	0.47	0.63	0.79	0.55
cereal substitutes	0.01	0.03	0.11	0	0.03
pulses & pulse prdcts	49.21	55.4	65.94	60.75	57.18
milk & milk products:	85.39	112.6	123.97	124.15	113.07
sugar	17.16	19.33	20.63	20.8	19.52
salt	2.72	2.82	2.67	2.72	2.77
edible oil	36.5	40.26	45.55	47.63	41.85
egg fish & meat	56.47	58.88	62.16	71.93	61.25
vegetables	57.85	71.53	86.5	78.16	73.33
fruits (fresh)	26.01	29.75	32.24	31.75	30.03
fruits (dry)	9.72	10.27	6.48	14.78	10.36
spices	28.43	29.2	29.74	31.39	29.55
beverages etc.	92.76	126.46	173.44	153.49	134.2
<b>TOTAL : Food Group</b>	<b>653.96</b>	<b>766.14</b>	<b>885.51</b>	<b>862.46</b>	<b>787.24</b>
pan	1.19	1.26	1.27	2.16	1.4
tobacco	13.08	14.55	19.8	7.16	13.97
intoxicants	12.68	14.79	27.05	9.28	15.52
Pan, tobacco & intoxicants	26.95	30.6	48.12	18.6	30.89
fuel and light	104.82	118.32	128.36	121.54	118.81
clothing	75.09	101.41	133.15	47.65	94.37
footwear	10.24	13.25	19.41	10.68	13.42
education	35.15	57.21	106.12	82.65	66.34
medical (institutional)	152.7	16.54	31.95	26.82	36.51
medical (non-inst.)	60.14	67.23	95.41	70.22	71.23
entertainment	32.22	40.14	44.99	43.93	40.59
minor durable-type goods	3.34	2.88	22.54	2.65	5.92
toilet articles	42.54	49.38	61.07	51.93	50.8
other household consumables	36.27	40.38	43.38	37.68	39.92
Consumer services	73.75	130.17	158.46	162.16	133.2
Conveyance	60.37	108.92	133.18	217.77	124.89
rent	68.3	201.13	199.32	313.05	203.75
Taxes and cesses	10.02	13.56	18.25	21.7	15.21
Durable goods total	52.14	237.42	37.01	19.83	149.15
<b>TOTAL : NON-Food Group</b>	<b>844.06</b>	<b>1228.54</b>	<b>1280.72</b>	<b>1248.86</b>	<b>1194.99</b>
<b>TOTAL EXPENDITURE</b>	<b>1498.02</b>	<b>1994.67</b>	<b>2166.23</b>	<b>2111.32</b>	<b>1982.23</b>

Table A2 : Average value of monthly consumption of broad groups of food and non-food items per person for a uniform reference period (URP) of 30 days in different types of towns in ASSAM

Items of consumption	Towns of different types				All
	Census	Small & medium	large	Million plus	
cereal	238.57	204.91	251.59		222.91
gram	0.97	0.64	0.83		0.76
cereal substitutes	0	0	0		0
pulses & pulse prdcts	43.28	39	58.53		43.96
milk & milk products:	53.48	54.78	81.59		59.71
sugar	15.6	15.57	12.64		15
salt	3.22	3.15	3.35		3.21
edible oil	36.47	42.15	56.64		43.51
egg fish & meat	137.42	97.59	340.44		155.77
vegetables	83.96	85.72	139.7		95.87
fruits (fresh)	22.85	18.63	63.83		28.62
fruits (dry)	4.39	2.89	14.59		5.58
spices	16.81	16.91	34.55		20.35
beverages etc.	85.05	66.56	118.26		81.57
<b>TOTAL : Food Group</b>	<b>742.08</b>	<b>648.49</b>	<b>1176.53</b>		<b>776.82</b>
pan	17.51	13.19	16.49		14.97
tobacco	17.02	11.86	20.72		14.95
intoxicants	4.33	3.57	2.1		3.48
Pan, tobacco & intoxicants	38.86	28.62	39.31		33.41
fuel and light	123.13	119.81	140.21		124.69
clothing	102.49	56.13	51.69		67.41
footwear	18.25	9.07	21.68		13.95
education	69.99	64.56	115.39		75.98
medical (institutional)	4.01	1.70	0		1.97
medical (non-inst.)	31.74	14.66	66.99		29.42
entertainment	35.03	33.1	52.65		37.45
minor durable-type goods	10.8	5.29	3.52		6.39
toilet articles	40.7	27.69	78.62		41.11
other household consumables	28.18	23.93	49.3		30.03
Consumer services	117.11	77.95	200.16		112.24
Conveyance	80.58	46.36	137.22		73.19
rent	39.55	50.35	105.2		58.3
Taxes and cesses	2.15	8.48	12.84		7.68
Durable goods total	73.72	29.43	76.19		50.23
<b>TOTAL : NON-Food Group</b>	<b>816.28</b>	<b>597.13</b>	<b>1150.97</b>		<b>763.45</b>
<b>TOTAL EXPENDITURE</b>	<b>1558.36</b>	<b>1245.62</b>	<b>2327.5</b>		<b>1540.27</b>

Table A3: Average value of monthly consumption of broad groups of food and non-food items per person for a uniform reference period (URP) of 30 days in different types of towns in GOA

Items of consumption	Towns of different types				All
	Census	Small & medium	large	Million plus	
cereal	175.36	187.52			182.69
gram	1.39	2.18			1.87
cereal substitutes	0.06	0.27			0.18
pulses & pulse prdcts	54.91	56.13			55.64
milk & milk products:	132.32	143.04			138.79
sugar	35.06	32.71			33.64
salt	3.05	3.17			3.12
edible oil	42.32	45.5			44.24
egg fish & meat	156.58	155.07			155.67
vegetables	69.71	77.48			74.4
fruits (fresh)	86.68	93.42			90.74
fruits (dry)	6.96	5.21			5.91
spices	32.83	31.71			32.15
beverages etc.	92.41	96.77			95.04
TOTAL : Food Group	889.65	930.17			914.09
pan	1.46	1.19			1.3
tobacco	6.19	8.25			7.43
intoxicants	13.79	12.54			13.04
Pan, tobacco & intoxicants	21.45	21.98			21.77
fuel and light	134.7	163.42			152.02
clothing	71.12	128			105.43
footwear	22.88	28.27			26.13
education	38.72	50			45.53
medical (institutional)	15.27	25.92			21.69
medical (non-inst.)	65.21	82			75.34
entertainment	47.14	54.01			51.28
minor durable-type goods	7.21	10.73			9.33
toilet articles	62.9	71.93			68.34
other household consumables	31.73	35.92			34.26
Consumer services	142.31	185.43			168.32
Conveyance	171.63	223.22			202.74
rent	98.95	91.18			94.26
Taxes and cesses	27.88	27.95			27.92
Durable goods total	81.12	1158.79			731.11
TOTAL : NON-Food Group	1040.2	2358.74			1835.47
TOTAL EXPENDITURE	1929.85	3288.91			2749.55

Table A4 : Average value of monthly consumption of broad groups of food and non-food items per person for a uniform reference period (URP) of 30 days in different types of towns in JHARKHAND

Items of consumption	Towns of different types				All
	Census	Small & medium	large	Million plus	
cereal	185.33	183.33	190.35		185.7
gram	4.26	3.27	4.43		3.91
cereal substitutes	0	0	0		0
pulses & pulse prdcts	40.13	36.92	48.09		40.7
milk & milk products:	93.21	80.46	137.64		98.44
sugar	20.54	19.02	27.94		21.65
salt	2.64	2.36	2.93		2.6
edible oil	45.93	43.25	57.41		47.52
egg fish & meat	51.05	46.93	48.78		48.89
vegetables	84.24	74.66	107.79		85.89
fruits (fresh)	16.69	18.39	29.97		20.44
fruits (dry)	5.72	3.98	13.17		6.76
spices	20.74	21.19	22.11		21.23
beverages etc.	71.91	74.01	100.12		79.28
<b>TOTAL : Food Group</b>	<b>642.39</b>	<b>607.78</b>	<b>790.73</b>		<b>663.01</b>
pan	2.08	2.39	2.13		2.22
tobacco	7.15	6.04	6.11		6.47
intoxicants	5.73	7.52	21.02		9.98
Pan, tobacco & intoxicants	14.95	15.95	29.26		18.66
fuel and light	83.25	98.37	127.04		99.38
clothing	58	64.88	125.94		76.45
footwear	9.24	15.46	28.42		16.14
education	82.89	72.32	107.52		84.4
medical (institutional)	4.21	2.25	19.45		6.96
medical (non-inst.)	33.69	31.59	41.68		34.71
entertainment	21.67	18.95	37.38		24.23
minor durable-type goods	2.82	2.49	8.99		4.12
toilet articles	35.93	31.14	49.35		37.14
other household consumables	27.87	31.4	29.41		29.63
Consumer services	72.12	64.27	157.95		88.87
Conveyance	78.36	47.39	179.12		89.41
rent	71.35	78.54	111.27		83.44
Taxes and cesses	0.4	0.47	1.41		0.66
Durable goods total	38.68	22.44	44.8		33.66
<b>TOTAL : NON-Food Group</b>	<b>635.45</b>	<b>597.91</b>	<b>1098.97</b>		<b>727.86</b>
<b>TOTAL EXPENDITURE</b>	<b>1277.83</b>	<b>1205.69</b>	<b>1889.7</b>		<b>1390.87</b>

Table A5: Average value of monthly consumption of broad groups of food and non-food items per person for a uniform reference period (URP) of 30 days in different types of towns in KERALA

Items of consumption	Towns of different types				All
	Census	Small & medium	large	Million plus	
cereal	140.79	148.84	181.88		154.21
gram	6.64	5.69	8.64		6.62
cereal substitutes	2.75	3.09	3.68		3.13
pulses & pulse prdcts	35.4	33.42	55.15		38.94
milk & milk products:	69.62	75.06	111.55		81.93
sugar	27.52	27.25	34.08		28.89
salt	2.38	2.18	2.82		2.38
edible oil	29.26	28.95	33.74		30.13
egg fish & meat	148.64	129.18	178.15		145.7
vegetables	54.04	54.25	86.97		61.69
fruits (fresh)	58.65	55.76	89.12		64.19
fruits (dry)	3.11	3.55	7.46		4.32
spices	29.66	29.69	37.72		31.52
beverages etc.	144.09	140.17	278.55		172.93
<b>TOTAL : Food Group</b>	<b>752.55</b>	<b>737.07</b>	<b>1109.51</b>		<b>826.59</b>
pan	0.73	1.44	2.32		1.45
tobacco	11.01	13.39	15.16		13.15
intoxicants	17.29	16.98	30.34		20.13
Pan, tobacco & intoxicants	29.03	31.81	47.82		34.72
fuel and light	119.2	119.01	161.19		128.72
clothing	97.03	94.06	256.39		132.05
footwear	15.55	14.13	36.39		19.62
education	97.66	115.46	151.66		118.9
medical (institutional)	26.99	150.44	93.82		103.8
medical (non-inst.)	97.42	104.71	180.42		120.06
entertainment	25.91	29.39	61.92		35.89
minor durable-type goods	5.98	6.59	9.26		7.03
toilet articles	35.16	35.57	46.18		37.89
other household consumables	36.14	32.4	48.67		37.15
Consumer services	135.59	140.33	244.27		162.84
Conveyance	132.94	144.44	275.53		171.33
rent	70.67	39.76	184.61		81.37
Taxes and cesses	9.93	14.18	29.8		16.6
Durable goods total	164.49	317.72	1858.88		628.9
<b>TOTAL : NON-Food Group</b>	<b>1099.68</b>	<b>1390.01</b>	<b>3686.8</b>		<b>1836.86</b>
<b>TOTAL EXPENDITURE</b>	<b>1852.23</b>	<b>2127.07</b>	<b>4796.31</b>		<b>2663.45</b>

Table A6 : Average value of monthly consumption of broad groups of food and non-food items per person for a uniform reference period (URP) of 30 days in different types of towns in MEGHALAYA

Items of consumption	Towns of different types				All
	Census	Small & medium	large	Million plus	
cereal	187.96	187.71			187.8
gram	0.07	0.46			0.33
cereal substitutes	0	0.96			0.63
pulses & pulse prdcts	19.96	20.54			20.34
milk & milk products:	31.12	34.42			33.28
sugar	16.43	16.6			16.54
salt	2.42	2.75			2.64
edible oil	26.01	29.25			28.13
egg fish & meat	98.97	103.81			102.14
vegetables	63.69	69.29			67.35
fruits (fresh)	17.89	14.71			15.81
fruits (dry)	0.36	1.46			1.08
spices	10.64	11.68			11.32
beverages etc.	119.86	79.14			93.22
<b>TOTAL : Food Group</b>	<b>595.38</b>	<b>572.79</b>			<b>580.6</b>
pan	27.7	22.36			24.2
tobacco	29.91	27.01			28.01
intoxicants	4.19	6.1			5.44
Pan, tobacco & intoxicants	61.79	55.47			57.65
fuel and light	130.72	119.19			123.17
clothing	75.9	84.03			81.22
footwear	26.42	34.85			31.93
education	68.08	60.59			63.18
medical (institutional)	7.28	2.82			4.36
medical (non-inst.)	19.2	31.83			27.46
entertainment	39.13	43.01			41.67
minor durable-type goods	4.27	7.16			6.16
toilet articles	32.29	36.83			35.26
other household consumables	22.99	25.77			24.8
Consumer services	117.77	113.33			114.87
Conveyance	122.74	102.64			109.59
rent	132.5	85.27			101.6
Taxes and cesses	6.68	6.55			6.6
Durable goods total	17.26	60.9			45.81
<b>TOTAL : NON-Food Group</b>	<b>885.02</b>	<b>870.24</b>			<b>875.35</b>
<b>TOTAL EXPENDITURE</b>	<b>1480.4</b>	<b>1443.03</b>			<b>1455.95</b>

Table A7: Average value of monthly consumption of broad groups of food and non-food items per person for a uniform reference period (URP) of 30 days in different types of towns in TAMILNADU

Items of consumption	Towns of different types				All
	Census	Small & medium	large	Million plus	
cereal	153.72	144.55	179.21	173.16	153.26
gram	3.44	4.63	5.58	1.84	4.19
cereal substitutes	0	0.16	0	0	0.11
pulses & pulse prdcts	56.42	53.52	50.76	66.65	55.5
milk & milk products:	111.9	104.87	115.33	126.8	109.91
sugar	14.19	15.62	15.18	13.58	15.13
salt	2.23	2.34	2.37	2.7	2.38
edible oil	40.22	37.47	38.55	41.31	38.43
egg fish & meat	65.44	61.81	57.7	82.91	64.92
vegetables	71.15	66.37	72.32	86.81	70.51
fruits (fresh)	38.1	33.43	36.58	44.39	35.86
fruits (dry)	2.35	2.75	1.71	5.09	2.95
spices	37.31	35.01	36.32	42.39	36.48
beverages etc.	114.48	113.68	140.61	183.06	126.91
<b>TOTAL : Food Group</b>	<b>710.94</b>	<b>676.21</b>	<b>752.21</b>	<b>870.69</b>	<b>716.53</b>
pan	0.69	1.31	1.13	1.58	1.27
tobacco	11.93	10.02	9.15	11.56	10.35
intoxicants	17.63	10.19	6.77	25.11	12.82
Pan, tobacco & intoxicants	30.26	21.52	17.05	38.26	24.45
fuel and light	109.82	104.78	101.55	157.27	112.83
clothing	79.88	71.81	50.06	122.77	78.05
footwear	8.24	8.35	2.6	15.75	8.87
education	81.69	44.08	23.84	127.59	58.28
medical (institutional)	2.71	16.39	1.65	0.31	11.13
medical (non-inst.)	60.42	73.96	77.37	97.22	76.46
entertainment	34.89	30.48	32.91	42.27	32.93
minor durable-type goods	2.94	2.61	0.51	5.8	2.91
toilet articles	41.62	41.71	46.05	52.78	43.8
other household consumables	43.26	38.45	42.54	51.19	41.25
Consumer services	82.05	95.9	89.93	182.04	106.86
Conveyance	123.36	100.17	112.83	175.31	115.02
rent	155.91	148.54	192.51	373.24	187.45
Taxes and cesses	10.51	10.37	16.46	13.88	11.53
Durable goods total	58.95	52.22	77.76	18.01	50.34
<b>TOTAL : NON-Food Group</b>	<b>926.52</b>	<b>861.33</b>	<b>885.63</b>	<b>1473.71</b>	<b>962.16</b>
<b>TOTAL EXPENDITURE</b>	<b>1637.46</b>	<b>1537.54</b>	<b>1637.84</b>	<b>2344.4</b>	<b>1678.69</b>

Table A8 : Average value of monthly consumption of broad groups of food and non-food items per person for a uniform reference period (URP) of 30 days in different types of towns in TRIPURA

Items of consumption	Towns of different types				All
	Census	Small & medium	large	Million plus	
cereal	205.1	224.3			216.7
gram	0	0.02			0.01
cereal substitutes	0	0.97			0.59
pulses & pulse prdcts	39.21	43.33			41.7
milk & milk products:	40.88	72.21			59.81
sugar	9.81	14.17			12.45
salt	3.92	4.19			4.09
edible oil	43.85	53.68			49.79
egg fish & meat	172.49	227.59			205.78
vegetables	104.78	127.57			118.55
fruits (fresh)	15.21	24.95			21.09
fruits (dry)	0.83	1.59			1.29
spices	19.81	25.9			23.49
beverages etc.	52.33	66.61			60.96
TOTAL : Food Group	708.21	887.1			816.29
pan	11.72	14.13			13.18
tobacco	22.97	29.77			27.08
intoxicants	2.49	1.92			2.15
Pan, tobacco & intoxicants	37.19	45.82			42.4
fuel and light	107.61	139.65			126.97
clothing	66.58	62.05			63.85
footwear	8.76	11.2			10.23
education	62.84	137.01			107.65
medical (institutional)	0.52	14.22			8.8
medical (non-inst.)	48.83	127.98			96.65
entertainment	14.55	28.1			22.74
minor durable-type goods	1.01	2.28			1.78
toilet articles	24.47	34.27			30.4
other household consumables	17.28	24.89			21.88
Consumer services	56.34	114.65			91.57
Conveyance	50.23	106.58			84.28
rent	56.74	60.42			58.96
Taxes and cesses	2.43	6.42			4.84
Durable goods total	0.01	21.66			13.09
TOTAL : NON-Food Group	555.41	937.23			786.08
TOTAL EXPENDITURE	1263.62	1824.33			1602.37

Table A9: Average value of monthly consumption of broad groups of food and non-food items per person for a uniform reference period (URP) of 30 days in different types of towns in WEST BENGAL

Items of consumption	Towns of different types				All
	Census	Small & medium	large	Million plus	
cereal	174.34	181.33		174.74	178.99
gram	0.25	0.84		1.1	0.82
cereal substitutes	0.12	0.05		0	0.05
pulses & pulse prdcts	30.88	30.92		33.58	31.5
milk & milk products:	47.59	60.91		82.83	64.06
sugar	19.47	20.45		22.58	20.8
salt	2.89	2.75		2.99	2.82
edible oil	44.66	49.21		57.14	50.39
egg fish & meat	90.59	125.71		177.29	132.65
vegetables	72.89	92.25		101.46	91.83
fruits (fresh)	19.84	21.58		36.01	24.54
fruits (dry)	2.36	2.27		4.23	2.72
spices	21.04	23.09		27.37	23.77
beverages etc.	72.29	95.08		188.98	112.92
<b>TOTAL : Food Group</b>	<b>599.2</b>	<b>706.44</b>		<b>910.32</b>	<b>737.87</b>
pan	4.23	3.31		3.2	3.4
tobacco	15.4	19.74		29.59	21.37
intoxicants	7.96	3.49		6.59	4.74
Pan, tobacco & intoxicants	27.59	26.54		39.38	29.51
fuel and light	110.85	141.55		196.56	149.81
clothing	91.99	89.28		172.04	107.89
footwear	16.41	17.69		17.64	17.51
education	56.43	102.46		170.06	111.56
medical (institutional)	11.02	17		15.46	15.9
medical (non-inst.)	51.84	77.74		149.11	90.21
entertainment	21.32	30.87		50.61	34.02
minor durable-type goods	6.97	6.02		6.54	6.26
toilet articles	30.59	37.89		58.19	41.44
other household consumables	22.02	29.63		40.1	30.98
Consumer services	68.29	109.03		253.6	135.78
Conveyance	38.97	68.34		258.53	106.6
rent	30.99	54.07		84.1	57.78
Taxes and cesses	1.56	5.68		18.44	7.98
Durable goods total	70.12	51.9		53.58	54.58
<b>TOTAL : NON-Food Group</b>	<b>656.97</b>	<b>865.67</b>		<b>1583.95</b>	<b>997.79</b>
<b>TOTAL EXPENDITURE</b>	<b>1256.17</b>	<b>1572.11</b>		<b>2494.27</b>	<b>1735.66</b>

Table B1 : Average value of monthly consumption of broad groups of food and non-food items per person for a mixed reference period (MRP) of 30 days in different types of towns in ANDHRA PRADESH

Items of consumption	Towns of different types				All
	Census	Small & medium	large	Million plus	
cereal	191.28	209.13	235.43	224.13	213.56
gram	0.45	0.47	0.63	0.79	0.55
cereal substitutes	0.01	0.03	0.11	0	0.03
pulses & pulse prdcts	49.21	55.4	65.94	60.75	57.18
milk & milk products:	85.39	112.6	123.97	124.15	113.07
sugar	17.16	19.33	20.63	20.8	19.52
salt	2.72	2.82	2.67	2.72	2.77
edible oil	36.5	40.26	45.55	47.63	41.85
egg fish & meat	56.47	58.88	62.16	71.93	61.25
vegetables	57.85	71.53	86.5	78.16	73.33
fruits (fresh)	26.01	29.75	32.24	31.75	30.03
fruits (dry)	9.72	10.27	6.48	14.78	10.36
spices	28.43	29.2	29.74	31.39	29.55
beverages etc.	92.76	126.46	173.44	153.49	134.2
<b>TOTAL : Food Group</b>	<b>653.96</b>	<b>766.14</b>	<b>885.51</b>	<b>862.46</b>	<b>787.24</b>
pan	1.19	1.26	1.27	2.16	1.4
tobacco	13.08	14.55	19.8	7.16	13.97
intoxicants	12.68	14.79	27.05	9.28	15.52
Pan, tobacco & intoxicants	26.95	30.6	48.12	18.6	30.89
fuel and light	104.82	118.32	128.36	121.54	118.81
clothing	82.03	111.24	118.5	127.36	111.6
footwear	14.31	17.89	19.68	24.82	18.89
education	77.91	128.73	257.32	206.29	155.33
medical (institutional)	22.43	23.78	38.38	36.91	28.03
medical (non-inst.)	60.14	67.23	95.41	70.22	71.23
entertainment	32.22	40.14	44.99	43.93	40.59
minor durable-type goods	3.34	2.88	22.54	2.65	5.92
toilet articles	42.54	49.38	61.07	51.93	50.8
other household consumables	36.27	40.38	43.38	37.68	39.92
Consumer services	73.75	130.17	158.46	162.16	133.2
Conveyance	60.37	108.92	133.18	217.77	124.89
rent	68.3	201.13	199.32	313.05	203.75
Taxes and cesses	10.02	13.56	18.25	21.7	15.21
Durable goods total	75.66	78.24	117.4	49.12	79.17
<b>TOTAL : NON-Food Group</b>	<b>791.06</b>	<b>1162.59</b>	<b>1504.36</b>	<b>1505.72</b>	<b>1228.2</b>
<b>TOTAL EXPENDITURE</b>	<b>1445.02</b>	<b>1928.73</b>	<b>2389.87</b>	<b>2368.18</b>	<b>2015.44</b>

Table B2 : Average value of monthly consumption of broad groups of food and non-food items per person for a mixed reference period (MRP) of 30 days in different types of towns in ASSAM

Items of consumption	Towns of different types				All
	Census	Small & medium	large	Million plus	
cereal	238.57	204.91	251.59		222.91
gram	0.97	0.64	0.83		0.76
cereal substitutes	0	0	0		0
pulses & pulse prdcts	43.28	39	58.53		43.96
milk & milk products:	53.48	54.78	81.59		59.71
sugar	15.6	15.57	12.64		15
salt	3.22	3.15	3.35		3.21
edible oil	36.47	42.15	56.64		43.51
egg fish & meat	137.42	97.59	340.44		155.77
vegetables	83.96	85.72	139.7		95.87
fruits (fresh)	22.85	18.63	63.83		28.62
fruits (dry)	4.39	2.89	14.59		5.58
spices	16.81	16.91	34.55		20.35
beverages etc.	85.05	66.56	118.26		81.57
<b>TOTAL : Food Group</b>	<b>742.08</b>	<b>648.49</b>	<b>1176.53</b>		<b>776.82</b>
pan	17.51	13.19	16.49		14.97
tobacco	17.02	11.86	20.72		14.95
intoxicants	4.33	3.57	2.1		3.48
Pan, tobacco & intoxicants	38.86	28.62	39.31		33.41
fuel and light	123.13	119.81	140.21		124.69
clothing	91.33	68.02	106.53		81.7
footwear	18.93	13.61	30.07		18.24
education	120.81	71	252.88		119.81
medical (institutional)	9.67	9.34	0.34		7.66
medical (non-inst.)	31.74	14.66	66.99		29.42
entertainment	35.03	33.1	52.65		37.45
minor durable-type goods	10.8	5.29	3.52		6.39
toilet articles	40.7	27.69	78.62		41.11
other household consumables	28.18	23.93	49.3		30.03
Consumer services	117.11	77.95	200.16		112.24
Conveyance	80.58	46.36	137.22		73.19
rent	39.55	50.35	105.2		58.3
Taxes and cesses	2.15	8.48	12.84		7.68
Durable goods total	50.44	40.13	55.88		45.93
<b>TOTAL : NON-Food Group</b>	<b>839</b>	<b>638.35</b>	<b>1331.71</b>		<b>827.24</b>
<b>TOTAL EXPENDITURE</b>	<b>1581.08</b>	<b>1286.84</b>	<b>2508.25</b>		<b>1604.06</b>

Table B3 : Average value of monthly consumption of broad groups of food and non-food items per person for a mixed reference period (MRP) of 30 days in different types of towns in GOA

Items of consumption	Towns of different types				All
	Census	Small & medium	large	Million plus	
cereal	175.36	187.52			182.69
gram	1.39	2.18			1.87
cereal substitutes	0.06	0.27			0.18
pulses & pulse prdcts	54.91	56.13			55.64
milk & milk products:	132.32	143.04			138.79
sugar	35.06	32.71			33.64
salt	3.05	3.17			3.12
edible oil	42.32	45.5			44.24
egg fish & meat	156.58	155.07			155.67
vegetables	69.71	77.48			74.4
fruits (fresh)	86.68	93.42			90.74
fruits (dry)	6.96	5.21			5.91
spices	32.83	31.71			32.15
beverages etc.	92.41	96.77			95.04
<b>TOTAL : Food Group</b>	<b>889.65</b>	<b>930.17</b>			<b>914.09</b>
pan	1.46	1.19			1.3
tobacco	6.19	8.25			7.43
intoxicants	13.79	12.54			13.04
Pan, tobacco & intoxicants	21.45	21.98			21.77
fuel and light	134.7	163.42			152.02
clothing	97.18	106.58			102.85
footwear	23.67	25.86			24.99
education	49.46	90.24			74.05
medical (institutional)	36.46	40.13			38.67
medical (non-inst.)	65.21	82			75.34
entertainment	47.14	54.01			51.28
minor durable-type goods	7.21	10.73			9.33
toilet articles	62.9	71.93			68.34
other household consumables	31.73	35.92			34.26
Consumer services	142.31	185.43			168.32
Conveyance	171.63	223.22			202.74
rent	98.95	91.18			94.26
Taxes and cesses	27.88	27.95			27.92
Durable goods total	111.59	189.92			158.83
<b>TOTAL : NON-Food Group</b>	<b>1129.46</b>	<b>1420.49</b>			<b>1304.99</b>
<b>TOTAL EXPENDITURE</b>	<b>2019.1</b>	<b>2350.65</b>			<b>2219.07</b>

Table B4 : Average value of monthly consumption of broad groups of food and non-food items per person for a mixed reference period (MRP) of 30 days in different types of towns in JHARKHAND

Items of consumption	Towns of different types				All
	Census	Small & medium	large	Million plus	
cereal	185.33	183.33	190.35		185.7
gram	4.26	3.27	4.43		3.91
cereal substitutes	0	0	0		0
pulses & pulse prdcts	40.13	36.92	48.09		40.7
milk & milk products:	93.21	80.46	137.64		98.44
sugar	20.54	19.02	27.94		21.65
salt	2.64	2.36	2.93		2.6
edible oil	45.93	43.25	57.41		47.52
egg fish & meat	51.05	46.93	48.78		48.89
vegetables	84.24	74.66	107.79		85.89
fruits (fresh)	16.69	18.39	29.97		20.44
fruits (dry)	5.72	3.98	13.17		6.76
spices	20.74	21.19	22.11		21.23
beverages etc.	71.91	74.01	100.12		79.28
<b>TOTAL : Food Group</b>	<b>642.39</b>	<b>607.78</b>	<b>790.73</b>		<b>663.01</b>
pan	2.08	2.39	2.13		2.22
tobacco	7.15	6.04	6.11		6.47
intoxicants	5.73	7.52	21.02		9.98
Pan, tobacco & intoxicants	14.95	15.95	29.26		18.66
fuel and light	83.25	98.37	127.04		99.38
clothing	89.91	78.49	125.38		93.6
footwear	12.93	15.07	22.42		15.97
education	100.13	93.53	170.29		113.75
medical (institutional)	6.24	4.52	14.83		7.54
medical (non-inst.)	33.69	31.59	41.68		34.71
entertainment	21.67	18.95	37.38		24.23
minor durable-type goods	2.82	2.49	8.99		4.12
toilet articles	35.93	31.14	49.35		37.14
other household consumables	27.87	31.4	29.41		29.63
Consumer services	72.12	64.27	157.95		88.87
Conveyance	78.36	47.39	179.12		89.41
rent	71.35	78.54	111.27		83.44
Taxes and cesses	0.4	0.47	1.41		0.66
Durable goods total	36.77	42.01	32.89		37.95
<b>TOTAL : NON-Food Group</b>	<b>688.39</b>	<b>654.18</b>	<b>1138.65</b>		<b>779.05</b>
<b>TOTAL EXPENDITURE</b>	<b>1330.77</b>	<b>1261.95</b>	<b>1929.39</b>		<b>1442.06</b>

Table B5 : Average value of monthly consumption of broad groups of food and non-food items per person for a mixed reference period (MRP) of 30 days in different types of towns in KERALA

Items of consumption	Towns of different types				All
	Census	Small & medium	large	Million plus	
cereal	140.79	148.84	181.88		154.21
gram	6.64	5.69	8.64		6.62
cereal substitutes	2.75	3.09	3.68		3.13
pulses & pulse prdcts	35.4	33.42	55.15		38.94
milk & milk products:	69.62	75.06	111.55		81.93
sugar	27.52	27.25	34.08		28.89
salt	2.38	2.18	2.82		2.38
edible oil	29.26	28.95	33.74		30.13
egg fish & meat	148.64	129.18	178.15		145.7
vegetables	54.04	54.25	86.97		61.69
fruits (fresh)	58.65	55.76	89.12		64.19
fruits (dry)	3.11	3.55	7.46		4.32
spices	29.66	29.69	37.72		31.52
beverages etc.	144.09	140.17	278.55		172.93
<b>TOTAL : Food Group</b>	<b>752.55</b>	<b>737.07</b>	<b>1109.51</b>		<b>826.59</b>
pan	0.73	1.44	2.32		1.45
tobacco	11.01	13.39	15.16		13.15
intoxicants	17.29	16.98	30.34		20.13
Pan, tobacco & intoxicants	29.03	31.81	47.82		34.72
fuel and light	119.2	119.01	161.19		128.72
clothing	100.09	104.5	186.07		121.98
footwear	19.21	17.67	23.94		19.53
education	133.8	103.91	200.94		134.28
medical (institutional)	63.75	76.32	99.04		78.09
medical (non-inst.)	97.42	104.71	180.42		120.06
entertainment	25.91	29.39	61.92		35.89
minor durable-type goods	5.98	6.59	9.26		7.03
toilet articles	35.16	35.57	46.18		37.89
other household consumables	36.14	32.4	48.67		37.15
Consumer services	135.59	140.33	244.27		162.84
Conveyance	132.94	144.44	275.53		171.33
rent	70.67	39.76	184.61		81.37
Taxes and cesses	9.93	14.18	29.8		16.6
Durable goods total	125.87	215.66	486.03		253.09
<b>TOTAL : NON-Food Group</b>	<b>1140.69</b>	<b>1216.24</b>	<b>2285.69</b>		<b>1440.57</b>
<b>TOTAL EXPENDITURE</b>	<b>1893.24</b>	<b>1953.31</b>	<b>3395.2</b>		<b>2267.16</b>

Table B6 : Average value of monthly consumption of broad groups of food and non-food items per person for a mixed reference period (MRP) of 30 days in different types of towns in MEGHALAYA

Items of consumption	Towns of different types				All
	Census	Small & medium	large	Million plus	
cereal	187.96	187.71			187.8
gram	0.07	0.46			0.33
cereal substitutes	0	0.96			0.63
pulses & pulse prdcts	19.96	20.54			20.34
milk & milk products:	31.12	34.42			33.28
sugar	16.43	16.6			16.54
salt	2.42	2.75			2.64
edible oil	26.01	29.25			28.13
egg fish & meat	98.97	103.81			102.14
vegetables	63.69	69.29			67.35
fruits (fresh)	17.89	14.71			15.81
fruits (dry)	0.36	1.46			1.08
spices	10.64	11.68			11.32
beverages etc.	119.86	79.14			93.22
TOTAL : Food Group	595.38	572.79			580.6
pan	27.7	22.36			24.2
tobacco	29.91	27.01			28.01
intoxicants	4.19	6.1			5.44
Pan, tobacco & intoxicants	61.79	55.47			57.65
fuel and light	130.72	119.19			123.17
clothing	87.43	88.78			88.31
footwear	28.59	31.23			30.32
education	109.89	111.16			110.72
medical (institutional)	3.29	8.57			6.74
medical (non-inst.)	19.2	31.83			27.46
entertainment	39.13	43.01			41.67
minor durable-type goods	4.27	7.16			6.16
toilet articles	32.29	36.83			35.26
other household consumables	22.99	25.77			24.8
Consumer services	117.77	113.33			114.87
Conveyance	122.74	102.64			109.59
rent	132.5	85.27			101.6
Taxes and cesses	6.68	6.55			6.6
Durable goods total	33.33	43.01			39.66
TOTAL : NON-Food Group	952.61	909.79			924.6
TOTAL EXPENDITURE	1547.98	1482.58			1505.2

Table B7 : Average value of monthly consumption of broad groups of food and non-food items per person for a mixed reference period (MRP) of 30 days in different types of towns in TAMILNADU

Items of consumption	Towns of different types				All
	Census	Small & medium	large	Million plus	
cereal	153.72	144.55	179.21	173.16	153.26
gram	3.44	4.63	5.58	1.84	4.19
cereal substitutes	0	0.16	0	0	0.11
pulses & pulse prdcts	56.42	53.52	50.76	66.65	55.5
milk & milk products:	111.9	104.87	115.33	126.8	109.91
sugar	14.19	15.62	15.18	13.58	15.13
salt	2.23	2.34	2.37	2.7	2.38
edible oil	40.22	37.47	38.55	41.31	38.43
egg fish & meat	65.44	61.81	57.7	82.91	64.92
vegetables	71.15	66.37	72.32	86.81	70.51
fruits (fresh)	38.1	33.43	36.58	44.39	35.86
fruits (dry)	2.35	2.75	1.71	5.09	2.95
spices	37.31	35.01	36.32	42.39	36.48
beverages etc.	114.48	113.68	140.61	183.06	126.91
<b>TOTAL : Food Group</b>	<b>710.94</b>	<b>676.21</b>	<b>752.21</b>	<b>870.69</b>	<b>716.53</b>
pan	0.69	1.31	1.13	1.58	1.27
tobacco	11.93	10.02	9.15	11.56	10.35
intoxicants	17.63	10.19	6.77	25.11	12.82
Pan, tobacco & intoxicants	30.26	21.52	17.05	38.26	24.45
fuel and light	109.82	104.78	101.55	157.27	112.83
clothing	89.63	80.15	87.52	123.07	88.27
footwear	14.1	12.25	11.63	20.96	13.68
education	147.84	102.71	89.16	191.3	119.09
medical (institutional)	36.07	29.07	37.24	13.33	28.23
medical (non-inst.)	60.42	73.96	77.37	97.22	76.46
entertainment	34.89	30.48	32.91	42.27	32.93
minor durable-type goods	2.94	2.61	0.51	5.8	2.91
toilet articles	41.62	41.71	46.05	52.78	43.8
other household consumables	43.26	38.45	42.54	51.19	41.25
Consumer services	82.05	95.9	89.93	182.04	106.86
Conveyance	123.36	100.17	112.83	175.31	115.02
rent	155.91	148.54	192.51	373.24	187.45
Taxes and cesses	10.51	10.37	16.46	13.88	11.53
Durable goods total	57.07	74.61	46.1	96.13	73.22
<b>TOTAL : NON-Food Group</b>	<b>1039.76</b>	<b>967.28</b>	<b>1001.38</b>	<b>1634.06</b>	<b>1077.98</b>
<b>TOTAL EXPENDITURE</b>	<b>1750.71</b>	<b>1643.48</b>	<b>1753.59</b>	<b>2504.76</b>	<b>1794.52</b>

Table B8: Average value of monthly consumption of broad groups of food and non-food items per person for a mixed reference period (MRP) of 30 days in different types of towns in TRIPURA

Items of consumption	Towns of different types				All
	Census	Small & medium	large	Million plus	
cereal	205.1	224.3			216.7
gram	0	0.02			0.01
cereal substitutes	0	0.97			0.59
pulses & pulse prdcts	39.21	43.33			41.7
milk & milk products:	40.88	72.21			59.81
sugar	9.81	14.17			12.45
salt	3.92	4.19			4.09
edible oil	43.85	53.68			49.79
egg fish & meat	172.49	227.59			205.78
vegetables	104.78	127.57			118.55
fruits (fresh)	15.21	24.95			21.09
fruits (dry)	0.83	1.59			1.29
spices	19.81	25.9			23.49
beverages etc.	52.33	66.61			60.96
<b>TOTAL : Food Group</b>	<b>708.21</b>	<b>887.1</b>			<b>816.29</b>
pan	11.72	14.13			13.18
tobacco	22.97	29.77			27.08
intoxicants	2.49	1.92			2.15
Pan, tobacco & intoxicants	37.19	45.82			42.4
fuel and light	107.61	139.65			126.97
clothing	70.47	94.75			85.14
footwear	11.21	17.24			14.85
education	76.63	141.5			115.82
medical (institutional)	12.64	31.4			23.97
medical (non-inst.)	48.83	127.98			96.65
entertainment	14.55	28.1			22.74
minor durable-type goods	1.01	2.28			1.78
toilet articles	24.47	34.27			30.4
other household consumables	17.28	24.89			21.88
Consumer services	56.34	114.65			91.57
Conveyance	50.23	106.58			84.28
rent	56.74	60.42			58.96
Taxes and cesses	2.43	6.42			4.84
Durable goods total	31.62	39.76			36.54
<b>TOTAL : NON-Food Group</b>	<b>619.27</b>	<b>1015.73</b>			<b>858.79</b>
<b>TOTAL EXPENDITURE</b>	<b>1327.48</b>	<b>1902.83</b>			<b>1675.07</b>

Table B9 : Average value of monthly consumption of broad groups of food and non-food items per person for a mixed reference period (MRP) of 30 days in different types of towns in WEST BENGAL

Items of consumption	Towns of different types				All
	Census	Small & medium	large	Million plus	
cereal	174.34	181.33		174.74	178.99
gram	0.25	0.84		1.1	0.82
cereal substitutes	0.12	0.05		0	0.05
pulses & pulse prdcts	30.88	30.92		33.58	31.5
milk & milk products:	47.59	60.91		82.83	64.06
sugar	19.47	20.45		22.58	20.8
salt	2.89	2.75		2.99	2.82
edible oil	44.66	49.21		57.14	50.39
egg fish & meat	90.59	125.71		177.29	132.65
vegetables	72.89	92.25		101.46	91.83
fruits (fresh)	19.84	21.58		36.01	24.54
fruits (dry)	2.36	2.27		4.23	2.72
spices	21.04	23.09		27.37	23.77
beverages etc.	72.29	95.08		188.98	112.92
<b>TOTAL : Food Group</b>	<b>599.2</b>	<b>706.44</b>		<b>910.32</b>	<b>737.87</b>
pan	4.23	3.31		3.2	3.4
tobacco	15.4	19.74		29.59	21.37
intoxicants	7.96	3.49		6.59	4.74
Pan, tobacco & intoxicants	27.59	26.54		39.38	29.51
fuel and light	110.85	141.55		196.56	149.81
clothing	76.88	95.1		150.55	105.03
footwear	11.17	13.13		19.51	14.29
education	69.53	125.21		204.11	135.58
medical (institutional)	19.25	26.79		115.16	45.34
medical (non-inst.)	51.84	77.74		149.11	90.21
entertainment	21.32	30.87		50.61	34.02
minor durable-type goods	6.97	6.02		6.54	6.26
toilet articles	30.59	37.89		58.19	41.44
other household consumables	22.02	29.63		40.1	30.98
Consumer services	68.29	109.03		253.6	135.78
Conveyance	38.97	68.34		258.53	106.6
rent	30.99	54.07		84.1	57.78
Taxes and cesses	1.56	5.68		18.44	7.98
Durable goods total	43.2	70.95		94.25	72.58
<b>TOTAL : NON-Food Group</b>	<b>631.02</b>	<b>918.51</b>		<b>1738.76</b>	<b>1063.17</b>
<b>TOTAL EXPENDITURE</b>	<b>1230.22</b>	<b>1624.95</b>		<b>2649.08</b>	<b>1801.03</b>

Table C1: Average value of monthly consumption of broad groups of food and non-food items per person for a modified mixed reference period (MMRP, schedule type 2) of 30 days in different types of towns in ANDHRA PRADESH

Items of consumption	Towns of different types				All
	Census	Small & medium	large	Million plus	
cereal	192.07	208.31	246.91	224.14	215.32
gram	0.73	0.53	0.67	0.25	0.53
cereal substitutes	0	0.03	0.22	0	0.05
pulses & pulse prdcts	51.83	56.18	64.65	56.88	57.16
milk & milk products:	92.83	113.34	128.75	118.46	114.34
sugar	18.19	18.67	21.13	20.43	19.3
salt	2.9	2.88	2.58	2.74	2.81
edible oil	48.54	48.11	54.36	56.48	50.57
egg fish & meat	91.48	99.5	108.34	115.56	102.7
vegetables	94.14	107.24	125.54	118.51	110.58
fruits (fresh)	48.5	50.61	58.31	63.04	53.69
fruits (dry)	14.83	14.47	9.69	13.6	13.59
spices	50.04	52.42	52.97	57.47	53.08
beverages etc.	130.83	199.35	262.36	240.54	208.57
<b>TOTAL : Food Group</b>	<b>836.91</b>	<b>971.64</b>	<b>1136.49</b>	<b>1088.08</b>	<b>1002.3</b>
pan	1.61	2.14	2.02	5.55	2.63
tobacco	16.79	17.25	32.25	15.84	19.38
intoxicants	23.12	16.39	51.36	29.99	25.06
Pan, tobacco & intoxicants	41.51	35.78	85.63	51.39	47.07
fuel and light	104.39	119.07	137.71	119.85	120.52
clothing	87.98	102.87	129.16	123.98	108.94
footwear	13.8	17.17	24.13	24.02	19.05
education	66.65	140.55	304.06	180.3	165.09
medical (institutional)	14.31	60.51	21.6	33.38	44.43
medical (non-inst.)	66.67	69.06	58.14	67.47	66.76
entertainment	33.29	39.51	49.14	50.52	42.2
minor durable-type goods	3.28	2.55	7.28	2.44	3.38
toilet articles	43.01	46.77	51.15	52.53	48.01
other household consumables	36.73	37.78	40.33	39.03	38.28
Consumer services	77.62	121.38	152.28	149.77	126.11
Conveyance	59.52	105.59	168.44	192.65	125.03
rent	65	180.98	231.68	278.22	192.19
Taxes and cesses	9.26	15.33	14.64	22.24	15.69
Durable goods total	60.5	72.35	85.3	69.23	72.56
<b>TOTAL : NON-Food Group</b>	<b>783.5</b>	<b>1167.24</b>	<b>1560.66</b>	<b>1457.02</b>	<b>1235.3</b>
<b>TOTAL EXPENDITURE</b>	<b>1620.42</b>	<b>2138.87</b>	<b>2697.15</b>	<b>2545.1</b>	<b>2237.6</b>

Table C2 : Average value of monthly consumption of broad groups of food and non-food items per person for a modified mixed reference period (MMRP, schedule type 2) of 30 days in different types of towns in ASSAM

Items of consumption	Towns of different types				All
	Census	Small & medium	large	Million plus	
cereal	234.04	205.7	266.26		223.77
gram	0.89	0.7	0.98		0.8
cereal substitutes	0	0	0		0
pulses & pulse prdcts	42.06	35.59	61.25		41.78
milk & milk products:	52.27	47.52	110.71		59.81
sugar	15.87	14.96	13.22		14.9
salt	3.27	3.06	3.87		3.26
edible oil	46.4	43.8	63.79		47.98
egg fish & meat	209.95	141.73	370.78		199.78
vegetables	143.53	122.26	157.3		134.01
fruits (fresh)	42.98	32.2	92.29		45.55
fruits (dry)	5.28	2.97	24.18		7.28
spices	32.64	25.61	47.63		31.31
beverages etc.	153.9	103.58	114.17		118.75
<b>TOTAL : Food Group</b>	<b>983.09</b>	<b>779.68</b>	<b>1326.43</b>		<b>928.99</b>
pan	28.14	20.24	17.79		21.9
tobacco	18.69	14.76	18.71		16.49
intoxicants	7.49	7.65	44.1		13.97
Pan, tobacco & intoxicants	54.31	42.65	80.6		52.36
fuel and light	121.94	123.38	166.81		130.58
clothing	90.01	63.25	122.64		80.7
footwear	20.28	12.59	34.74		18.49
education	128.68	64.02	176.04		100.7
medical (institutional)	8.9	9.08	1.34		7.68
medical (non-inst.)	23.48	13.21	91.98		29.68
entertainment	34.89	34.6	52.4		37.78
minor durable-type goods	6.98	3.75	5.97		4.99
toilet articles	40.58	24.22	92.21		40.42
other household consumables	26.22	21.21	49.42		27.46
Consumer services	112.25	77.42	235.02		114.16
Conveyance	68.68	45.74	119.68		64.72
rent	29.27	48.17	119.11		55.55
Taxes and cesses	2.01	7.67	7.24		6.09
Durable goods total	60.98	43.41	79.34		54.33
<b>TOTAL : NON-Food Group</b>	<b>829.45</b>	<b>634.34</b>	<b>1434.54</b>		<b>825.71</b>
<b>TOTAL EXPENDITURE</b>	<b>1812.54</b>	<b>1414.02</b>	<b>2760.96</b>		<b>1754.7</b>

Table C3: Average value of monthly consumption of broad groups of food and non-food items per person for a modified mixed reference period (MMRP, schedule type 2) of 30 days in different types of towns in GOA

Items of consumption	Towns of different types				All
	Census	Small & medium	large	Million plus	
cereal	179.51	178.64			179.01
gram	2.43	2.8			2.64
cereal substitutes	0	0.1			0.05
pulses & pulse prdcts	54.62	54.7			54.66
milk & milk products:	109.83	136.68			125.27
sugar	36.13	32.38			33.98
salt	3.13	2.95			3.03
edible oil	52.92	62.9			58.66
egg fish & meat	244.32	298.6			275.53
vegetables	117.97	154.39			138.91
fruits (fresh)	115.03	154.79			137.88
fruits (dry)	6.43	11.85			9.55
spices	65.65	69.12			67.65
beverages etc.	172.12	204.91			190.97
<b>TOTAL : Food Group</b>	<b>1160.08</b>	<b>1364.81</b>			<b>1277.78</b>
pan	3.08	2.3			2.63
tobacco	10.53	12.66			11.76
intoxicants	33.1	52.56			44.28
Pan, tobacco & intoxicants	46.71	67.52			58.67
fuel and light	133.71	157.04			147.12
clothing	97.49	113.98			106.97
footwear	22.34	30.82			27.21
education	62.79	105.64			87.42
medical (institutional)	64.25	85.62			76.54
medical (non-inst.)	54.63	118.55			91.38
entertainment	45.51	57.56			52.44
minor durable-type goods	7.04	6			6.44
toilet articles	60.19	68.23			64.81
other household consumables	26.22	38.82			33.46
Consumer services	132.76	217.11			181.25
Conveyance	181.39	225.47			206.73
rent	92.65	103.46			98.86
Taxes and cesses	26.73	35.01			31.49
Durable goods total	93.47	97.51			95.79
<b>TOTAL : NON-Food Group</b>	<b>1147.88</b>	<b>1528.34</b>			<b>1366.6</b>
<b>TOTAL EXPENDITURE</b>	<b>2307.96</b>	<b>2893.15</b>			<b>2644.38</b>

Table C4 : Average value of monthly consumption of broad groups of food and non-food items per person for a modified mixed reference period (MMRP, schedule type 2) of 30 days in different types of towns in JHARKHAND

Items of consumption	Towns of different types				All
	Census	Small & medium	large	Million plus	
cereal	189.18	192.51	179.02		188.05
gram	3.84	3.29	4.14		3.7
cereal substitutes	0	0	0		0
pulses & pulse prdcts	40.19	39.5	37.4		39.24
milk & milk products:	83.2	95.45	92.31		90.28
sugar	19.73	19.83	25.7		21.21
salt	2.56	2.51	3.05		2.66
edible oil	49.14	49.2	66		53.23
egg fish & meat	83.78	64.26	86.07		76.55
vegetables	114.69	115.88	161.95		126.57
fruits (fresh)	25.55	36.2	53.39		36.52
fruits (dry)	8.86	7.2	12.61		9.1
spices	33.72	34.34	40.58		35.62
beverages etc.	105.08	116.91	202.46		133.3
<b>TOTAL : Food Group</b>	<b>759.52</b>	<b>777.08</b>	<b>964.69</b>		<b>816.04</b>
pan	2.89	5.11	1.73		3.49
tobacco	8.13	7.26	10.93		8.46
intoxicants	12.75	6.51	5		8.39
Pan, tobacco & intoxicants	23.76	18.88	17.66		20.35
fuel and light	80.6	93.62	124.46		96.38
clothing	86.54	85.93	98.43		89.17
footwear	13.12	15.67	15.13		14.62
education	113.18	116.44	152.37		123.94
medical (institutional)	14.28	7.98	25.8		14.55
medical (non-inst.)	48.43	24.88	34.73		35.74
entertainment	18.39	16.25	29.54		20.23
minor durable-type goods	3.6	4.67	2.93		3.87
toilet articles	34.03	36.88	41.05		36.86
other household consumables	25.43	30.99	22.93		27.04
Consumer services	67.02	69.12	114.32		79.27
Conveyance	66.04	56.87	129.97		77.82
rent	69.98	98.42	80.29		83.8
Taxes and cesses	0.69	0.62	1.56		0.87
Durable goods total	38.77	52.32	34.81		43.22
<b>TOTAL : NON-Food Group</b>	<b>703.87</b>	<b>729.53</b>	<b>925.99</b>		<b>767.71</b>
<b>TOTAL EXPENDITURE</b>	<b>1463.39</b>	<b>1506.61</b>	<b>1890.67</b>		<b>1583.75</b>

Table C5: Average value of monthly consumption of broad groups of food and non-food items per person for a modified mixed reference period (MMRP, schedule type 2) of 30 days in different types of towns in KERALA

Items of consumption	Towns of different types				All
	Census	Small & medium	large	Million plus	
cereal	147.98	143.33	171.28		151.08
gram	6.47	5.41	9.31		6.6
cereal substitutes	2.61	3.01	4.17		3.18
pulses & pulse prdcts	34.04	32.67	48.19		36.65
milk & milk products:	72.94	75.39	110.88		82.98
sugar	30.7	26.03	27.88		27.71
salt	2.39	2.13	2.6		2.31
edible oil	39.13	31.26	39.97		35.4
egg fish & meat	169.53	161.84	200.52		172.9
vegetables	79.76	83.9	115.25		90.07
fruits (fresh)	80.94	88.02	112.6		91.83
fruits (dry)	5.8	7.47	7.77		7.09
spices	43.49	47.28	50.2		46.94
beverages etc.	183.58	209.91	262.45		215.04
<b>TOTAL : Food Group</b>	<b>899.35</b>	<b>917.67</b>	<b>1163.07</b>		<b>969.76</b>
pan	1.79	1.54	3.92		2.16
tobacco	14.49	18.16	24.81		18.72
intoxicants	24.58	24.95	38.66		28.03
Pan, tobacco & intoxicants	40.86	44.64	67.39		48.91
fuel and light	110.95	116.53	161.48		125.47
clothing	105.51	108.5	126.18		111.81
footwear	18.48	17.91	22.31		19.09
education	138.1	104.73	230.82		142.99
medical (institutional)	89.07	90.34	85.88		88.96
medical (non-inst.)	90.29	119.2	139.23		116.08
entertainment	37.71	29.83	46.77		35.88
minor durable-type goods	4.77	5.85	7.21		5.87
toilet articles	32.56	35.26	41.37		35.95
other household consumables	30.42	32.16	39.49		33.39
Consumer services	144.99	147.12	189.84		156.47
Conveyance	148.8	154.97	219.78		168.37
rent	63.41	47.82	139.48		73.31
Taxes and cesses	9.58	13.18	29.75		16.06
Durable goods total	127.4	282.59	382.94		264.2
<b>TOTAL : NON-Food Group</b>	<b>1192.88</b>	<b>1350.62</b>	<b>1929.91</b>		<b>1442.81</b>
<b>TOTAL EXPENDITURE</b>	<b>2092.24</b>	<b>2268.29</b>	<b>3092.99</b>		<b>2412.58</b>

Table C6 : Average value of monthly consumption of broad groups of food and non-food items per person for a modified mixed reference period (MMRP, schedule type 2) of 30 days in different types of towns in MEGHALAYA

Items of consumption	Towns of different types				All
	Census	Small & medium	large	Million plus	
cereal	190.67	180.71			184.46
gram	0	0.15			0.09
cereal substitutes	0	0.82			0.51
pulses & pulse prdcts	18.21	18.27			18.25
milk & milk products:	27.62	31.04			29.75
sugar	15.33	16.22			15.89
salt	2.28	2.62			2.49
edible oil	25.3	28.86			27.52
egg fish & meat	127.52	154.06			144.07
vegetables	84.23	106.43			98.07
fruits (fresh)	26.02	24.98			25.37
fruits (dry)	0.75	0.92			0.85
spices	17.65	19.13			18.57
beverages etc.	145.07	113.29			125.26
<b>TOTAL : Food Group</b>	<b>680.64</b>	<b>697.49</b>			<b>691.14</b>
pan	39.3	38.13			38.57
tobacco	33.61	36.14			35.19
intoxicants	1.46	7.88			5.46
Pan, tobacco & intoxicants	74.37	82.15			79.22
fuel and light	122.56	117.31			119.29
clothing	83.23	84.28			83.89
footwear	28.07	28.62			28.41
education	141.66	97.82			114.33
medical (institutional)	10.36	5.31			7.21
medical (non-inst.)	22.05	26.99			25.13
entertainment	42.91	37.93			39.8
minor durable-type goods	4.79	10.03			8.06
toilet articles	27.31	33.83			31.37
other household consumables	24.07	25.62			25.04
Consumer services	109.33	96.34			101.23
Conveyance	135.38	91.67			108.13
rent	131.42	117.87			122.97
Taxes and cesses	5.79	4.99			5.29
Durable goods total	38.63	37.93			38.19
<b>TOTAL : NON-Food Group</b>	<b>1001.92</b>	<b>898.7</b>			<b>937.57</b>
<b>TOTAL EXPENDITURE</b>	<b>1682.56</b>	<b>1596.19</b>			<b>1628.72</b>

Table C7: Average value of monthly consumption of broad groups of food and non-food items per person for a modified mixed reference period (MMRP, schedule type 2) of 30 days in different types of towns in TAMILNADU

Items of consumption	Towns of different types				All
	Census	Small & medium	large	Million plus	
cereal	147.1	145.35	167.1	163.42	150.53
gram	4.06	4.22	5.09	2.37	4.02
cereal substitutes	0	0.08	0	0	0.05
pulses & pulse prdcts	54.13	52.56	47.83	68.51	54.62
milk & milk products:	110.59	102.66	117.09	134.19	109.67
sugar	13.41	15.1	14.94	14.6	14.85
salt	2.34	2.32	2.22	2.67	2.37
edible oil	42.15	44.05	41.42	45.6	43.83
egg fish & meat	82.44	98.09	83.94	107.69	96.63
vegetables	105.37	97.91	96.49	130.01	103.29
fruits (fresh)	54.64	52.66	56.77	70.93	56.04
fruits (dry)	4.57	5.05	5.8	7.89	5.51
spices	62.85	59.3	54.66	69.88	60.73
beverages etc.	157.72	166.43	186.51	208.32	174.08
<b>TOTAL : Food Group</b>	<b>841.37</b>	<b>845.78</b>	<b>879.86</b>	<b>1026.08</b>	<b>876.21</b>
pan	3.77	1.94	1.54	1.18	1.95
tobacco	8	10.05	8.73	12.78	10.13
intoxicants	10.91	11.15	13.56	21.89	13
Pan, tobacco & intoxicants	22.68	23.14	23.83	35.84	25.09
fuel and light	116.51	102	103.11	159.08	112.07
clothing	86.61	80.78	82.26	122	87.7
footwear	12.91	12.02	11.39	19.15	13.11
education	135.69	121.46	73.54	195.91	128.97
medical (institutional)	52.58	27.45	25.36	54.56	33.62
medical (non-inst.)	56.43	61.22	91.55	90.51	68.4
entertainment	32.33	31.99	33.55	42.51	33.78
minor durable-type goods	2.4	5.22	0.45	3.91	4.26
toilet articles	39.82	40.49	43.92	52.89	42.67
other household consumables	42.91	37.4	39.05	50.28	40.02
Consumer services	88.68	93.72	88.03	174.2	104.83
Conveyance	97.15	101.33	86.42	181.82	111.54
rent	132.93	134.69	193.22	374.92	176.99
Taxes and cesses	10.53	11.11	15.62	14.5	12.05
Durable goods total	119.41	60.6	40.54	142.97	76.31
<b>TOTAL : NON-Food Group</b>	<b>1049.57</b>	<b>944.64</b>	<b>951.85</b>	<b>1715.05</b>	<b>1071.4</b>
<b>TOTAL EXPENDITURE</b>	<b>1890.94</b>	<b>1790.42</b>	<b>1831.7</b>	<b>2741.13</b>	<b>1947.61</b>

Table C8: Average value of monthly consumption of broad groups of food and non-food items per person for a modified mixed reference period (MMRP, schedule type 2) of 30 days in different types of towns in TRIPURA

Items of consumption	Towns of different types				All
	Census	Small & medium	large	Million plus	
cereal	205.72	229.11			219.9
gram	0	0			0
cereal substitutes	0	0.31			0.19
pulses & pulse prdcts	34.79	40.78			38.42
milk & milk products:	42.66	71.85			60.35
sugar	9.7	13.44			11.97
salt	3.75	4.12			3.98
edible oil	44.98	57.56			52.61
egg fish & meat	208.18	306.55			267.81
vegetables	154.34	203.35			184.05
fruits (fresh)	31.61	56.09			46.45
fruits (dry)	1.3	4.27			3.1
spices	27.77	39.06			34.61
beverages etc.	74.24	97.41			88.28
TOTAL : Food Group	839.03	1123.92			1011.72
pan	19.41	23.54			21.91
tobacco	20.22	43.91			34.58
intoxicants	2.68	2.05			2.3
Pan, tobacco & intoxicants	42.31	69.5			58.79
fuel and light	103.56	135.4			122.86
clothing	67.03	91.34			81.77
footwear	9.64	17.33			14.3
education	97.27	155.48			132.56
medical (institutional)	20.83	23.95			22.72
medical (non-inst.)	43.23	100.65			78.04
entertainment	10.32	26.31			20.01
minor durable-type goods	0.78	8.42			5.41
toilet articles	23.96	34.23			30.19
other household consumables	16.12	22.52			20
Consumer services	50.09	132.85			100.26
Conveyance	46.86	71.43			61.76
rent	33.71	100.91			74.45
Taxes and cesses	3.07	6.48			5.13
Durable goods total	13.05	42.89			31.14
TOTAL : NON-Food Group	581.82	1039.7			859.37
TOTAL EXPENDITURE	1420.85	2163.62			1871.09

Table C9: Average value of monthly consumption of broad groups of food and non-food items per person for a modified mixed reference period (MMRP, schedule type 2) of 30 days in different types of towns in WEST BENGAL

Items of consumption	Towns of different types				All
	Census	Small & medium	large	Million plus	
cereal	173.63	181.33		171.63	178.21
gram	0.41	0.68		0.63	0.63
cereal substitutes	0.02	0.05		0	0.04
pulses & pulse prdcts	30.4	31.14		31.5	31.13
milk & milk products:	48.79	62.49		84.68	65.76
sugar	17.72	20.24		20.43	19.97
salt	2.76	2.76		2.95	2.8
edible oil	48.53	56.26		61.23	56.41
egg fish & meat	125.99	178.83		239.65	185.92
vegetables	107.53	125.78		132.04	124.93
fruits (fresh)	33.65	35.91		50.11	38.81
fruits (dry)	4.36	3.95		4.04	4.02
spices	34.45	36.75		38.69	36.9
beverages etc.	100.67	148.55		231.83	161.28
TOTAL : Food Group	728.9	884.71		1069.41	906.81
pan	4.69	4.76		4.24	4.64
tobacco	18.57	28.75		38.14	29.6
intoxicants	2.97	4.17		8.7	5.03
Pan, tobacco & intoxicants	26.23	37.68		51.09	39.27
fuel and light	102.26	137.52		185.57	143.92
clothing	70.75	94.79		132.68	100.3
footwear	10.03	12.57		17.66	13.4
education	83.72	118.22		202.86	132.9
medical (institutional)	34.01	41.38		35.27	39.1
medical (non-inst.)	40.99	81.33		128.06	86.81
entertainment	21	32.34		44.87	33.75
minor durable-type goods	4.09	5.19		3.06	4.58
toilet articles	29.47	38.48		51.01	40.17
other household consumables	21.25	27.88		37.13	29.13
Consumer services	54.09	110.87		233.59	131.33
Conveyance	40.22	88.54		192.87	105.92
rent	33.78	54.64		140.24	71.23
Taxes and cesses	1.37	5.31		12.12	6.35
Durable goods total	41.48	78.19		105.72	79.82
TOTAL : NON-Food Group	614.73	964.93		1573.8	1057.97
TOTAL EXPENDITURE	1343.63	1849.64		2643.22	1964.78

## What MPCE does not reveal

Subrata Dhar\*

Over the years, NSSO, has been collecting data on monthly Consumer Expenditure of households and persons through large scale Socio-economic surveys. These data when averaged over groups of population are expected to provide an insight into the per capita consumer expenditure, a proxy to the per capita income or the quality of life indicator. The NSSO estimates, being survey results are subjected to both sampling and non-sampling errors and therefore ample precautions are taken to reduce these errors. But the pertinent question remains: can these estimates be considered relevant indicators for quality of life?

The statistician's obsession to obtain an indicator, a state level aggregate, often misleads as it may camouflage the immediate and important areas of concern. Averaging out the "good, the bad and the ugly" ironically irons out the effect of the "good" and "bad" standard of livings and provides a confusing picture of individual's quality of life, amenable to one's perceptions. The inherent disparities and inequalities are lost in the process of normalizing.

### **1.The Kerala Paradox.**

Kerala provides such an example.

From the data thrown up by the 66<sup>th</sup> Round of NSSO (2009-10), Kerala's both urban and rural areas have shown one of highest levels of MPCE( Monthly Per capita Expenditure) in the country among all major States. In fact for the last few decades Kerala has occupied this distinction competing closely with Punjab. Additionally, compared to All India Rural MPCE figures Kerala's increase of MPCE in real terms during 1972-73 to 2009-10 (66<sup>th</sup> Round) has been 209%, while the All India figures increased only by 88.9% during the period. In the case of urban areas, Kerala's increase of MPCE in real terms was 184% during 1972-73 to 2009-10, as compared to the all India increase of 100%(Table.1).

In Kerala the share of food expenditure to total expenditure was 46% in rural areas and 40% in urban areas in 2009-10 whereas the all India percentage for rural population was 57% and urban population was 44%. In 1972-73 the share of food expenditure to total expenditure in Kerala was 70.4% in rural areas and 65% in urban areas against an all India rural percentage of 73% and an urban percentage of 64.5%. Analysis of cereal consumption shows that Kerala's cereal share in its food consumption has also been decreasing and is presently one of the least in the country. Kerala therefore has been decreasing the proportion of expenditure on food and cereals within its total expenditure more drastically than the all India levels, and has shown signs of diversification of the consumption basket over time and with economic development. All these put Kerala's consumer expenditure spread as one of the most progressive in the country.

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*\*Views expressed by the author are his own.*

**Table 1: Monthly Per Capita Consumer Expenditure (MPCE) (Rs.) at constant prices.**

<b>RURAL</b>	<b>1972-73</b>	<b>77-78</b>	<b>1983</b>	<b>87-88</b>	<b>93-94</b>	<b>99-00</b>	<b>2004-05</b>	<b>2009-10</b>	<b>Growth % (1972-73 to 2009-10)</b>
<b>India</b>	44.17	60.15	62.28	68.11	67.85	73.66	77.83	83.43	88.88
<b>Kerala</b>	42.19	65.14	75.53	83.67	82.74	105.58	121.73	130.49	209.29
<b>URBAN</b>									
<b>India</b>	63.33	77.60	81.37	87.48	92.40	106.86	110.90	126.59	99.89
<b>Kerala</b>	58.27	77.46	90.28	102.35	110.50	122.73	144.88	165.37	183.80
<b>Rural/Urban Ratio</b>									
<b>India</b>	69.8	77.5	76.5	77.9	73.9	68.9	70.2	65.9	
<b>Kerala</b>	72.4	84.1	83.7	81.8	74.9	86.0	84.0	78.9	

However, a close look shows that all is not well. Gini Coefficient of the distribution of MPCE for Kerala, rural and urban, shows that Kerala as compared to all major States of India has been having one of the highest levels of disparity/inequality in Per Capita Consumer Expenditure now for quite sometime (Table.2).

**Table 2: Gini Coefficient for Monthly Per Capita Consumer Expenditure(MPCE)**

	<b>1972-73</b>	<b>1977-78</b>	<b>1983</b>	<b>1987-88</b>	<b>1993-94</b>	<b>1999-00</b>	<b>2004-05</b>	<b>2009-10</b>
<b>Rural Kerala</b>	.310	.353	.330	.323	.287	.270	.341	.417
<b>India</b>	.302	.337	.298	.291	.281	.260	.297	.291
<b>Urban Kerala</b>	.390	.395	.374	.387	.337	.321	.400	.498
<b>India</b>	.341	.345	.330	.352	.340	.343	.373	.381

Alarming, this inequality has been increasing from 0.310 in 1972-73 to .417 in 2009-10 in rural areas and from 0.390 in 1972-73 to .498 in 2009-10 in urban areas. In 2009-10, Kerala has recorded the highest Lorenz ratio among all the major State of the country.

This issue of rising intra-regional inequality in Kerala has been studied by a host of authors, who have travelled from Kuznet's findings to "trade-off" models in a neo-liberal region. Even under policies of "inclusive growths" and "distribute justice" it was noted that high growths have prompted higher inequalities and pockets of poverty.

Even within this small State of 14 districts there exists significant differences in MPCE across the districts. The magnitude of this difference is such that when one sub-state within Kerala, viz., Trivandrum had the second highest MPCE in the country (61<sup>st</sup> Round, 2004-05), another district viz.,Kannur reported being among the 15 district with the lowest MPCE. The fallacy of using State average(MPCE) to speak for the States`s living condition becomes clear and pronounced and is making district level/sub-State level estimates absolutely necessary for a complete understanding of the level of living prevailing in any society/State.

## **2.The North-South Divide.**

Present day Kerala consists of 14 districts in an area of 38863 Sq.Km. Before independence this region consisted of 2 Princely State-Cochin and Travancore and the Malabar region which was directly under British rule. These three regions were at different levels of development when the State was formed in 1956, Travancore being the most developed followed by Cochin, Malabar being the backward region. The disparities widened in the next 4 decades and the Malabar region lagged further behind. Today the Travancore-Cochin States represents the South Kerala region and the Malabar, the North Kerala region.

And there is a distinct difference in the development of the North and South Kerala regions as the following analysis bring it out. To emphasis this demarcation in our analysis, we consider the Thrissur district of the erstwhile Malabar region to be part of South Kerala; thus in the exercise that follows North Kerala consists of 6 district viz.,Kasargode, Kannur Waynad, Palakkad, Malappuram, Kozhikode and South Kerala consists of 8 districts , viz.,Trivandrum, Kollam, Pathenamthitta,Allappuzha,Kottayam, Ernakulam, Idukki , Trichur.

Table.3 shows the Health Infrastructure in North is much poorer than in South as the total number of hospitals and Public Health Centers and beds in hospitals and PHCs are much less in North than in South. The same picture is visible regarding Educational Infrastructure the number of Higher Secondary and Vocational Schools in Northern districts is much less than that of the Southern. Tele density and spread of road is also poor in the Northern districts than in the South, though the Northern districts cover 45% of the States land area. Number of units assisted by KSIDC and number of rural micro Enterprises are also extremely less in the North than in South, together with the employment opportunities available both in private and public sector. Similarly average daily wage rates for unskilled labour for both males and females in the North are less than their Southern brothers and sisters. Clearly there exists a marked difference in facilities available in the North districts as compared to those available in the South. These are pertinent reasons for differences in quality of life for people in the North districts and also for the increased number of poor`s in the North. And data on district wise per capita income in real terms also shows this difference.

In fact the Northern districts, where 45% of rural and 43% of Urban population live, have larger percentages of poor and lower MPCE levels both in urban and rural areas than that of their southern counterparts, as per calculations based on 61<sup>st</sup> Round of NSS. Using the 2011 Census population data, the Northern districts have 14% poor in the Rural areas and 34% poor in the Urban areas, whereas the Southern districts have 7% poor in the Rural areas and 12.5% poor in the Urban areas, showing that the total percentage of poor living in the State, both Urban and Rural are more influenced by the number of poors living in the Northern districts. Similarly the MPCE estimates for Kerala from 61st Round of NSSO was actually Rs.1410 in urban areas and Rs.1175 in the rural areas if only the Southern districts are considered. Because of the lower MPCE in the Northern districts viz., Rs.812 in rural and Rs.933 in urban areas, the MPCE figures for total Kerala has been brought down (Table.4).

Looking historically, as the Malabar region, i.e., the North Kerala region, had been under British rule, the districts behave more closely to the neighbouring districts of Western Karnataka. Integrating the “two Kerala” is therefore an important task. The Kerala Human Development Reports have shown that the State’s endeavor to reduce the intra-state disparities and gender/social group differentials are starting to pay off. People’s participation and effective decentralization of planning, implementation and tax efforts are yielding exemplary dividends.

Table.5 provide the district wise population proportion of the North and South in 2001 and 2011. Taken together the proportion of population has increased in the north districts than in south districts for both urban and rural population, though individually some districts like Palakkad, Wayanad, Idukki, Pathenamthitta have more rural population and Kannur, Kozhikode, Trichur, Ernakulam and Trivandrum have more urban population. The data on percentage of population engaged in Agriculture, 2008 also substantiate this aspect. However interesting to note is that the percentage growth in Urban population has been phenomenal in the districts of Kasargode(116%), Malappuram(410%), Thrichur(149%), Kozhikode(89%), Kollam(155%), and Palakkad (90%) during 2001-11. Cities and towns provide opportunities for social mobilization and empowerment. Cities generate jobs and income and with good governance better health, education and other services. Most of these districts with high rate of urbanization are in the North region. Though even in 2011, North districts lag behind on literacy rate (both male and female), the North-South divide may be erased soon.

### **3. More Disaggregated Data.**

Some district level information on MPCE and Lorenz Ratios are available from studies done by researchers using 61<sup>st</sup> Round NSS data (Table.4). Invariably the rural areas have lower MPCE than urban areas and in most cases lesser disparities than that in urban areas of the district. But here too districts with high MPCE may not represent better living conditions for all e.g., Urban Palakkad in the North has the highest MPCE in the region ( Rs.1762) and also the highest Lorenz ratio of 0.544 and Alappuzha rural in the South has the highest MPCE level of Rs.1259 in the region and also the highest Lorenz ratio of 0.443. On the other hand, areas with large concentration of population have high level of disparity e.g., rural Malappuram which contains 14% of the rural population of Kerala has one of the highest level of disparity of 0.397 and urban Ernakulam which contains 22% of Urban population of Kerala has high level

of disparity of 0.393. MPCE values at district levels may therefore conveniently hide the huge number of poors that may live there.

The rural- urban disparity in Consumer Expenditure can be measured by obtaining the rural-urban ratio of MPCE estimates. A ratio of 1 indicates that the differences are nil, whereas a ratio of less than 1 indicates that there is significant difference in the consumer expenditure of the two regions. Table.1 gives the ratios (percentages) for Kerala vis-à-vis that of All India. The result shows that Kerala's ratio has behaved similar to the All India ratio (with an increase in ratio during the 80s) but at a slightly higher level. However that difference exists between rural & urban areas is visible.

The 61<sup>st</sup> Round also provides data on average MPCE of households for size of land possessed (hectare) and Social Groups in Rural India. Whereas from the All India (Rural) data little or no difference exists between data based on size of land possessed and some difference exists in data based on social groupings, there is wide variation in Kerala data, which show vast increase in MPCE estimate as the size of land possessed increases.

**Table 6: MPCE of Rural households against land possessed and social groups**

Size of land possessed (hectare)	<.01	0.01-0.40	0.41-1.00	1.00-2.00	2.00-4.00	4+
Kerala	793.03	960.14	1154.33	1433.39	1585.29	2652.00
India	503.92	560.88	535.78	566.41	606.92	732.12
Social groups	ST	SC	OBC	OTHERS	ALL	
Kerala	518.05	733.11	995.62	1191.32	1013.15	
India	426.19	474.72	556.72	685.31	558.78	

A comparison of the first to ninth deciles values of the rural and urban MPCE(URP) distribution of Kerala from 61<sup>st</sup> Round and 66<sup>th</sup> Round NSS data, shows that even after constant price adjustment the 66<sup>th</sup> Round figures are at a higher level for all areas. Thus the 66<sup>th</sup> Round distributions lie to the right of the 61<sup>st</sup> Round at a higher expenditure platform (Table.7).

But interesting to note is that after the 6<sup>th</sup> deciles i.e., for the top 40% of the population, expenditure levels do not rise at the same pace in the 66<sup>th</sup> Round as that of the 61<sup>st</sup> Round. Rather the incremental increase in expenditure of the higher deciles groups is much more in 2009-10 (66<sup>th</sup> Round) than in 2004-05 (61<sup>st</sup> Round) for both rural and urban Kerala population. In the lower expenditure brackets, of course, the increase of value of one decile group in 2009-10 is similar to the increase of another decile group in 2004-05. The consumer expenditure level of the higher expenditure groups/deciles in 2009-10 has increased drastically within this 5 years span both for rural and urban areas.

#### **4. Lessons to be learnt.**

Although there exists a host of studies on inter-regional disparities in India (especially among States), there are only a few on intra-regional disparities essentially due to non-availability of data. In economic planning and policy making household expenditure distribution is still used as a "surrogate for income distribution", though this household Expenditure distribution too has its own limitations.

In the NSS 61<sup>st</sup> Round survey (2004-05) the districts were taken as strata for selection of first stage units (fsu) in both rural and urban sectors and further sub-stratification was done within the district. Researchers, on the basis of State/UT level RSE of Head Count Ratios (HCRs) have however concluded that not all district estimates passed the precision tests and some amends were necessary.

In the 66<sup>th</sup> Round Survey (2009-10) fsus are the villages and blocks. The objectives do not stipulate that district level or sub-state level estimates are necessary. Though some improvements have been introduced in terms of MMRP (Modified Mixed Reference Period) measure of MPCE, it is clearly stated that the samples even for smaller States may not be large enough for getting sufficiently reliable estimate.

On the one hand as we realize the need for district level/sub-state level estimates of MPCE, Lorenz Ratio, percentage of poor etc. are absolutely necessary for a complete understanding of the level of living prevailing in any part of the country, we feel definitely handicapped by the non-availability of survey methodologies. We realize that State averages only hide the wide geographical/social disparities existing within as well as across the country. In our attempt to feel complacent and amenable to our perception we avoid seeing what MPCE does not reveal.

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Table 3 District-wise Infrastructure, Health, Educational & Employment Facilities and Per Capita Income

DISTRICT NAME	HOSPITALS (2008)		PHCS INCLUDING		BEDS PER LAKH OF POPULATION(2008)	2008-2009 NUMBER OF		NO OF TELEPHONE PER 1000 (2008)	TOTAL ROADS 2007	RATION CARD (2008)	EMPLOYMENT (2008)		RURAL MICRO ENTERPRISE		NUMBER OF UNITS		AVERAGE DAILY WAGE RATES		Per Capita Income (2006-07)
	NO	BEDS	NO	BEDS		HIGHER SECONDARY	VOCATIONAL				PRIVATE SECTOR	PUBLIC SECTOR	No.	SUBSIDY (RS)	PUBLIC	PRIVATE	MALE	FEMALE	
<b>NORTH</b>																			
KASARGOD	3	644	46	259	106	81	22	181	1419	223434	32221	17322	22	872500	1	1	165	128	23928
KANNUR	9	1693	79	761	129	127	19	188	2343	473322	40569	35731	11	510000	1	9	168	149	26416
WAYANAD	3	374	25	318	140	44	10	128	970	174243	14298	15412	13	522500	0	6	128	105	26694
KOZHIKODE	8	2115	69	311	193	136	28	175	2208	591125	32747	39042	35	1297500	3	16	165	142	26238
MALAPURAM	7	1302	94	760	81	197	27	139	2424	645682	29729	33524	37	1652300	0	22	161	135	19124
PALAKKAD	8	1147	82	790	101	108	25	144	1727	557507	15249	45932	127	6107500	1	80	140	85	24903
<b>TOTAL</b>	<b>38</b>	<b>7275</b>	<b>395</b>	<b>3199</b>		<b>612</b>	<b>131</b>			<b>2665313</b>	<b>164813</b>	<b>186963</b>	<b>245</b>	<b>10962300</b>	<b>6</b>	<b>134</b>			
<b>SOUTH</b>																			
TRICHUR	16	2558	87	640	168	151	36	193	1778	697287	47500	52885	30	130400	4	41	165	130	28301
ERNAKULAM	22	3010	77	935	165	179	16	243	2655	702811	75691	83894	43	2547500	4	167	190	148	39304
IDUKKI	3	488	52	528	128	66	34	166	2494	270654	44140	15163	89	3297500	1	15	151	120	30605
KOTAYAM	12	1506	60	544	212	124	31	244	2830	443315	27769	33439	55	2120000	0	19	148	133	30605
ALAPPUZHA	10	2457	65	493	217	106	21	175	1876	510993	38587	22236	62	2362500	0	31	186	162	25686
PATHANAMTHITTA	8	1291	51	504	157	91	27	241	1265	301116	14658	26000	14	507500	3	6	163	113	28979
KOLLAM	9	1534	65	342	95	129	52	184	1777	620486	46297	47584	34	1140000	4	10	168	151	24580
THIRUVANANTHAPURAM	18	3752	77	490	292	164	41	205	2437	808627	48226	141569	41	1575000	9	40	175	163	28526
<b>TOTAL</b>	<b>98</b>	<b>16596</b>	<b>534</b>	<b>4476</b>		<b>1010</b>	<b>258</b>			<b>4355289</b>	<b>342868</b>	<b>422770</b>	<b>368</b>	<b>13680400</b>	<b>25</b>	<b>329</b>			
<b>TOTAL</b>	<b>136</b>	<b>23871</b>	<b>929</b>	<b>7675</b>		<b>1703</b>	<b>389</b>			<b>7020602</b>	<b>507684</b>	<b>609733</b>	<b>613</b>	<b>25816300</b>	<b>31</b>	<b>465</b>			

TABLE 4 DISTRICT WISE % POPULATION , % OF POOR, MPCE, LORENZ RATIOS FOR RURAL AND URBAN KERALA								
DISTRICT NAME	% POPULATION		% POOR NSSO (61ST ROUND)		MPCE (RS) (NSSO 61st Round)		LORENZ RATIO (S) 61st Round)	
	RURAL	URBAN	RURAL	URBAN	RURAL	URBAN	RURAL	URBAN
NORTH								
KASARGOD	4.6	3.2	22.6	34.2	725	874	0.314	0.319
KANNUR	5.1	10.3	35.4	39.4	656	824	0.327	0.33
WAYANAD	4.5	0.2	22.2	10.6	790	1153	0.339	0.364
KOZHIKODE	5.8	13	25.3	36.2	715	918	0.31	0.365
MALAPURAM	13.1	11.4	19.3	31.6	901	938	0.397	0.391
PALAKKAD	12.2	4.3	11.2	20.5	868	1762	0.312	0.544
<b>TOTAL</b>	<b>45.3</b>	<b>42.4</b>	<b>14.32</b>	<b>33.87</b>	<b>811.82</b>	<b>983.92</b>		
SOUTH								
TRICHUR	5.8	13.1	13.1	15.3	1049	1112	0.385	0.318
ERNAKULAM	6	14	12.5	16.3	1018	1419	0.36	0.393
IDUKKI	6	0.33	3.4	14.2	1156	1557	0.335	0.326
KOTAYAM	8.1	3.6	6.9	6	1218	1774	0.352	0.354
ALAPPUZHA	5.6	7.2	4.4	14.1	1259	1200	0.443	0.389
PATHANAMTHITTA	6.1	0.83	5.2	6.1	1165	1243	0.356	0.277
KOLLAM	8.3	7.4	7	12.2	1014	1270	0.318	0.308
THIRUVANANTHAPURAM	8.8	11.2	3.7	6	1442	1867	0.332	0.378
<b>TOTAL</b>	<b>54.7</b>	<b>57.6</b>	<b>6.84</b>	<b>12.47</b>	<b>1174.71</b>	<b>1410.22</b>		
<b>TOTAL</b>	<b>100</b>	<b>100</b>	<b>13.2</b>	<b>20</b>	<b>1013</b>	<b>1291</b>	0.3748	0.4037

**TABLE 5 DISTRICT WISE POPULATION PROPORTION,PERCENTAGES AND GROWTH IN URBAN POPULATION,% IN PRIMARY WORK, LITERACY RATES, SEX RATIOS FOR RURAL AND URBAN SECTOR IN KERALA**

DISTRICT NAME	PROPORTIONAL POPULATION (2001 CENSUS)		PROPORTIONAL POPULATION (2011 CENSUS)		% urban population	Growth in urban population on 2001-2011	% population in Agriculture (2008)	LIERACY RATE(2011)		SEX RATIO(2011)	
	RURAL	URBAN	RURAL	URBAN				MALE	FEMALE	TOTAL	(0-6) age
<b>NORTH</b>											
KASARGOD	4.1	2.2	4.6	3.2	38.78	116.16	15.04	93.93	86.13	1079	960
KANNUR	4.7	9.1	5.1	10.3	65.05	35.45	9.24	97.54	93.57	1133	962
WAYANAD	3.3	0.3	4.5	0.2	3.87	4.52	47.27	92.84	85.94	1035	960
KOZHIKODE	7.5	13	5.8	13	67.15	88.42	11.7	97.57	93.16	1097	963
MALAPURAM	14.1	5.4	13.1	11.4	44.19	410	24.37	95.78	91.55	1096	960
PALAKKAD	8.2	5.6	12.2	4.3	24.09	89.92	42.62	92.27	84.99	1067	962
<b>TOTAL</b>	<b>41.9</b>	<b>35.6</b>	<b>45.3</b>	<b>42.4</b>							
<b>SOUTH</b>											
TRICHUR	9.3	9.7	5.8	13.1	67.19	148.95	16.71	96.98	93.85	1109	948
ERNAKULAM	8.2	21.9	6	14	68.07	51.15	13.22	97.14	94.27	1028	954
IDUKKI	4.5	0.5	6	0.33	4.7	-9.67	48.21	94.84	89.59	1006	958
KOTAYAM	7.3	3.4	8.1	3.6	28.58	88.66	21.04	97.17	95.67	1040	957
ALAPPUZHA	6.4	8	5.6	7.2	54.06	84.57	17.51	97.9	94.8	1100	947
PATHANAMTHITTA	4.7	2.2	6.1	0.83	11.06	6.19	33.38	97.7	96.26	1129	964
KOLLAM	8.9	5.7	8.3	7.4	45.11	154.59	21.52	95.83	91.95	1113	960
THIRUVANANTHAPURAM	8.8	12.9	8.8	11.2	53.8	62.99	16.6	94.6	90.89	1088	967
<b>TOTAL</b>	<b>58.1</b>	<b>64.3</b>	<b>54.7</b>	<b>57.66</b>							
<b>TOTAL</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100.06</b>	<b>47.72</b>	<b>92.72</b>		<b>96.02</b>	<b>91.98</b>	<b>1084</b>	<b>959</b>

**TABLE 7 First to Ninth Deciles of Distribution of MPCE(MRP) for Kerala (Rural and Urban areas) for 61st and 66th NSSO at Constant Prices(Rs)**

	61st Round				66th Round			
	Rural	Increment	Urban	Increment	Rural	Increment	Urban	Increment
D1	124.76		130.76		150		156.46	
D2	152.66	27.9	165.97	35.21	180.97	30.97	188.07	31.61
D3	178.36	25.7	196.44	30.47	210.93	29.96	225.64	37.57
D4	205.64	27.28	227.21	30.77	235.42	24.49	267.39	41.75
D5	233.22	27.58	267.15	39.94	263.36	27.94	319.68	52.29
D6	267.08	33.86	323.07	55.92	303.64	40.28	373.75	54.07
D7	317.24	50.16	390.53	67.46	361.53	57.89	454.87	81.12
D8	392.79	75.55	481.06	90.53	449.39	87.86	568.98	114.11
D9	537.93	145.14	670.71	189.65	573.07	123.68	793.83	224.85

# Expenditure Elasticity of Rice for Major States and All-India

- Monojit Das<sup>1</sup>

## *Abstract*

*This paper analyzes rice consumption patterns of Indian households, using a demand system and socio-demographic information. Acknowledging the fact that demand for rice is dependent upon overall consumption and other consumption needs of a given household. I have employed the theoretical framework of Working-Leser to formulate household demand system using NSSO 66<sup>th</sup> round household consumer expenditure survey data based on Schedule 1.0 (Type 2). Rice consumption pattern in India is affected by income/expenditure, price as well as socioeconomic and geographic factors. In addition to a general concern about Indian consumption behaviour, it is also of great interest to ascertain whether rice is a normal or an inferior good, i.e. whether per capita rice consumption goes up or down as income/expenditure increases. Since rice is a very important food item in Asian countries, many domestic and international agricultural trade policies are centered on it. Such important agricultural policies would be misdirected if they were based on a belief that rice is an inferior good, without a rigorous and robust estimation of that characteristic.*

**Keywords: Rice demand, Working-Leser model, Elasticity, Inferior goods.**

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## Section-I

### Introduction

Household food consumption has long been an important area of research for academicians. Studies on food consumption help to provide a better understanding of how the demand for food responds to changes in food prices as well as changes in household expenditure. This information is essential for evaluating the welfare effects of many types of economic shocks as well as the welfare impacts from trade liberalization. Demand analysis can be based on either aggregated time-series data or household surveys. However, in many developing countries the availability of reliable time-series data on aggregate demand, prices and income/expenditure is limited. In contrast, many household surveys implemented in these countries provide rich and fairly reliable micro data on household consumption patterns. Food demand analysis based on household surveys has been increasingly used in recent years. In developing countries, where a large percentage of household expenditure is allocated to food, consumer expenditure surveys are particularly useful because they can provide information on specific sub-population of households that are more likely to be affected by changes in commodity prices or household incomes.

Although rural-urban dichotomy exists, the variations across the expenditure groups are more striking than rural-urban variations for the corresponding expenditure groups. As one moves from the lower to higher expenditure groups, the marginal budget share of cereals declines sharply in both rural and urban areas. The fall in marginal share is compensated by other non-food items. Rice occupies an important position in the consumption basket in both rural and urban areas in all states. In this paper, an attempt has been made to estimate the demand elasticity of rice<sup>2</sup> for major<sup>3</sup> states and also for all India [rural and urban area separately] using NSSO 66<sup>th</sup> round data based on Schedule 1.0, type 2.

Section-I is the introductory section. Section-II deals with theoretical model and data for determining the demand elasticity. In Section-III, I have presented the demand elasticity results and also presented an analysis of the estimated results. Section –IV is the concluding section.

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<sup>2</sup> Rice includes rice sold in open market and rice sold through PDS.

<sup>3</sup> This refers to the 17 States of India which had a population of 20 million or more according to the Census of 2001. The States are: Andhra Pradesh, Assam, Bihar, Chhattisgarh, Gujarat, Haryana, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal.

## Section-II

### Methodology for estimation of Elasticity

An Engel curve is the function describing how a consumer's expenditures on some good or service relates to the consumer's total resources holding prices fixed, so  $q_i = g_i(y, z)$ , where  $q_i$  is the quantity consumed of goods  $i$ ,  $y$  is income, wealth, or total expenditures on goods and services, and  $z$  is a vector of other characteristics of the consumer, such as age and household composition. Engel curves are frequently expressed in the budget share form and it is defined as  $w_i = h_i[\log(y), z]$ , where  $w_i$  is the fraction of  $y$  that is spent buying goods  $i$ . The goods are typically aggregate commodities such as total food, clothing, or transportation, consumed over some weeks or months, rather than discrete purchases. Engel curves can be defined as Marshallian demand functions holding the prices of all goods fixed.

Engel function introduced by Leser,  $w_i = \alpha_i + \beta_i \log(y) + \epsilon_i$ , where  $w_i$  is the budget share on the  $i^{\text{th}}$  item and  $y$  is household total expenditure. Using data from Belgian surveys of working class families, Ernst Engel (1857, 1895) studied how household's expenditures on food vary with income/expenditure. He found that food expenditures are an increasing function of income/expenditure and of family size, but that food budget shares decrease with income/expenditure. This relationship of food consumption to income/expenditure, known as Engel's law, has since been found to hold in most economies and time periods, often with the function  $h_i$  for food  $i$  close to linear in  $\log(y)$ .

Engel curves can be used to calculate income/expenditure elasticity of any specific commodity, which is roughly the percent change in  $q_i$  that results from a one percent change in  $y$ , or can be written as  $\partial \log g_i(y, z) / \partial \log(y)$ . Goods with income/expenditure elasticity below zero, between zero and one, and above one are called inferior goods, necessities, and luxuries respectively, so by these definitions what Engel found is that food is a necessity. Elasticity can themselves vary with income or expenditure, so e.g. a good that is a necessity for the rich can be a luxury for the poor.

Working (1943) proposed the linear budget share specification  $w_i = \alpha_i + \beta_i \log(y) + \epsilon_i$ , which is known as the Working-Leser model, since Leser (1963) found that this functional

form fit better than some alternatives. In this study, instead of total expenditure (y), I have used Monthly Per Capita Expenditure (x) which is also known as MPCE, where

$$\text{MPCE (x)} = \frac{\text{monthly household expenditure (y)}}{\text{household size (n)}}$$

Budget share ( $w_i$ ) is defined as,

$$\begin{aligned} \text{Budget share (} w_i \text{)} &= \frac{\text{monthly household expenditure for the } i^{\text{th}} \text{ item (} y_i \text{)}}{\text{monthly household expenditure (y)}} \\ &= \frac{\text{monthly household expenditure for the } i^{\text{th}} \text{ item (} y_i \text{)/household size (n)}}{\text{monthly household expenditure (y)/household size (n)}} \\ &= \frac{\text{per capita monthly expenditure for the } i^{\text{th}} \text{ item}}{\text{MPCE}} \end{aligned}$$

So the new model becomes

$$w_i = \alpha_i + \beta_i \log (x) + \gamma_j Z + \epsilon_i$$

where,

$w_i$  = budget share of rice

$x$  = MPCE

$Z$  = dummy variables including household types, social groups and religion

$\epsilon_i$  = random disturbances assumed with zero mean.

Sometimes other variables  $Z$  is also helpful to explain cross section variation in demand. Commonly used covariates include the household size, age and gender of family members, location measures, race and ethnicity, seasonal effects, and labor market status. Variables indicating ownership of a home, a car, or other large durables can also have considerable explanatory power, though these are themselves consumption decisions. Engel's original work showed the relevance of family size, and later studies confirm that larger families typically have larger budget shares of necessities than smaller families at the same expenditure level. This study is based on cross sectional data, I assume that price of rice is fixed across all the states (all households are purchasing rice at the same prices from market/PDS).

## Elasticity Estimates in Working-Leser model

The expenditure elasticity ( $e_i$ ) calculated from Working-Leser model is defined as:

$$e_i = 1 + \left[ \left( \frac{1}{w_i} \right) * \frac{\partial w_i}{\partial \ln(y)} \right]$$

Now, in this paper I have used MPCE (x), in place of total income or total expenditure (y). So, the expenditure elasticity ( $e_i$ ) for my model is:

$$e_i = 1 + \left[ \left( \frac{1}{w_i} \right) * \frac{\partial w_i}{\partial \ln(x)} \right]$$

If,

$e_i > 1$  then goods i is a luxury goods

$0 < e_i < 1$  then goods i is a normal goods

$e_i < 0$  then goods i is a inferior goods

## Data

The study is based on the Survey on Household Consumer Expenditure (HCE) conducted by the National Sample Survey office (NSSO). In NSSO 66<sup>th</sup> round, alternative schedule types for measuring household consumption based on different sets of reference periods were canvassed on matching sample sizes. The present study has used NSSO 66<sup>th</sup> round unit level data relating to Schedule 1.0 [Schedule type 2<sup>4</sup>]. Schedule Type 2 used ‘last 365 days’ (only) for the infrequently purchased categories, ‘last 7 days’ for some categories of food items, as well as pan, tobacco and intoxicants, and ‘last 30 days’ for other food items, fuel, and the rest. In this schedule, the value of consumption and also quantity of consumption of cereals for a period of 30 days are reported. A stratified multi-stage design was adopted for the 66<sup>th</sup> round survey. The first stage units (FSUs) were generally the 2001 Census villages (Panchayat wards in case of Kerala) in the rural sector and Urban Frame Survey (UFS) blocks in the urban sector. The ultimate stage units (USU) were households in both the sectors. In case of large FSUs, one intermediate stage of sampling was the selection of two hamlet-groups (hgs)/sub-blocks (sbs) from each rural/urban FSU. At all-India level, 12784 FSUs were allocated to the Central sample and 15132 FSUs to the State sample. For this study, I have considered Central sample only.

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**Differences (in reference period) between Schedule Types 1 and 2**

Category	Item groups	Reference period for	
		Schedule Type 1	Schedule Type 2
I	Clothing, bedding, footwear, education, medical (institutional), durable goods	‘Last 30 days’ and ‘Last 365 days’	Last 365 days
II	Edible oil; egg, fish & meat; vegetables, fruits, spices, beverages and processed foods; pan, tobacco & intoxicants	Last 30 days	Last 7 days
III	All other food, fuel and light, miscellaneous goods and services including non-institutional medical; rents and taxes	Last 30 days	Last 30 days

## Section-III

### Results

In table T1, the information of the level of living measured through  $MPCE_{MMRP}$ <sup>5</sup> (monthly per capita consumer expenditure, i.e., per capita consumer expenditure per 30 days), and the household size are presented for major states and all-India. (From here on  $MPCE$  means  $MPCE_{MMRP}$  )

**Table T1: Average rural and urban MPCE and average household size in 2009-10: major States**

State	average MPCE (Rs.)		average household size	
	rural	urban	rural	urban
(1)	(2)	(3)	(4)	(5)
Andhra Pradesh	1234	2238	3.6	3.6
Assam	1003	1755	5.0	4.1
Bihar	780	1238	5.2	4.9
Chhattisgarh	784	1647	4.7	4.8
Gujarat	1110	1909	4.9	4.4
Haryana	1510	2321	5.1	4.3
Jharkhand	825	1584	4.8	4.7
Karnataka	1020	2053	4.4	3.9
Kerala	1835	2413	4.0	3.9
Madhya Pradesh	903	1666	4.8	4.6
Maharashtra	1153	2437	4.5	4.2
Orissa	818	1548	4.3	3.9
Punjab	1649	2109	5.0	4.3
Rajasthan	1179	1663	5.2	4.9
Tamil Nadu	1160	1948	3.7	3.5
Uttar Pradesh	899	1574	5.5	4.9
West Bengal	952	1965	4.2	3.8
<b>all-India</b>	<b>1054</b>	<b>1984</b>	<b>4.7</b>	<b>4.1</b>

*Ref: NSS Report No. 538: Level and Pattern of Consumer Expenditure*

Fig 1.1 (based on Schedule type 1.0, type 1 data) shows the decreasing trend in per capita cereal consumption (kg) of the Indian population in both rural and urban areas estimated from the 50<sup>th</sup> (1993-94), 55<sup>th</sup> (1999-2000), 61<sup>st</sup> (2004-05) and 66<sup>th</sup> (2009-10) rounds of NSS rounds.

<sup>5</sup> **Modified Mixed Reference Period MPCE** (or  $MPCE_{MMRP}$ ) This is the measure of MPCE obtained by the CES when household consumer expenditure on edible oil, egg, fish and meat, vegetables, fruits, spices, beverages, refreshments, processed food, pan, tobacco and intoxicants is recorded for a reference period of “last 7 days”, and for all other items, the reference periods used are the same as in case of Mixed Reference Period MPCE ( $MPCE_{MRP}$ ).

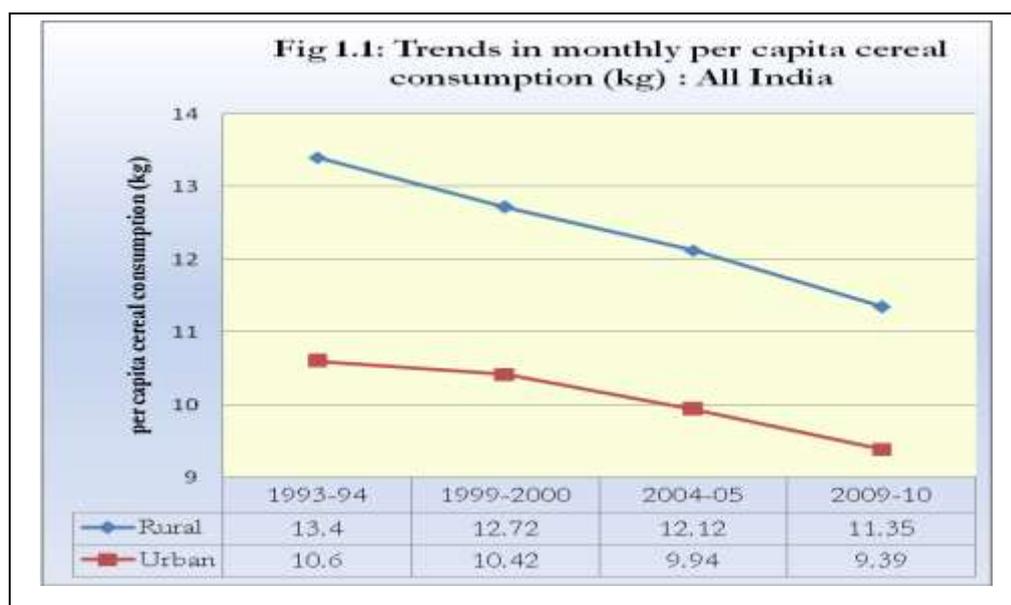


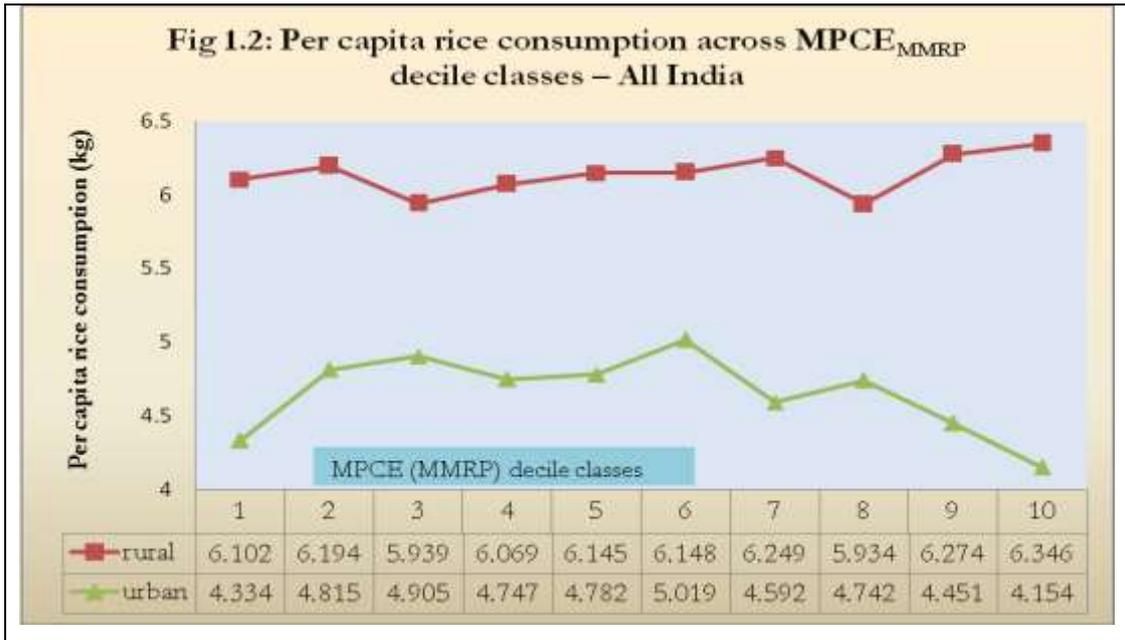
Table T2 (based on Schedule type 1.0, type 1 data) shows per capita quantity of consumption of rice in 2004-05 (NSS 61<sup>st</sup> round) and 2009-10 (66<sup>th</sup> round). It can be seen that the general decline in per capita rice consumption over the last two quinquennial NSS surveys.

**Table T2: Consumption of rice in 2004-05 and 2009-10, all-India**

cereal	year/ round	per capita qty (kg) consumed in 30 days	
		rural	urban
(1)	(2)	(3)	(4)
rice: all sources*	2004-05 (61 <sup>st</sup> round)	6.38	4.71
	2009-10 (66 <sup>th</sup> round)	6.00	4.52

\*excludes rice products

Fig 1.2 (based on Schedule type 1.0, type 2 data) shows the pattern of rice consumption as  $MPCE_{MMRP}$  increases is shown for all-India. Numbers 1 to 10 are used to denote the  $MPCE_{MMRP}$  decile classes. At all-India level average monthly per capita rice consumption in rural area is 6.14 kg and 4.65 kg in urban. In rural India, average monthly per capita rice consumption is around 6.10 kg for the poorest 10% of the population which is nearly equal to all-India average. It is seen to maintain same trend with every decile class, at tenth decile class monthly per capita rice consumption is 6.35 kg, which is maximum and it is 5.93 kg for the eighth decile classes, which is minimum across  $MPCE_{MMRP}$  decile classes. In urban India, per capita rice consumption increases from under 4.33 kg to about 4.91 kg per month over the first three decile classes but then starts to fall. In the tenth decile class it falls below its level in the first decile class.



With economic advancement, MPCE of households is showing upward trend over the years (Ref: NSS Report No. 538: Level and Pattern of Consumer Expenditure) but monthly per capita cereal consumption as well as monthly per capita rice consumption depicts downward trend over the years. Now question arises whether or not rice is becoming inferior goods with increasing trend in MPCEs. Elasticity can be worked out in above case. Both rural and urban, consumption will be in-elastic, means consumption invariant over MPCE Class. We may be cautious in stating the situation as of inferior good.

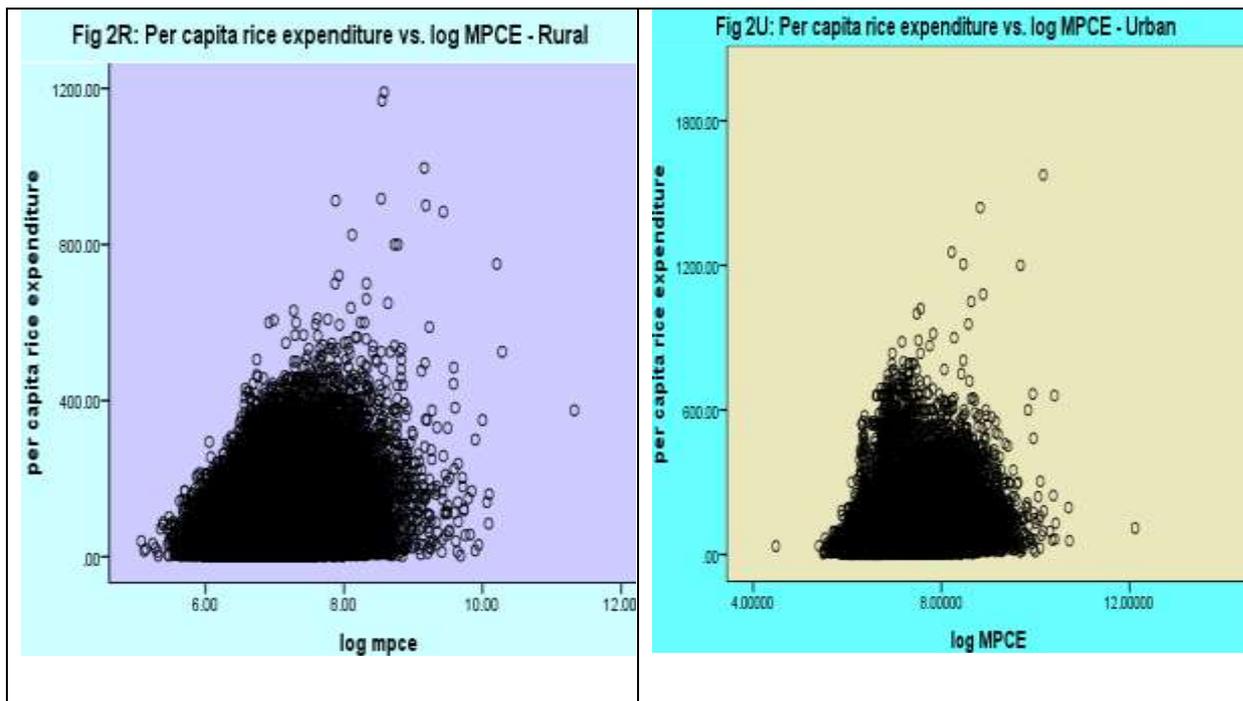
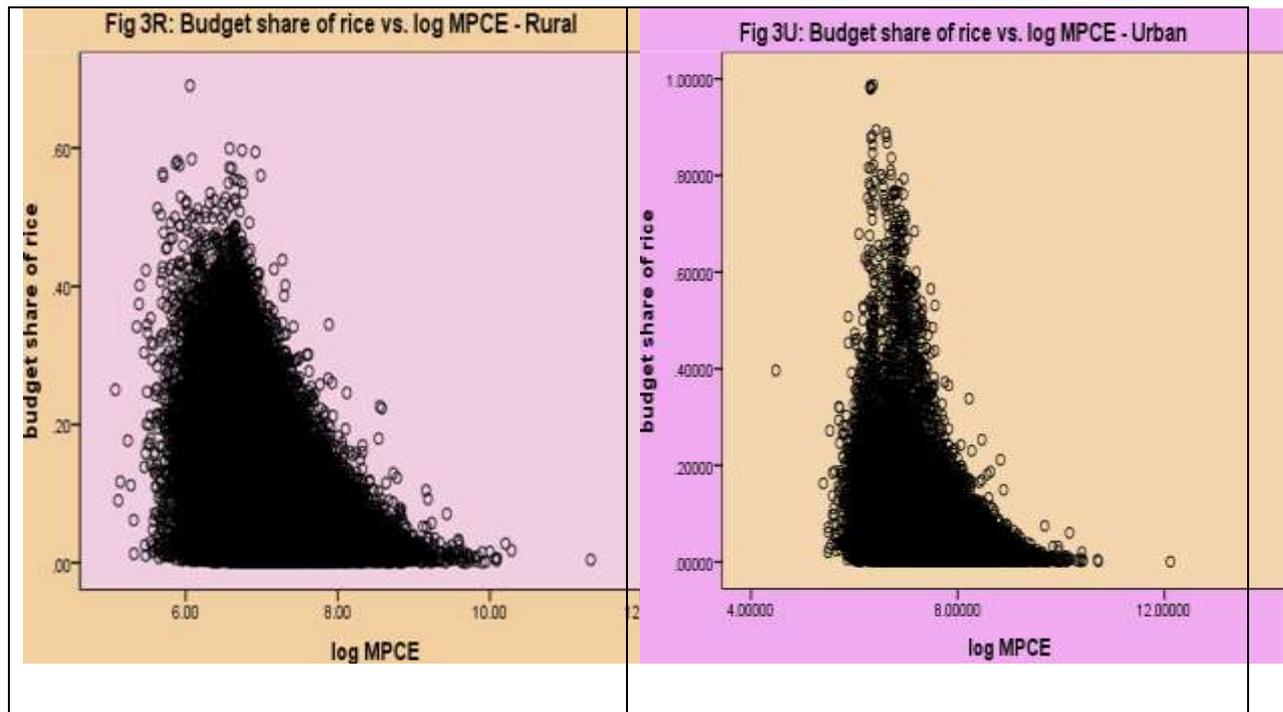


Fig 2R and 2U shows relationship between per capita rice expenditure (Rs.) and log of MPCE for both rural and urban sector; Per-capita rice expenditure (Rs.) is positively related to log of MPCE across households for both the sectors.

Fig 3R and 3U shows relationship between Budget Share of rice and log of MPCE for both rural and urban sector separately; Budget Share of rice is negatively related to log of MPCE for both the sectors.



To sum up, two key findings emerge from above graphs based on NSS 66<sup>th</sup>, Sch. 1.0 (type 2) data, they are:

First, there is a positive and monotonic relationship between log MPCE and per capita rice expenditure across households; in other words, better-off households (in terms of MPCE) expend more on rice than poorer households.

Second, over the last decades of rising MPCE levels, budget share of rice has declined, particularly (but not only) among higher MPCE classes.

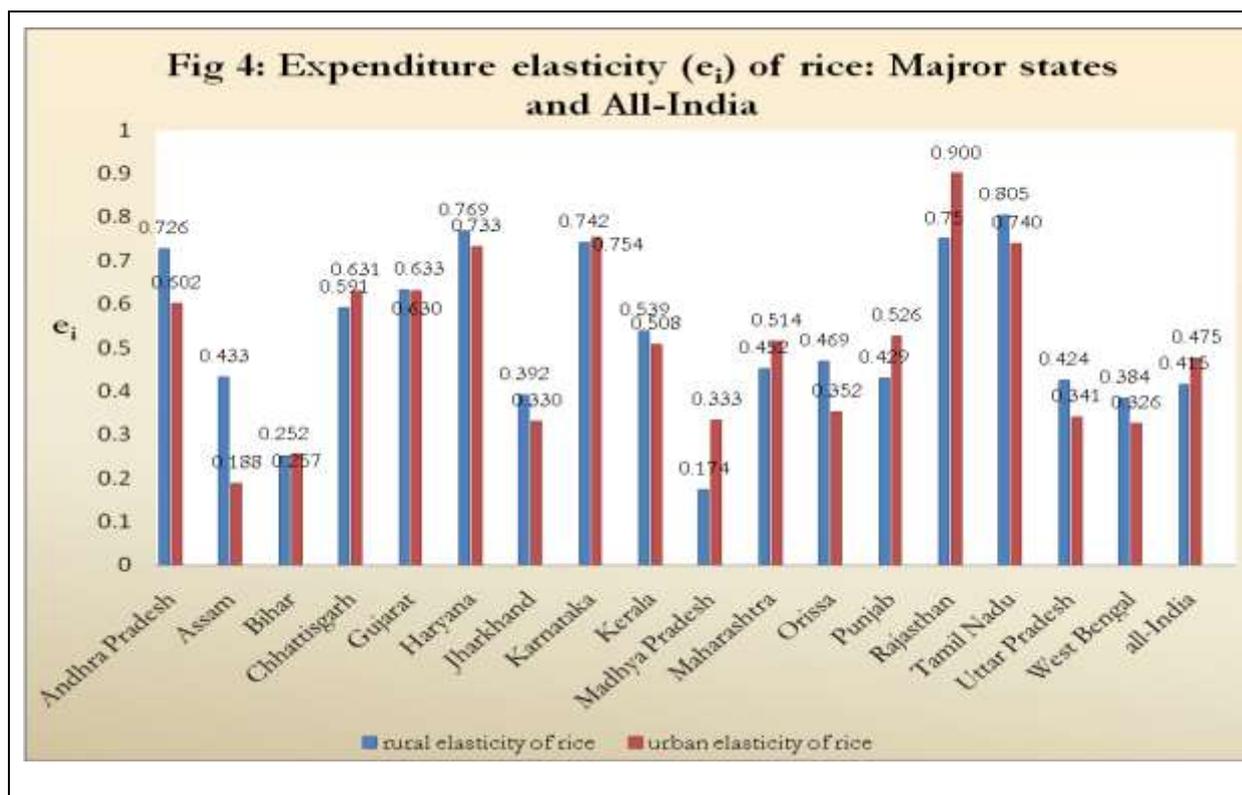


Table T3 shows estimated  $\beta$ , expenditure elasticity of rice and model  $R^2$  and Fig 4 shows rural and urban expenditure elasticity of rice for major states and all-India. There is not much difference in case of rural and urban elasticity at all-India level but in some states viz., Andhra Pradesh, Assam, Madhya Pradesh, Orissa, Rajasthan large variation in expenditure elasticity can be observed between rural and urban sector. In all major states and all-India, the expenditure elasticity of rice is less than one in both rural and urban areas. This implies, as the monthly per capita expenditure (MPCE) increases there is increase in consumption of rice in lesser proportion than the increase of MPCE. The expenditure elasticity in case of rice is 0.415 in rural and 0.475 in urban areas at all-India level. So one may concludes that the responsiveness of the change in consumption of rice with the change of MPCE is more in urban than rural areas at all India level. The expenditure elasticity of rice is less than one in both rural and urban areas in all the states indicating that rice is inelastic in nature. Among major states, Tamil Nadu (0.805) has the highest expenditure elasticity of rice in rural area followed by Haryana (0.769) and Rajasthan (0.750). Rural expenditure elasticity of rice is lowest in Madhya Pradesh (0.174), followed by Bihar (0.252). Rajasthan (0.900) and Karnataka (0.754) were the two major States with the highest expenditure elasticity of rice in the urban sector, followed by Tamil Nadu (0.740). Urban expenditure elasticity of rice is lowest in Assam (0.188) followed by Bihar (0.257). However, no attempts have been made to calculate RSE of the estimated elasticity ( $e_i$ ).

**Table T3: Estimated expenditure elasticity of rice in all major states and all-India**

States	rural			urban		
	estimated $\beta$	elasticity of rice ( $e_i$ )	model $R^2$	estimated $\beta$	elasticity of rice ( $e_i$ )	model $R^2$
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Andhra Pradesh	-0.037 (0.077)	0.726	0.072	-0.041 (0.053)	0.602	0.228
Assam	-0.115 (0.040)	0.433	0.363	-0.112 (0.021)	0.188	0.619
Bihar	-0.092 (0.081)	0.252	0.370	-0.075 (0.065)	0.257	0.428
Chhattisgarh	-0.056 (0.102)	0.591	0.087	-0.031 (0.091)	0.631	0.147
Gujarat	-0.011 (0.097)	0.633	0.097	-0.010 (0.116)	0.630	0.086
Haryana	-0.003 (0.117)	0.769	0.053	-0.004 (0.207)	0.733	0.043
Jharkhand	-0.093 (0.071)	0.392	0.216	-0.061 (0.088)	0.330	0.426
Karnataka	-0.016 (0.891)	0.742	0.024	-0.017 (0.407)	0.754	0.072
Kerala	-0.035 (0.095)	0.539	0.199	-0.032 (0.081)	0.508	0.279
Madhya Pradesh	-0.038 (0.084)	0.174	0.157	-0.018 (0.171)	0.333	0.142
Maharashtra	-0.023 (0.106)	0.452	0.062	-0.017 (0.272)	0.514	0.187
Orissa	-0.093 (0.068)	0.469	0.223	-0.081 (0.059)	0.352	0.411
Punjab	-0.008 (0.072)	0.429	0.128	-0.009 (0.093)	0.526	0.154
Rajasthan	-0.002 (0.378)	0.750	0.010	-0.001 (0.517)	0.900	0.005
Tamil Nadu	-0.016 (0.154)	0.805	0.020	-0.020 (0.254)	0.740	0.074
Uttar Pradesh	-0.038 (0.091)	0.424	0.133	-0.029 (0.066)	0.341	0.194
West Bengal	-0.101 (0.061)	0.384	0.299	-0.062 (0.052)	0.326	0.489
<b>all-India</b>	<b>-0.055</b> <b>(0.083)</b>	<b>0.415</b>	<b>0.118</b>	<b>-0.031</b> <b>(0.070)</b>	<b>0.475</b>	<b>0.142</b>

Note: The numbers in the parenthesis below estimated  $\beta$  are standard error. All the estimates are statistically significant at 5% level.

## Section-IV

### Conclusions

Working-Leser system has been used to estimate the expenditure elasticity of rice. The expenditure elasticity of rice is less than one in all the major states and all-India in both rural and urban areas. The expenditure elasticity of rice shows that rural area is more responsive in terms of change in demand for rice than urban areas in most of the major states. However, at all-India level, urban sector is more responsive than rural sector. The expenditure elasticities are less than one which indicates there is increase in rice consumption in lesser proportion with the increase in MPCE. Rice is actually essential commodities and there is little variation in their demand with change of MPCE. Unlike rice quantity, per capita expenditure of rice does increase with per capita income or MPCE. Richer households do not increase per capita quantity of rice consumption, but they do buy better quality and more expensive rice. In some states viz. Rajasthan, Tamil Nadu etc. for both rural and urban sector model  $R^2$  is not satisfactory enough, may be this model is unable to explain the factors responsible for the rice consumption. So, this model is not unique for all the states. Future studies based on panel and time series data could shed some light on that changing rice consumption pattern.

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An Estimation of Multilateral Price Index Number  
- using 66<sup>th</sup> round NSS data

Siddhartha Kundu<sup>1</sup>

**Abstract**

*The importance of Multilateral Price Index number is a well-known fact. At international level, World Bank produces GDP at Purchasing Power Parity at US \$ and it is prepared to compare the domestic production between two or more countries taking into consideration the variation in prices between these countries and also between exchange rates of their currencies. In producing the GDP at Purchasing Power Parity, a kind of multilateral price index is computed to take into account this spatial variation in price levels. In Indian sub-continent, similarly, the price levels in States vary. Thus, it is pertinent to compute the multilateral price index, which will not only help to gauge the differences in price levels between states, it will also help in comparing the welfare levels by eliminating the variation in price level in different States. Unfortunately, there is no single multilateral price index available in India. However, using Indian NSS data on consumer expenditure, which provides information of both value and quantity for most of the items of Indian consumers, an attempt is made to compute the multilateral unit-value index for the year 2009-10.*

Key Words: Multilateral Price index, Welfare comparison.

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<sup>1</sup> The author is presently working as Director, Central Statistics Office, Kolkata. Usual disclaimer applies.

## Introduction

The importance of Multilateral Price Index number is a well-known fact. At international level, World Bank produces GDP at Purchasing Power Parity at US \$ and this is prepared to compare the domestic production between two or more countries taking into consideration the variation in prices between these countries and also between exchange rates of their currencies. In producing the GDP at Purchasing Power Parity, a kind of multilateral price index is computed to take into account this spatial variation in price levels. In Indian sub-continent, similarly, the price levels in States vary. Thus, it is pertinent to compute the multilateral price index, which will not only help to measure the differences in price levels between states, it will also help in comparing the welfare levels by eliminating the variation in price level between different States. Unfortunately, there is no single multilateral price index available in India. However, using Indian NSS data on consumer expenditure, which provides information of both value and quantity for most of the items of Indian consumers, an attempt is made to compute the multilateral unit-value index for the year 2009-10.

Suppose, there are M states for which multilateral comparisons will be made. So, a total of  $M \times (M-1)/2$  binary comparisons between all distinct pairs of states will be made, and a simpler notation is used in this paper. Let  $I_{mn}$  denote the consumer price index number for state n with state m as the base. If m stands for West Bengal and n stands for Punjab, and if  $I_{mn}=1.10$ , then the index is interpreted to mean that Rs. 110 in Punjab would require to purchase same goods and services as would Rs. 100 in West Bengal. Since the comparison will be multilateral in nature, multilateral index numbers can be presented in the following structure:

$$I = \begin{bmatrix} I_{11} & I_{12} & \dots & I_{1M} \\ I_{21} & I_{22} & \dots & I_{2M} \\ \dots & \dots & \dots & \dots \\ I_{M1} & I_{M2} & \dots & I_{MM} \end{bmatrix} \dots\dots\dots(1)$$

The multilateral nature of spatial comparisons is a distinguishing feature of price comparisons across regions. When price levels of goods and services across different regions are compared, it is essential that such comparisons are undertaken for every pair of regions being considered. This multilateral nature of comparisons creates

several problems. Firstly, the number of comparisons (one for each pair) can be quite large, and presentation and use of such results may be quite unmanageable. For example, if there are 25 States, then it requires 300 ( $25 \times 24/2$ ) separate binary comparisons involving distinct pairs of States. Second, results from such a large tableau of binary comparisons require a degree of consistency. This requirement essentially means “transitivity” condition to be fulfilled which is mentioned below. In addition there are some other conditions like ‘base invariance’<sup>2</sup>, and ‘characteristicity’<sup>3</sup> which are also to be fulfilled to be considered for multilateral price index. An index number formula  $I_{mn}$  is said to satisfy the transitivity property if and only if for all choices of m, n and r (m, n, r = 1,2,...,M), the index satisfies  $I_{mn} = I_{mr} \times I_m \dots \dots (2)$ . There is a vast literature available on this subject of inter-area price comparison. Some of them are mentioned as references.

### **Data and Methodology:**

In 66<sup>th</sup> round (2009-10) two schedule types, viz., schedule type 1 and 2, were canvassed to collect consumer expenditure data. The schedule type 1 schedule of consumer expenditure survey data of 66<sup>th</sup> round has been used for this study. In this schedule expenditure on the infrequent items, viz., clothing, bedding, footwear, institutional medical care, education and durable goods, are collected with two recall periods of ‘last 30 days’ and ‘last 365 days’. The other items of consumption including food were collected with single reference period of ‘last 30 days’. Sometimes, all data with ‘last 30 days’ recall period is termed as Uniform Recall Period data or ‘URP data’; and dataset collected with ‘last 365 days’ recall period for infrequent items and ‘last 30 days’ recall period for rest of the items is denoted as ‘Mixed Recall Period data’ or MRP data. In schedule type 2, consumption data of edible oil, egg, fish & meat, vegetables, fruits, spices, beverages and processed foods, in food items and pan, tobacco & intoxicants in non-food items were collected with

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<sup>2</sup> Base invariance: An index number formula is said to be base invariant if a comparison between a given pair of States (m, n) is invariant to the order in which the States are listed. This implies that multilateral comparisons should be invariant to all possible permutations of the data set.

<sup>3</sup> Characteristicity: This property requires that any set of multilateral comparisons satisfying the transitivity property should retain the essential features of the binary comparisons constructed without the transitivity requirement. Since a transitive comparison in eq. (2) between a pair of States m and n is necessarily influenced by the price and quantity data for all the other States, the characteristicity property requires that distortions resulting from adherence to the transitivity property should be kept at a minimum.

recall period of ‘last 7 days’. The expenditure on the infrequent items, viz., clothing, bedding, footwear, institutional medical care, education and durable goods, are collected with recall period of ‘last 365 days’. Remaining all other items of food, fuel and light, miscellaneous goods and services including non-institutional medical; rents and taxes had recall period of ‘last 30 days’. This dataset popularly termed as Mixed Modified Recall Period data or ‘MMRP data’. In this study, MRP data of schedule type 1 data is used.

In the dataset, there were two types of item-groups, viz., one for which both quantity and value of expenditure (or consumption) are collected and the other where only expenditure is reported. For the 1<sup>st</sup> type of item group where both quantity and value were reported, the unit value is derived by dividing value by quantity. Here, this unit value is considered as price<sup>4</sup>, ignoring the quality impact. In each such item group, average unit value and budget share have been computed, separately for each state and sector. In every item group there are some items whose quantity were not collected and these items are not considered while computing average unit value of an item group. The average unit value of an item group, say k<sup>th</sup> item group,

is  $\overline{uv}_k = \frac{\sum uv_{ik} \times Q_{ik}}{\sum Q_{ik}}$ , where  $uv_{ik}$  is the unit value of the i<sup>th</sup> item in the k<sup>th</sup> item group,

$Q_{ik}$  is the estimated total quantity consumed of the i<sup>th</sup> item in the k<sup>th</sup> item group. So,

we can write  $Q_{ik} = \sum_{h=1}^n q_{hik} \times m_h$ , where  $q_{hik}$  is the consumption of i<sup>th</sup> item in k<sup>th</sup> item

group by h<sup>th</sup> household and  $m_h$  is the multiplier associated with h<sup>th</sup> household. This average unit value  $\overline{uv}_k$  is computed for the item groups of food, pan, tobacco and intoxicants, fuel and light, and clothing, bedding and footwear, i.e., for those items for which both quantity and value were available.

For the 2<sup>nd</sup> type of item groups where only expenditure is reported, i.e., for items of education, institutional and non-institutional medical care, miscellaneous goods and services and of durable goods, per-capita expenditure is considered as prices instead of unit value. In case of durable goods, the expenditure along with number of first-hand purchase although available, the per capita expenditure is considered due to two

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<sup>4</sup> Strictly speaking, the unit value is not price. The unit value has the combined effect of both price and quality. The price can be obtained only after the elimination of quality effect from the unit value.

reasons. Firstly, the reported ‘number of first hand purchase’ was not very reliable and hence unit value arrived at using this would be subject to criticism. Secondly, ‘number of second hand purchase’ was not collected and so unit value of second hand item was not possible to compute. Hence only per-capita expenditure was used instead of unit-value. However, the limitation of using PCE instead of actual price data is fully acknowledged. For these services (health, education, etc.) the unavailability of price data has induced the author to carry out the exercise with second best solution. The budget share of all these item groups is also computed separately for each state and sector. So, for each state in a sector, average unit value,  $\overline{uv}_{ks}$ , and budget share,  $w_{ks}$ , for  $s^{\text{th}}$  state and  $k^{\text{th}}$  item group in each sector is computed.

Now, the bilateral Laspeyres price index number of state  $s_2$  with base state  $s_1$  is

$$(L_{12}) = \sum \frac{\overline{uv}_{ks_2}}{\overline{uv}_{ks_1}} \times w_{ks_1} . \text{ In general, the bilateral Laspeyres index number of state } s_n \text{ with}$$

$$\text{base state } s_m \text{ is } L_{mn} = \sum \frac{\overline{uv}_{ks_n}}{\overline{uv}_{ks_m}} \times w_{ks_m} , \text{ for } m, n = 1, 2, \dots . \text{ Similarly, bilateral Paasche}$$

index number of state  $s_n$  with base state  $s_m$  is computed using unit-value relative and

$$\text{budget share of state } s_n \text{ i.e., } P_{mn} = \left[ \sum \left( \frac{\overline{uv}_{ks_n}}{\overline{uv}_{ks_m}} \right)^{-1} \times w_{ks_n} \right]^{-1} , \text{ for } m, n = 1, 2, \dots . \text{ Thus,}$$

from geometric mean of Laspeyres and Paasche index would give the Fisher’s ideal index number. However, this bilateral index number cannot confirm the transitivity and that has induced to compute the multilateral index number which will ensure transitivity and circularity. Transitivity means that if index of state P is higher than that of state Q and index of state Q is higher than that of state R, then index of state P is higher than that of state R. In multilateral index, the transitivity and circularity is ensured. For the estimation of multilateral index<sup>5</sup> number, the Elteto–Koves–Szulc (EKS) methodology is followed.

In EKS method originally proposed in Elteto and Koves (1964) and Szulc (1964)<sup>6</sup>, the index for ‘state n’ with base ‘state m’ is not only based on the budget share and price relative of the state m and state n but also on budget share and price relative of all

<sup>5</sup> There are other methodologies for estimating multilateral price index number, viz., Geary-Khamis (GK) method and Country-Product Dummy (CPD) method.

<sup>6</sup> This methodology is generally used in aggregating price data. This methodology sometimes termed as (GEKS) as this formula has been mentioned by Gini (1924).

other states for which multilateral comparisons will be made. The following formula of EKS<sup>7</sup> is used in this paper:

$$EKS_{mm} = \left( \prod_{r=1}^t \sqrt{(F_{mr} \times F_m)} \right)^{1/t}, \text{ where } F_{mr} \text{ is the Fisher index of state } r \text{ with base state } m \text{ and } t \text{ is total number of states for which comparisons is being made. Here } t \text{ is 35, if all the states are used in comparison. Now, sometimes we are interested to know the index of a state with all-India as base. In that case, the average price and budget share can be computed, in addition, at all-India level and 'all-India' can be treated as a separate state and the value of } t \text{ will be 36. It is also to be noted that any index number which satisfy circulatory test can be used instead of Fisher's.}$$

**Results**

The estimate of multilateral price index number is presented in Tables 1R and 1U in the Appendix. In rural, the price level among the major States the least is in Orissa followed by UP, Rajasthan Chattisgarh, Karnataka in that order. The high price level is observed in Kerala followed by Punjab and Andhra Pradesh. The ordering for the major states in rural areas from low to high is stated below:

**ORS < UP < RAJ < CHG < KTK < MP < ASM < WB < JHK < BHR < GUJ < TN < MAH < HAR < AP < PUN < KER.**

In urban areas the highest price levels is observed in Delhi preceded by Maharashtra, Kerala and Andhra Pradesh in this order whereas the least price level is observed in Rajasthan, Bihar, Uttar Pradesh and Orissa. The ordering for the major states in urban areas from low to high is stated below:

**RAJ < BHR < UP < ORS < ASM < MP < JHK < TN < GUJ < WB < PUN < HAR < HP < KTK < AP < KER < MAH < DEL.**

The utility of such calculation is explained with the help of welfare comparison. The welfare ranking of the states is normally done using MPCE alone regardless of existing spatial variation of price between the states. The MPCE in current prices and MPCE at price of Andhra Pradesh as base (using the multilateral price index number

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<sup>7</sup> There is an alternative version of EKS available, which is  $EKS_{mm} = \left( \prod_{r=1}^t (F_{mr} \times F_m) \right)^{1/t}$ , which also ensures transitivity, base invariance and Characteristicity.

computed above) are presented. The original rank of MPCE and the rank after adjusting MPCE with Multilateral Price Index are presented in table 2. As a result, the ranking of states is changed as much as 12 places in rural and 9 places in urban. In rural areas, maximum change of rank is observed in Arunachal Pradesh (12 places) followed by Rajasthan (8 places), Manipur (7 places), Haryana and Lakshadweep (both 5 places). In urban areas, the maximum change of rank is observed in Rajasthan (9 places) followed by Nagaland (7 places), Uttar Pradesh and Arunachal Pradesh (both 6 places). There are also States where no change in rank is observed. No change in rank is observed in both rural and urban part of Chandigarh and A & N Islands. Besides these States, no change in rank is observed in rural part of Andhra Pradesh, Maharashtra, Meghalaya and Tamil Nadu; and urban part of Assam, Bihar, Manipur, Meghalaya, Tripura, Daman and Diu and Pondicherry.

Moreover, poverty ranking criterion between two sectors or between States is possible, using the generalized Lorenz curve of the poor, if the poverty line across the sectors or States is fixed and exogenous. In view of spatial difference in price level, the assumption of fixed and exogenous poverty line may not be very reasonable assumption. The differences in poverty line between States and sectors due to price differences between States and/or between sectors can be eliminated using the multilateral price index.

## **Conclusion**

The calculation of multilateral price index is very useful particularly in India where spatial price variation exists. The official estimates of consumer price indexes do not provide any idea about spatial price variation. In this paper some attempt is made to compute such price variation. However, the analysis is done on the basis of unit-value not on actual price. There is some difference between unit value and price. The impact of quality is embodied in the unit value. However, the consumer expenditure data of NSS do not provide any idea of price but unit value. To get the estimate of price, the quality effect has to be eliminated from unit value (see Deaton (1997)). In addition, per capita expenditures have been considered as price of services, since the actual prices are not available. This may be thought of as second best solution in the absence of such data. The multilateral price indexes can be calculated following above EKS procedure using the collected price data and these limitations can be avoided.

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Table 1R: The Multilateral Price Index Number of **rural India** for the year 2009-10

State	AP	ARP	ASM	BHR	CHG	DEL	GOA	GUJ	HAR	HP	J&K	JHK	KTK	KER	MP	MAH	MAN	MEG	MIZ	NAG	ORS	PUN	RAJ	SKM	TN	TRP	UTC	UP	WB	A&N	CHN	DNH	DD	LKH	PON
AP	1.000	1.362	0.916	0.967	0.881	1.196	1.207	0.973	0.996	1.052	1.080	0.930	0.896	1.223	0.909	0.993	1.167	1.012	1.030	1.189	0.871	1.096	0.879	1.074	0.987	0.940	1.198	0.875	0.916	1.195	1.388	0.926	1.171	1.091	1.143
ARP	0.734	1.000	0.673	0.710	0.647	0.878	0.886	0.714	0.731	0.773	0.793	0.683	0.658	0.898	0.668	0.730	0.857	0.743	0.756	0.873	0.640	0.805	0.645	0.789	0.725	0.690	0.880	0.642	0.673	0.878	1.019	0.680	0.860	0.801	0.839
ASM	1.092	1.487	1.000	1.056	0.962	1.305	1.318	1.062	1.087	1.149	1.179	1.015	0.979	1.335	0.992	1.085	1.274	1.105	1.125	1.298	0.951	1.196	0.959	1.173	1.078	1.026	1.308	0.955	1.000	1.305	1.515	1.011	1.279	1.191	1.248
BHR	1.034	1.408	0.947	1.000	0.911	1.236	1.248	1.006	1.029	1.088	1.117	0.961	0.927	1.264	0.940	1.027	1.207	1.046	1.065	1.230	0.901	1.133	0.908	1.110	1.020	0.971	1.238	0.904	0.947	1.236	1.435	0.958	1.211	1.128	1.182
CHG	1.135	1.546	1.040	1.098	1.000	1.357	1.370	1.104	1.130	1.194	1.226	1.055	1.017	1.388	1.032	1.128	1.325	1.149	1.169	1.350	0.989	1.244	0.997	1.219	1.120	1.067	1.359	0.993	1.040	1.357	1.575	1.051	1.329	1.238	1.297
DEL	0.836	1.139	0.766	0.809	0.737	1.000	1.010	0.814	0.833	0.880	0.904	0.778	0.750	1.023	0.760	0.831	0.976	0.847	0.862	0.995	0.729	0.917	0.735	0.899	0.826	0.786	1.002	0.732	0.767	1.000	1.161	0.775	0.980	0.912	0.956
GOA	0.829	1.128	0.759	0.801	0.730	0.991	1.000	0.806	0.825	0.872	0.895	0.771	0.743	1.013	0.753	0.823	0.967	0.839	0.853	0.985	0.722	0.908	0.728	0.890	0.818	0.779	0.992	0.725	0.759	0.990	1.150	0.768	0.970	0.904	0.947
GUJ	1.028	1.400	0.941	0.994	0.906	1.229	1.241	1.000	1.024	1.082	1.110	0.956	0.921	1.257	0.934	1.021	1.200	1.040	1.059	1.222	0.895	1.126	0.903	1.104	1.015	0.966	1.231	0.899	0.942	1.229	1.427	0.952	1.204	1.121	1.175
HAR	1.004	1.367	0.920	0.971	0.885	1.200	1.212	0.977	1.000	1.057	1.085	0.934	0.900	1.228	0.913	0.998	1.172	1.016	1.034	1.194	0.875	1.100	0.882	1.079	0.991	0.944	1.203	0.878	0.920	1.200	1.394	0.930	1.176	1.095	1.148
HP	0.950	1.294	0.870	0.919	0.837	1.136	1.147	0.925	0.946	1.000	1.027	0.884	0.852	1.162	0.864	0.944	1.109	0.962	0.979	1.130	0.828	1.041	0.835	1.021	0.938	0.893	1.138	0.831	0.871	1.136	1.319	0.880	1.113	1.036	1.086
J&K	0.926	1.261	0.848	0.895	0.816	1.107	1.117	0.901	0.922	0.974	1.000	0.861	0.830	1.132	0.842	0.920	1.081	0.937	0.954	1.101	0.806	1.014	0.813	0.994	0.914	0.870	1.109	0.810	0.848	1.107	1.285	0.858	1.084	1.010	1.058
JHK	1.075	1.464	0.985	1.040	0.948	1.286	1.298	1.046	1.071	1.132	1.162	1.000	0.964	1.315	0.978	1.068	1.255	1.088	1.108	1.279	0.937	1.178	0.945	1.155	1.061	1.011	1.288	0.941	0.985	1.285	1.493	0.996	1.259	1.173	1.229
KTK	1.116	1.519	1.022	1.079	0.983	1.334	1.346	1.085	1.111	1.174	1.205	1.037	1.000	1.365	1.014	1.108	1.302	1.129	1.149	1.327	0.972	1.222	0.980	1.198	1.101	1.048	1.336	0.976	1.022	1.334	1.548	1.034	1.307	1.217	1.275
KER	0.818	1.113	0.749	0.791	0.720	0.977	0.987	0.795	0.814	0.860	0.883	0.760	0.733	1.000	0.743	0.812	0.954	0.828	0.842	0.972	0.712	0.896	0.718	0.878	0.807	0.768	0.979	0.715	0.749	0.977	1.135	0.757	0.957	0.892	0.935
MP	1.100	1.498	1.008	1.064	0.969	1.315	1.328	1.070	1.095	1.158	1.188	1.023	0.986	1.346	1.000	1.093	1.284	1.113	1.133	1.308	0.958	1.205	0.967	1.182	1.086	1.034	1.318	0.962	1.008	1.315	1.527	1.019	1.288	1.200	1.257
MAH	1.007	1.371	0.922	0.974	0.887	1.203	1.215	0.979	1.002	1.059	1.087	0.936	0.902	1.231	0.915	1.000	1.175	1.019	1.037	1.197	0.877	1.103	0.885	1.081	0.994	0.946	1.206	0.880	0.922	1.203	1.397	0.933	1.179	1.098	1.151
MAN	0.857	1.167	0.785	0.829	0.755	1.024	1.034	0.834	0.853	0.902	0.925	0.797	0.768	1.048	0.779	0.851	1.000	0.867	0.882	1.019	0.746	0.939	0.753	0.920	0.846	0.805	1.026	0.749	0.785	1.024	1.189	0.794	1.003	0.934	0.979
MEG	0.988	1.345	0.905	0.956	0.871	1.181	1.192	0.961	0.984	1.040	1.067	0.919	0.886	1.208	0.898	0.981	1.153	1.000	1.018	1.175	0.861	1.082	0.868	1.061	0.975	0.928	1.183	0.864	0.905	1.181	1.371	0.915	1.157	1.078	1.129
MIZ	0.971	1.322	0.889	0.939	0.855	1.161	1.172	0.945	0.967	1.022	1.049	0.903	0.870	1.187	0.883	0.964	1.133	0.983	1.000	1.155	0.846	1.064	0.853	1.043	0.958	0.912	1.163	0.849	0.890	1.161	1.347	0.899	1.137	1.059	1.110
NAG	0.841	1.145	0.770	0.813	0.741	1.005	1.015	0.818	0.837	0.885	0.908	0.782	0.754	1.028	0.764	0.835	0.981	0.851	0.866	1.000	0.732	0.921	0.739	0.903	0.830	0.790	1.007	0.735	0.770	1.005	1.167	0.779	0.985	0.917	0.961

State	AP	ARP	ASM	BHR	CHG	DEL	GOA	GUJ	HAR	HP	J&K	JHK	KTK	KER	MP	MAH	MAN	MEG	MIZ	NAG	ORS	PUN	RAJ	SKM	TN	TRP	UTC	UP	WB	A&N	CHN	DNH	DD	LKH	PON
ORS	1.148	1.563	1.051	1.110	1.011	1.372	1.385	1.117	1.143	1.208	1.240	1.067	1.029	1.404	1.044	1.140	1.340	1.162	1.182	1.365	1.000	1.258	1.009	1.233	1.133	1.079	1.375	1.004	1.052	1.372	1.593	1.063	1.344	1.252	1.312
PUN	0.913	1.243	0.836	0.883	0.804	1.091	1.102	0.888	0.909	0.960	0.986	0.849	0.818	1.116	0.830	0.907	1.065	0.924	0.940	1.086	0.795	1.000	0.802	0.980	0.901	0.858	1.093	0.798	0.836	1.091	1.267	0.846	1.069	0.995	1.043
RAJ	1.138	1.550	1.042	1.101	1.003	1.360	1.373	1.107	1.133	1.198	1.229	1.058	1.020	1.392	1.034	1.131	1.328	1.152	1.172	1.353	0.991	1.247	1.000	1.222	1.123	1.069	1.363	0.995	1.043	1.360	1.579	1.054	1.333	1.241	1.301
SKM	0.931	1.268	0.853	0.901	0.820	1.113	1.124	0.906	0.927	0.980	1.006	0.866	0.834	1.139	0.846	0.925	1.087	0.942	0.959	1.107	0.811	1.020	0.818	1.000	0.919	0.875	1.115	0.814	0.853	1.113	1.292	0.862	1.090	1.015	1.064
TN	1.013	1.380	0.928	0.980	0.893	1.211	1.223	0.986	1.009	1.066	1.094	0.942	0.908	1.239	0.921	1.006	1.183	1.025	1.044	1.205	0.883	1.110	0.890	1.088	1.000	0.952	1.213	0.886	0.928	1.211	1.406	0.939	1.186	1.105	1.158
TRP	1.064	1.449	0.975	1.029	0.938	1.272	1.284	1.035	1.060	1.120	1.150	0.990	0.954	1.302	0.967	1.057	1.242	1.077	1.096	1.266	0.927	1.166	0.935	1.143	1.050	1.000	1.275	0.931	0.975	1.272	1.477	0.986	1.246	1.161	1.216
UTC	0.835	1.137	0.765	0.808	0.736	0.998	1.008	0.812	0.831	0.879	0.902	0.776	0.748	1.021	0.759	0.829	0.975	0.845	0.860	0.993	0.727	0.915	0.734	0.897	0.824	0.785	1.000	0.730	0.765	0.998	1.159	0.773	0.978	0.911	0.954
UP	1.143	1.557	1.047	1.106	1.007	1.367	1.380	1.112	1.139	1.203	1.235	1.063	1.025	1.399	1.039	1.136	1.335	1.157	1.178	1.360	0.996	1.253	1.005	1.228	1.129	1.074	1.369	1.000	1.048	1.367	1.587	1.059	1.339	1.247	1.307
WB	1.091	1.486	1.000	1.056	0.962	1.305	1.317	1.062	1.087	1.148	1.179	1.015	0.978	1.335	0.992	1.084	1.274	1.105	1.124	1.298	0.951	1.196	0.959	1.172	1.077	1.026	1.307	0.954	1.000	1.305	1.515	1.011	1.278	1.190	1.247
A&N	0.837	1.139	0.766	0.809	0.737	1.000	1.010	0.814	0.833	0.880	0.904	0.778	0.750	1.023	0.760	0.831	0.976	0.847	0.862	0.995	0.729	0.917	0.735	0.899	0.826	0.786	1.002	0.732	0.767	1.000	1.161	0.775	0.980	0.912	0.956
CHN	0.720	0.981	0.660	0.697	0.635	0.861	0.870	0.701	0.717	0.758	0.778	0.670	0.646	0.881	0.655	0.716	0.841	0.729	0.742	0.857	0.628	0.789	0.633	0.774	0.711	0.677	0.863	0.630	0.660	0.861	1.000	0.667	0.844	0.786	0.824
DNH	1.079	1.470	0.989	1.044	0.951	1.290	1.303	1.050	1.075	1.136	1.166	1.004	0.968	1.320	0.981	1.072	1.260	1.093	1.112	1.284	0.940	1.183	0.949	1.159	1.065	1.014	1.293	0.944	0.989	1.290	1.498	1.000	1.264	1.177	1.234
DD	0.854	1.163	0.782	0.826	0.752	1.021	1.031	0.831	0.850	0.899	0.922	0.794	0.765	1.044	0.776	0.848	0.997	0.864	0.880	1.016	0.744	0.936	0.750	0.917	0.843	0.802	1.023	0.747	0.782	1.021	1.185	0.791	1.000	0.931	0.976
LKH	0.917	1.249	0.840	0.887	0.808	1.096	1.107	0.892	0.913	0.965	0.990	0.853	0.822	1.121	0.834	0.911	1.070	0.928	0.944	1.091	0.799	1.005	0.806	0.985	0.905	0.862	1.098	0.802	0.840	1.096	1.273	0.849	1.074	1.000	1.048
PON	0.875	1.191	0.801	0.846	0.771	1.046	1.056	0.851	0.871	0.921	0.945	0.814	0.784	1.070	0.795	0.869	1.021	0.886	0.901	1.041	0.762	0.959	0.769	0.940	0.864	0.822	1.048	0.765	0.802	1.046	1.214	0.810	1.025	0.954	1.000

The result is presented in a matrix format.  $EKS(i,j)$  represents the multilateral price index of  $j$ th state with base state  $i$ .

Table 1U: The Multilateral Price Index Number of **urban India** for the year 2009-10

State	AP	ARP	ASM	BHR	CHG	DEL	GOA	GUJ	HAR	HP	J&K	JHK	KTK	KER	MP	MAH	MAN	MEG	MIZ	NAG	ORS	PUN	RAJ	SKM	TN	TRP	UTC	UP	WB	A&N	CHN	DNH	DD	LKH	PON
AP	1.000	1.005	0.909	0.822	0.866	1.063	1.004	0.938	0.972	0.994	0.947	0.920	0.995	1.027	0.916	1.045	0.901	0.910	0.941	0.987	0.876	0.965	0.821	1.032	0.931	0.883	0.859	0.843	0.940	1.127	1.201	0.881	0.894	0.970	1.087
ARP	0.995	1.000	0.904	0.818	0.862	1.058	0.999	0.934	0.967	0.990	0.942	0.915	0.990	1.022	0.911	1.040	0.896	0.906	0.936	0.982	0.871	0.960	0.817	1.027	0.926	0.878	0.854	0.839	0.935	1.121	1.195	0.877	0.890	0.966	1.081
ASM	1.100	1.106	1.000	0.904	0.953	1.170	1.105	1.033	1.069	1.094	1.042	1.012	1.095	1.130	1.007	1.150	0.991	1.001	1.035	1.086	0.963	1.062	0.903	1.136	1.024	0.971	0.945	0.928	1.034	1.240	1.321	0.969	0.984	1.068	1.195
BHR	1.217	1.223	1.106	1.000	1.054	1.294	1.222	1.142	1.183	1.210	1.153	1.119	1.211	1.250	1.114	1.272	1.096	1.108	1.145	1.201	1.066	1.175	0.999	1.256	1.133	1.074	1.045	1.026	1.144	1.371	1.462	1.072	1.088	1.181	1.322
CHG	1.155	1.160	1.050	0.949	1.000	1.228	1.159	1.084	1.122	1.148	1.093	1.062	1.149	1.186	1.057	1.207	1.040	1.051	1.087	1.139	1.011	1.114	0.948	1.192	1.075	1.019	0.991	0.974	1.085	1.301	1.387	1.017	1.033	1.121	1.255
DEL	0.941	0.945	0.855	0.773	0.815	1.000	0.944	0.883	0.914	0.935	0.891	0.865	0.936	0.966	0.861	0.983	0.847	0.856	0.885	0.928	0.824	0.908	0.772	0.971	0.876	0.830	0.808	0.793	0.884	1.060	1.130	0.829	0.841	0.913	1.022
GOA	0.996	1.001	0.905	0.818	0.863	1.059	1.000	0.935	0.968	0.990	0.943	0.916	0.991	1.023	0.912	1.041	0.897	0.907	0.937	0.983	0.872	0.961	0.818	1.028	0.927	0.879	0.855	0.840	0.936	1.122	1.196	0.878	0.891	0.967	1.082
GUJ	1.066	1.071	0.969	0.876	0.923	1.133	1.070	1.000	1.036	1.060	1.009	0.980	1.060	1.094	0.976	1.114	0.960	0.970	1.003	1.051	0.933	1.028	0.875	1.100	0.992	0.941	0.915	0.898	1.001	1.201	1.280	0.939	0.953	1.034	1.158
HAR	1.029	1.034	0.935	0.845	0.891	1.094	1.033	0.966	1.000	1.023	0.974	0.946	1.024	1.057	0.942	1.076	0.927	0.937	0.968	1.015	0.901	0.993	0.845	1.062	0.958	0.908	0.883	0.868	0.967	1.159	1.236	0.907	0.920	0.999	1.118
HP	1.006	1.011	0.914	0.826	0.871	1.069	1.010	0.944	0.977	1.000	0.952	0.925	1.001	1.033	0.921	1.051	0.906	0.915	0.946	0.992	0.881	0.970	0.825	1.038	0.936	0.888	0.863	0.848	0.945	1.133	1.208	0.886	0.899	0.976	1.093
J&K	1.056	1.061	0.960	0.868	0.915	1.123	1.060	0.991	1.026	1.050	1.000	0.971	1.051	1.084	0.967	1.104	0.951	0.961	0.994	1.042	0.925	1.019	0.867	1.090	0.983	0.932	0.907	0.890	0.992	1.190	1.268	0.930	0.944	1.025	1.147
JHK	1.087	1.093	0.988	0.893	0.942	1.156	1.092	1.020	1.057	1.081	1.030	1.000	1.082	1.117	0.996	1.137	0.979	0.990	1.023	1.073	0.952	1.049	0.892	1.122	1.012	0.960	0.933	0.917	1.022	1.225	1.306	0.958	0.972	1.055	1.181
KTK	1.005	1.010	0.913	0.826	0.870	1.068	1.009	0.943	0.977	0.999	0.952	0.924	1.000	1.032	0.920	1.051	0.905	0.915	0.946	0.992	0.880	0.970	0.825	1.037	0.935	0.887	0.863	0.847	0.945	1.132	1.207	0.885	0.899	0.975	1.092
KER	0.974	0.979	0.885	0.800	0.843	1.035	0.978	0.914	0.946	0.968	0.922	0.896	0.969	1.000	0.892	1.018	0.877	0.886	0.916	0.961	0.853	0.940	0.799	1.005	0.906	0.860	0.836	0.821	0.915	1.097	1.170	0.858	0.871	0.945	1.058
MP	1.092	1.097	0.993	0.897	0.946	1.161	1.096	1.025	1.061	1.086	1.034	1.004	1.087	1.121	1.000	1.142	0.983	0.994	1.028	1.077	0.956	1.054	0.896	1.127	1.017	0.964	0.938	0.921	1.026	1.230	1.312	0.962	0.977	1.060	1.187
MAH	0.957	0.961	0.869	0.786	0.828	1.017	0.960	0.898	0.930	0.951	0.906	0.880	0.952	0.982	0.876	1.000	0.862	0.871	0.900	0.944	0.838	0.923	0.785	0.987	0.890	0.844	0.821	0.807	0.899	1.078	1.149	0.843	0.855	0.928	1.039
MAN	1.110	1.116	1.009	0.912	0.962	1.180	1.115	1.042	1.079	1.104	1.052	1.021	1.105	1.140	1.017	1.161	1.000	1.011	1.045	1.096	0.972	1.072	0.911	1.146	1.034	0.980	0.953	0.936	1.044	1.251	1.334	0.978	0.993	1.078	1.206
MEG	1.099	1.104	0.999	0.903	0.951	1.168	1.103	1.031	1.068	1.092	1.040	1.010	1.093	1.128	1.006	1.148	0.989	1.000	1.034	1.084	0.962	1.060	0.902	1.134	1.023	0.970	0.943	0.926	1.033	1.238	1.320	0.968	0.982	1.066	1.194
MIZ	1.063	1.068	0.966	0.873	0.920	1.130	1.067	0.997	1.033	1.057	1.006	0.977	1.058	1.091	0.973	1.111	0.957	0.967	1.000	1.049	0.931	1.026	0.872	1.097	0.989	0.938	0.912	0.896	0.999	1.197	1.276	0.936	0.950	1.031	1.155

State	AP	ARP	ASM	BHR	CHG	DEL	GOA	GUJ	HAR	HP	J&K	JHK	KTK	KER	MP	MAH	MAN	MEG	MIZ	NAG	ORS	PUN	RAJ	SKM	TN	TRP	UTC	UP	WB	A&N	CHN	DNH	DD	LKH	PON
NAG	1.014	1.018	0.921	0.833	0.878	1.077	1.018	0.951	0.985	1.008	0.960	0.932	1.009	1.041	0.928	1.059	0.913	0.923	0.954	1.000	0.888	0.978	0.832	1.046	0.943	0.895	0.870	0.855	0.953	1.142	1.217	0.893	0.906	0.984	1.101
ORS	1.142	1.148	1.038	0.938	0.989	1.214	1.146	1.072	1.110	1.135	1.081	1.050	1.136	1.173	1.046	1.194	1.028	1.039	1.075	1.127	1.000	1.102	0.937	1.179	1.063	1.008	0.980	0.963	1.073	1.287	1.372	1.006	1.021	1.108	1.241
PUN	1.036	1.041	0.942	0.851	0.897	1.102	1.040	0.972	1.007	1.030	0.981	0.953	1.031	1.064	0.949	1.083	0.933	0.943	0.975	1.022	0.907	1.000	0.851	1.070	0.965	0.915	0.890	0.874	0.974	1.168	1.245	0.913	0.927	1.006	1.126
RAJ	1.218	1.224	1.107	1.001	1.055	1.295	1.223	1.143	1.184	1.211	1.154	1.121	1.212	1.251	1.116	1.274	1.097	1.109	1.146	1.202	1.067	1.176	1.000	1.257	1.134	1.075	1.046	1.027	1.145	1.373	1.463	1.073	1.089	1.182	1.324
SKM	0.969	0.974	0.881	0.796	0.839	1.030	0.973	0.909	0.942	0.963	0.918	0.891	0.964	0.995	0.887	1.013	0.873	0.882	0.912	0.956	0.848	0.935	0.795	1.000	0.902	0.855	0.832	0.817	0.911	1.092	1.164	0.854	0.866	0.940	1.053
TN	1.074	1.080	0.976	0.883	0.930	1.142	1.079	1.008	1.044	1.068	1.017	0.988	1.069	1.103	0.984	1.123	0.967	0.978	1.011	1.060	0.941	1.037	0.882	1.109	1.000	0.948	0.922	0.906	1.010	1.210	1.290	0.946	0.961	1.042	1.167
TRP	1.133	1.138	1.030	0.931	0.981	1.204	1.137	1.063	1.101	1.126	1.073	1.042	1.127	1.163	1.037	1.184	1.020	1.031	1.066	1.118	0.992	1.093	0.930	1.169	1.054	1.000	0.973	0.955	1.065	1.276	1.361	0.998	1.013	1.099	1.231
UTC	1.165	1.170	1.059	0.957	1.009	1.238	1.169	1.093	1.132	1.158	1.103	1.071	1.159	1.196	1.067	1.218	1.049	1.060	1.096	1.149	1.020	1.124	0.956	1.202	1.084	1.028	1.000	0.982	1.095	1.312	1.399	1.026	1.041	1.130	1.265
UP	1.186	1.192	1.078	0.974	1.027	1.261	1.191	1.113	1.153	1.179	1.123	1.091	1.180	1.218	1.086	1.240	1.068	1.080	1.116	1.170	1.039	1.145	0.973	1.224	1.104	1.047	1.018	1.000	1.115	1.336	1.424	1.045	1.061	1.151	1.289
WB	1.064	1.069	0.967	0.874	0.921	1.131	1.068	0.999	1.034	1.058	1.008	0.979	1.059	1.093	0.974	1.112	0.958	0.968	1.001	1.050	0.932	1.027	0.873	1.098	0.990	0.939	0.914	0.897	1.000	1.199	1.278	0.937	0.951	1.033	1.156
A&N	0.887	0.892	0.807	0.729	0.769	0.943	0.891	0.833	0.863	0.882	0.840	0.816	0.883	0.911	0.813	0.928	0.799	0.808	0.835	0.876	0.777	0.856	0.728	0.916	0.826	0.783	0.762	0.748	0.834	1.000	1.066	0.782	0.794	0.861	0.964
CHN	0.833	0.837	0.757	0.684	0.721	0.885	0.836	0.781	0.809	0.828	0.788	0.766	0.828	0.855	0.762	0.870	0.750	0.758	0.783	0.821	0.729	0.803	0.683	0.859	0.775	0.735	0.715	0.702	0.783	0.938	1.000	0.734	0.745	0.808	0.905
DNH	1.135	1.141	1.032	0.933	0.983	1.207	1.140	1.065	1.103	1.129	1.075	1.044	1.129	1.166	1.039	1.187	1.022	1.033	1.068	1.120	0.994	1.095	0.932	1.172	1.057	1.002	0.975	0.957	1.067	1.279	1.363	1.000	1.015	1.101	1.233
DD	1.118	1.124	1.016	0.919	0.969	1.189	1.123	1.049	1.087	1.112	1.059	1.029	1.113	1.148	1.024	1.169	1.007	1.018	1.052	1.103	0.979	1.079	0.918	1.154	1.041	0.987	0.960	0.943	1.051	1.260	1.343	0.985	1.000	1.085	1.215
LKH	1.030	1.036	0.937	0.847	0.892	1.096	1.035	0.967	1.002	1.025	0.976	0.948	1.025	1.058	0.944	1.077	0.928	0.938	0.970	1.017	0.902	0.994	0.846	1.064	0.959	0.910	0.885	0.869	0.969	1.161	1.238	0.908	0.921	1.000	1.120
PON	0.920	0.925	0.837	0.756	0.797	0.978	0.924	0.864	0.894	0.915	0.872	0.847	0.916	0.945	0.843	0.962	0.829	0.838	0.866	0.908	0.806	0.888	0.755	0.950	0.857	0.812	0.790	0.776	0.865	1.037	1.105	0.811	0.823	0.893	1.000

The result is presented in a matrix format.  $EKS(i,j)$  represents the multilateral price index of  $j^{\text{th}}$  state with base state  $i$ .

**Table 2R: State-wise MPCE (MRP) and their ranks both original and in terms of price level of Andhra Pradesh in rural**

State	Original		Index with base price of Andhra Pradesh	after adjusting for spatial price variation	
	MPCE (MRP)	Rank		MPCE (MRP)	Rank
(1)	(2)	(3)	(4)	(5)	(6)
Andhra Pradesh	1090.28	18	1.00000	1090.28	18
Arunachal Pradesh	1227.43	16	1.36182	901.32	28
Assam	866.57	27	0.91603	946.01	26
Bihar	689.37	34	0.96735	712.64	35
Chhattisgarh	685.89	35	0.88115	778.40	34
Delhi	1714.29	4	1.19551	1433.94	5
Goa	1673.31	6	1.20697	1386.37	10
Gujarat	1065.4	19	0.97296	1095.01	17
Haryana	1423.27	11	0.99587	1429.17	6
Himachal Pradesh	1412.7	12	1.05237	1342.40	11
Jammu & Kashmir	1243.63	14	1.08031	1151.18	15
Jharkhand	724.22	32	0.92996	778.76	33
Karnataka	887.86	26	0.89638	990.50	23
Kerala	1763.14	3	1.22319	1441.43	4
Madhya Pradesh	802.79	31	0.90910	883.06	30
Maharashtra	1048.41	20	0.99349	1055.28	20
Manipur	958.8	25	1.16729	821.39	32
Meghalaya	967.02	24	1.01223	955.34	24
Mizoram	1098.13	17	1.03010	1066.04	19
Nagaland	1378.61	13	1.18941	1159.07	14
Orissa	715.59	33	0.87117	821.41	31
Punjab	1565.53	9	1.09573	1428.76	7
Rajasthan	1035.15	21	0.87880	1177.91	13
Sikkim	1234.6	15	1.07420	1149.32	16
Tamil Nadu	1017.07	22	0.98712	1030.34	22
Tripura	980.21	23	0.93976	1043.04	21
Uttar Pradesh	832.18	29	0.87464	951.45	25
Uttaranchal	1694.67	5	1.19777	1414.85	8
West Bengal	857.77	28	0.91640	936.02	27
A & N Islands	1813.61	2	1.19545	1517.09	2
Chandigarh	2767.89	1	1.38802	1994.13	1
Dadra & N. Haveli	831.01	30	0.92644	896.99	29
Daman & Diu	1562.41	10	1.17118	1334.05	12
Lakshadweep	1579.46	8	1.09069	1448.13	3
Pondicherry	1589.56	7	1.14308	1390.59	9

**Table 2U: State-wise MPCE (MRP) and their ranks both original and in terms of price level of Andhra Pradesh in urban**

State	Original		Index with base price of Andhra Pradesh	after adjusting for spatial price variation	
	MPCE (MRP)	Rank		MPCE (MRP)	Rank
(1)	(2)	(3)	(4)	(5)	(6)
Andhra Pradesh	2015.44	13	1.00000	2015.44	15
Arunachal Pradesh	1601.63	25	1.00490	1593.82	31
Assam	1604.06	24	0.90892	1764.80	24
Bihar	1096.56	34	0.82164	1334.60	34
Chhattisgarh	1370.31	33	0.86604	1582.27	32
Delhi	2411.69	4	1.06310	2268.54	5
Goa	2219.07	8	1.00394	2210.36	6
Gujarat	1914.17	15	0.93846	2039.69	13
Haryana	2008.16	14	0.97186	2066.31	12
Himachal Pradesh	2315.07	5	0.99436	2328.20	4
Jammu & Kashmir	1666.81	21	0.94699	1760.11	25
Jharkhand	1442.06	32	0.91978	1567.83	33
Karnataka	2060.32	12	0.99507	2070.53	11
Kerala	2267.16	6	1.02694	2207.68	7
Madhya Pradesh	1529.82	27	0.91571	1670.64	29
Maharashtra	2251.44	7	1.04534	2153.79	9
Manipur	1061.86	35	0.90058	1179.08	35
Meghalaya	1505.2	30	0.91023	1653.65	30
Mizoram	1779.46	18	0.94096	1891.11	21
Nagaland	1731.54	19	0.98666	1754.95	26
Orissa	1468.84	31	0.87572	1677.29	28
Punjab	2072.11	11	0.96502	2147.22	10
Rajasthan	1576.6	26	0.82082	1920.76	17
Sikkim	2100.35	10	1.03214	2034.95	14
Tamil Nadu	1794.52	17	0.93086	1927.81	16
Tripura	1675.07	20	0.88277	1897.52	20
Uttar Pradesh	1512.16	29	0.84317	1793.42	23
Uttaranchal	1643.16	23	0.85859	1913.79	19
West Bengal	1801.03	16	0.93985	1916.30	18
A & N Islands	2826.43	2	1.12677	2508.44	2
Chandigarh	3525.25	1	1.20107	2935.09	1
Dadra & N. Haveli	1524.33	28	0.88099	1730.25	27
Daman & Diu	1665.66	22	0.89421	1862.72	22
Lakshadweep	2137.29	9	0.97041	2202.46	8
Pondicherry	2698.33	3	1.08650	2483.51	3

# Equivalence scale: evidences from NSS 66th round consumption data

Onkar Prosad Ghosh<sup>1</sup>

## 1. INTRODUCTION

In India, the Planning Commission has been estimating the percentage of poor at national and state levels using the large sample survey data on household consumer expenditure conducted by the National Sample Survey Office (NSSO). The state-wise rural and urban poverty lines were last released for the year 2004-05. State-wise poverty ratios are calculated sector wise on the basis of the proportion of persons, whose Monthly per Capita Expenditure (MPCE) does not exceed the corresponding poverty line. The poverty line at all-India level is worked out from the expenditure class-wise distribution of persons and the poverty ratio at all-India level. The poverty ratio at all-India is obtained as the weighted average of the state-wise poverty ratio. While using MPCE for such comparison, the inherent assumption is that the total consumption of a household is equally shared by all members irrespective of its size and age-sex composition. This procedure has a chance of mis-representing large households as the poor/non-poor. If a community tends to have disproportionately large households, aggregate poverty may be overblown. Also it is noted that adults consume food more than children do, and larger households spend more on some necessities than smaller households do. Therefore, for aggregate poverty assessment a properly constructed household *equivalence scales* is appropriate to use. In a fixed price, it indicates the cost differential for a household, due to demographic characteristics e.g., household size, age and sex of family members and other relevant household attributes like household occupation, primary source of cooking, primary source of lighting, etc to reach the welfare level of a *reference household*.

In this paper an attempt has been made to empirically assess the wrong estimation of aggregate poverty by ignoring the varying household age-composition and scale economies in household consumption. Several studies have been made by researchers across the globe and different methodologies are suggested. In the next section, the discussion is based on two popular models of estimating equivalence scales; the third section briefly describes the empirical model. In the fourth section, certain recommendations were made based on the empirical results and it is followed by a concluding section, where the implication of equivalence scales on estimates of aggregate poverty in India is discussed.

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## 2. METHODOLOGY:

While constructing the equivalence scale, the prime requirements are models which are easy to implement and data which is readily available. On the basis of favourable assumptions, these requirements are met by two of the most popular single-equation models suggested by Engel and Rothbarth. The brief theoretical description is as follows -

Models of equivalence scales assume the welfare is given by

$$u = u(q,x) \quad \dots\dots\dots (1)$$

where  $q$  is a vector of household consumption levels and  $x$  is a vector of demographic characteristics. Associated with (1) is an expenditure function which relates the minimum expenditure  $y$  necessary to attain a utility level  $u$  at prices  $p$  and household characteristics  $x$ :

$$c(u,p,x) = y \quad \dots\dots\dots (2)$$

Then, if  $u^r$  and  $p^r$  are some reference utility level and price vector, the equivalence scale for any household  $h$  with characteristic  $x^h$  is derived as the ratio of its cost function to that of the reference household with characteristic  $x^r$ ,

$$\varepsilon^h = \frac{c(u^r,p^r,x^h)}{c(u^r,p^r,x^r)} \quad \dots\dots\dots (3)$$

The above definition mentioned in (3) has certain limitations. Firstly, this scale is dependent on the chosen base level of utility or expenditure, as well as on prices and demographic characteristics. Lewbell [1] proposed an equivalence scale which is independent of a base level of income or utility. Also, this definition assumes that changes in demographic characteristics do not affect prices.

Deaton *et al* [2] suggested the *Engel cost function* of household  $h$  with demographic characteristic  $x^h$  based on the assumption that (i) for households with same demographic characteristics, food share varies inversely with total household income or expenditure and that (ii) for households with same income, share on food varies directly with number of children. This method is also known as *Iso-prop method*. This model presumes that the share of food in total household expenditures correctly indicates the standard of living of adults. This function is as follows

$$C(u^h,p^h,x^h)=\mu(x^h)\varphi(u^h,p^h) \quad \dots\dots\dots (4)$$

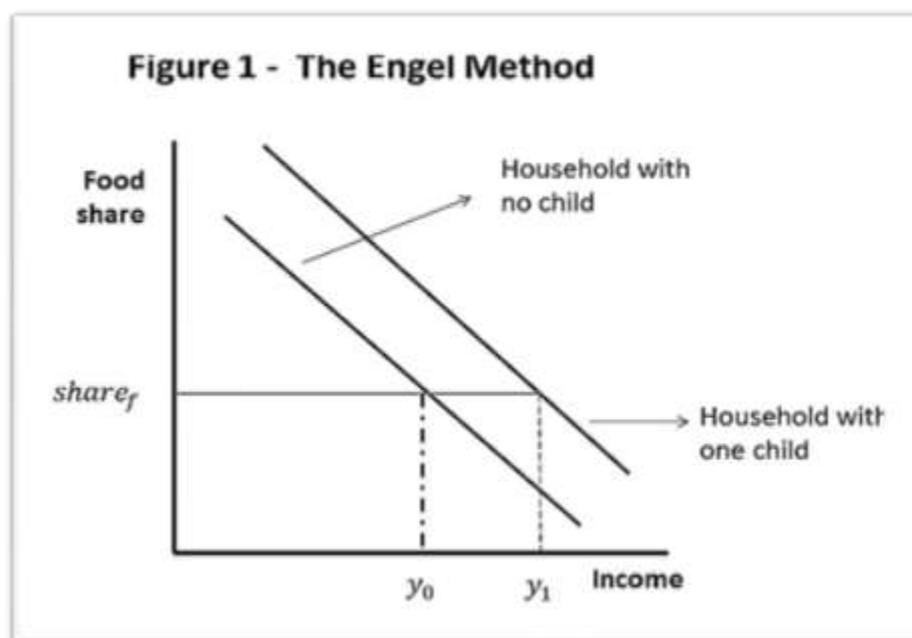
Where  $\mu(x^h)$  is the number of adult equivalents of household  $h$  and  $\varphi(u^h,p^h)$  is the per capita cost function, which is that of the reference household for which  $\mu(x^h)=1$ . In a simple language, the cost function of any household  $h$  with demographic characteristics  $x^h$  is simply the reference household's expenditure function scaled up or down by the number of adult equivalent of the household under consideration. Taking logarithm of (4) and then

differentiating it with respect to the price of food ( $p_f$ ) the Engel food share equation is expressed as

$$Share_f^h = \frac{\delta \ln C(u^h, p^h, x^h)}{\delta \ln p_f} = \frac{\delta [\ln \mu(x^h) + \ln \varphi(u^h, p^h)]}{\delta \ln p_f} = \frac{\delta [\ln \varphi(u^h, p^h)]}{\delta \ln p_f} = \zeta(u^h, p^h) \dots (5)$$

So, at constant prices, food share is directly related with household's utility; hence, it is an indicator of household welfare. In this model, two households are considered equally well-off if they have the same food share irrespective of demographic characteristics and incomes.

Let us explain by using the Figure 1 below. It shows the Engels hypothesis for two different households, one with no child and another with one child. The y-axis reports the Engel indicator of welfare i.e., the share of food on total expenditure, while the x-axis reports the level of income. The figure postulates that at any given level of income, the household with one child has a lower level of welfare (i.e. a greater food share). Alternatively, at any given level of welfare, say  $share_f$ , the household with one child needs more income. The ratio between the nominal incomes of the two households at  $share_f$  would give the additional cost of achieving the same level of welfare with a different household composition.



Next, let us presume that all commodities consumed by households are grouped into two types, namely, those which are consumed purely by adults and those which are consumed by both adults and children, public goods jointly consumed and goods consumed by children only, i.e., *Adult goods* and *Non-adult goods*. Also it is assumed that the presence of children does not affect the relative prices of the goods in the first group. The Rothbarth model is based on the assumption that total expenditures on adult goods correctly indicate adult welfare. This method is also known as *Isolevel method*. The *Rothbarth cost function* for household  $h$  as given by

$$C(u^h, p^{adult\ good}, p^{non-adult\ good}, x^c) = \alpha(u^h, p^{non-adult\ good}, x^c) + \gamma(u^h, p^{non-adult\ good}, p^{adult\ good}) \quad \dots\dots\dots (6)$$

where  $p^{adult\ good}$  and  $p^{non-adult\ good}$  are price vectors for adult good and non-adult goods, respectively, and  $x^c$  is the vector of demographic characteristics for children. The first term,  $\alpha(\cdot)$  is the cost of children, and the second,  $\gamma(\cdot)$ , can be thought of as base or fixed cost.

The total expenditure,  $y$ , is,

$$Y^{adult} + Y^{non-adult} = p^{adult\ good} X^{adult\ good} + p^{non-adult\ good} X^{non-adult\ good}.$$

Applying Shephard's lemma to (6), the expenditure on adult goods is

$$Y^{adult} = \frac{\sum_{i \in Adult\ good} p_i \delta \gamma(u^h, p^{adult\ good}, p^{non-adult\ good})}{\delta p_i} = \tau(u^h, p^{adult\ good}, p^{non-adult\ good}) \quad \dots\dots\dots (7)$$

This indicates that at constant prices, well-being of household  $h$  is directly related with its consumption of adult goods. Also, (7) implies two households with the same consumption level of adult goods are equally well-off, in spite of demographic characteristics and incomes. Interesting to note that if non-adult goods in the Rothbarth model correspond to food in the Engel model, and if foods are necessities, then the Rothbarth equivalence scale is the same as the Engel equivalence scale.

### 3. EMPIRICAL MODEL OF ESTIMATION

Consider first estimating Engel equation for food. One equation, frequently fitting the data well, is the Working-Leser form, with food share as a linear function of the logarithm of total outlay (expenditure). Incorporating demographic composition and other household attributes the model becomes:

$$Share_f = \alpha + \beta \ln y + \sum_i w_i n_i + \varepsilon \quad \dots\dots\dots(8)$$

where  $\ln y$  is the logarithm of total household expenditure,  $n_i$  is demographic composition  $i$ ,  $\varepsilon$  is error term, and  $\alpha, \beta$  and  $w_i$  's are parameters.

To make things simple we considered Model as suggested in FAO literature [3], to understand the additional cost of having one child (OC), two children (TC) and more than two children (MTC) in comparison to the household type having no children using dummy variables, the following model may be considered for any household  $h$

$$Share_f^h = \alpha + \beta \ln y^h + w_1 OC + w_2 TC + w_3 MTC \quad \dots\dots\dots(9)$$

Where OC, TC and MTC assume value 1 if the household is of the corresponding type and zero otherwise. So, the general model (9) is actually containing four different sub-models, one for each household type :

$$\begin{aligned}
 Share_f^{NC} &= \alpha + \beta \ln y^{NC} \\
 Share_f^{OC} &= \alpha + \beta \ln y^{OC} + w_1 \quad \dots\dots\dots(10) \\
 Share_f^{TC} &= \alpha + \beta \ln y^{TC} + w_2 \\
 Share_f^{MTC} &= \alpha + \beta \ln y^{MTC} + w_3
 \end{aligned}$$

At the same level of welfare and transforming logarithms, the Engel equivalence scales can be obtained as

$$\begin{aligned}
 \epsilon^{OC} &= \frac{y^{OC}}{y^{NC}} = e^{-\left(\frac{w_1}{\beta}\right)} \\
 \epsilon^{TC} &= \frac{y^{TC}}{y^{NC}} = e^{-\left(\frac{w_2}{\beta}\right)} \quad \dots\dots\dots(11) \\
 \epsilon^{MTC} &= \frac{y^{MTC}}{y^{NC}} = e^{-\left(\frac{w_3}{\beta}\right)}
 \end{aligned}$$

Obviously, for the reference household,  $\epsilon^{NC}=1$ .

The procedure for estimating the Rothbarth equivalence scale is similar to that by the Engel method. Using the same formulation as that in (8), we estimate the Engel share equation for adult goods.

$$Share_{adult\ good} = \alpha + \beta \ln y + \sum_i a_i n_i + \epsilon \quad \dots\dots\dots(12)$$

where  $\ln y$  is the logarithm of total household expenditure,  $n_i$  is demographic composition  $i$ ,  $\epsilon$  is error term, and  $\alpha, \beta$  and  $a_i$  's are parameters.

#### 4. ANALYSIS OF DATA

In this study, the data on consumer expenditure conducted by National Sample Survey Organization in the period July 2010 – June 2011 i.e NSS 66<sup>th</sup> Round (Schedule Type-I, mixed reference period) is used.

For equivalence scale estimation, only the households consisting of two adult members were considered. The members above the age of 14 were taken as adults.

A snapshot of the data is as follows

<b>Table 1: The availability of data as per NSS 66<sup>th</sup> Round (Sch. Type- I)</b>	
<b>Description</b>	<b>No. of records</b>
No. of households surveyed	100,855
No of households reporting food	100,839
No of households with two adults	33,552
No of households with two adults reporting food	33,548
No of households with two adults reporting adult goods	19,579

Table 2 below gives the Engels equivalent scales for rural and urban areas separately. The estimates were calculated using survey weights. The adjusted R-squares for the model were found to be 0.020 and 0.522 for rural and urban respectively.

For rural the fitted model is

$$Share_f^h = 1.217 - 0.416 \ln y^h + 0.133OC + 0.311TC + 0.471MTC \dots\dots(13)$$

For urban the fitted model is

$$Share_f^h = 1.586 - 0.688 \ln y^h + 0.103OC + 0.263TC + 0.334MTC \dots\dots(14)$$

<b>Table 2: Equivalent scales using Engels method</b>		
<b>Description</b>	<b>Rural</b>	<b>Urban</b>
households with two adults with no child	1.00	1.00
households with two adults with one child	1.38	1.16
households with two adults with two children	2.11	1.47
households with two adults with more than two children	3.11	1.62

Rothbarth's equivalent scales were also attempted. The analysis was again done separately for rural and urban areas. For this analysis , pan, tobacco and intoxicants were considered as *adult goods*. The adjusted R-squares for the model were found to be 0.029 and 0.013 for rural and urban respectively. For rural the fitted model is

$$Share_f^h = 0.028 + 0.030 \ln y^h - 0.085OC - 0.154TC - 0.215MTC \dots\dots(15)$$

For urban, the fitted model is

$$Share_f^h = 0.73 - 0.050 \ln y^h - 0.034OC - 0.086TC - 0.103MTC \dots\dots(16)$$

Because of bad adjusted R-squares, the equivalent scales were not calculated as they may be misleading.

This equivalence scale is actually the deflator to apply to the nominal income of the household order to assure comparability with a two-adult member household. For example, suppose that the nominal income of a two-adult member household is Rs. 1000 and that the same nominal income is gained by a household with two adults and more than two children. In our exercise, in urban area, the two-adult member household is the benchmark. Therefore, its nominal income of Rs.1000 is also its real income. In the case of the household with more than two children, the nominal income of 1000 must be deflated by the equivalence scale in order to have a comparable real income i.e. (1000/1.62). This operation gives rise to a value of about 617. This means that, in terms of well-being, the two-adult member household is

much better off than the household with two adults and more than two children, even though their nominal income is the same.

On the basis of the results above, it may be inferred that there is a clear evidence of uneven consumption pattern inside a household which is heavily dependent of age-composition of household members and hence the method of using *per capita expenditure* appears to be faulty. All households may be broadly grouped according to the age composition of the household members and for each group the equivalence scale may be constructed subject to a *reference group* of households. This selection of reference group is another important issue, which may be looked into on the basis of the current dataset. Also, models with some more parameters may be fitted considering household attributes like household occupation, primary source of cooking, primary source of lighting, etc as suggested by Ballissacan *et al* [4], which may improve the adjusted R-square values but it will lead to more household groups . Interpretation and further application of such model to poverty analysis will be very difficult.

## 5. CONCLUSION

This study may be extended to identify the poor in the new set up and calculate the poverty indices. If the adult equivalent of the  $i^{\text{th}}$  household is  $\epsilon^i$  and  $r$  be the ratio of those whose expenditures are below the poverty line then  $z$  is calculated by adjusting with the mean adult-equivalent expenditure:

$$z = r \left( \frac{1}{N} \right) \sum_{i=1}^N \frac{y^i}{\epsilon^i} \dots\dots\dots(17)$$

where  $\epsilon^i$  is the total number of adult equivalents for household  $i$  and  $N$  is the total number of households.

Finally, the class of poverty indices proposed by Foster, Greer and Thorbecke (FGT) is given by

$$P_\theta = \frac{1}{N} \sum_{i=1}^q \left( \frac{z - \left( \frac{y^i}{\epsilon^i} \right)}{z} \right)^\theta \dots\dots\dots(18)$$

where  $q$  is the number of poor households (having consumption no greater than or equal to  $z$  and  $\theta \geq 0$  is a measure of poverty aversion[5]. The parameter  $\theta$  indicates the importance given to the poorest of the poor: the larger  $\theta$  is, the greater the emphasis given to the poorest households. The head-count poverty index (H), defined as the proportion of the poor, is obtained for  $\theta = 0$  in (18). For  $\theta = 1$ , we get the poverty gap index (PG), defined as the arithmetic mean of the income shortfall which is expressed in proportion to the poverty line over all households. For example, for  $\theta = 2$ , the resulting measure  $P_\theta$  in (18) is actually the

mean of the squared income shortfalls. Looking towards to unaccepted results in the preliminary results this was not attempted further.

In practice, estimates of Rothbarth scales tend to be smaller than those of Engel scales. This inconsistency arises entirely from differences in assumption, not in measurement. Deaton and Muellbauer [6] showed that while the Engel model tends to overestimate equivalence scales, the Rothbarth model tends to underestimate them. The upward bias in the Engel scale arises because of the likelihood the addition of a child raises the average food share for the household since the child's consumption is mainly food. The downward bias of the Rothbarth scale, on the other hand, arises if presence of children makes goods shared with children more expensive than pure adult goods. Modifications to the standard definition were given by Blundell et al [7] and this work may be extended in that light. However, it may be another interesting study to take a convex combination of these two equivalent scales to overcome the inherent nature of over/under estimation in these to types of scales.

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# **Change in Patterns of Consumption Expenditure: A study on Target Household Groups**

Nilanjana Roy and Subhra Sarker\*

## **Abstract**

This paper examines shift in the expenditure pattern of Indian households over a span of five years (2004-05 to 2009-10). Two sections of household members requiring special attention and care by the rest of the household members have been considered for analysis both in rural and urban sector. First section of population consists of households having children of school going age (5-14 years). The expenditure pattern of this section is analysed to examine changing shares of food and education in total expenditure. Second section of population consists of households with advanced aged people (60 years and above). They have been considered for examining change in expenditure pattern of food and health care.

At all-India level household share of expenditure on education has increased while share of food in total expenditure has decreased in both rural and urban India over the period under study in the first section of population. Hence, increase in the level of income has benefited the household members of school going age at all-India level. But in state/ UT level this finding does not hold good for most of the states mainly in urban India.

At All India level, share of food in household's total expenditure in the second section of population has decreased both in rural and urban area. However, share of medical expenses has decreased in rural households and remains the same in urban sector over the period of five year (2004-05 to 2009-10). At disaggregate level, significantly decreased share of food in HHD monthly consumption expenditure is not reflected in significant increased share of medical expenses in rural and urban sector. Moreover no direct and clear linkage between the increased dependency ratio and the change in share of medical expenditure during the period 2004-05 to 2009-10 could be established.

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## 1. **Introduction:**

Food is the basic necessity for survival. Once the basic nutritional need is satisfied the attention of a household (HHD) naturally shifts to other sectors like education, health, clothing, entertainment and personal care etc. If a household is having a child of school going age, natural tendency for the parents would be to give attention to educate the kid (s). Therefore, if the income of the household with 5-14 age group child increases over the years then the share of food is expected to decline and share of education is expected to rise over the years.

Similarly, if a household is having at least one aged member in the household, it is expected that there will be a recurrent expenditure for medicine, visit to doctors, medical investigations, hospitalisation etc. So if the income of such households increases over years then if there is fall in share of food expenditure there may be rise in medical expenditure.

Therefore, data of 61<sup>st</sup> and 66<sup>th</sup> Rounds of NSS have been analysed in this paper to find out whether the Indian consumer expenditure pattern is supportive to the two most vulnerable sections of population. In this regard it is to mention that with respect to 66<sup>th</sup> round the analysis is confined to type-1 schedules only. This paper consists of two sections. In the first section the study group consists of households having at least one child in 5-14 years age group. In the second section, the study group is chosen based on households having at least one aged member (60 years and above). The target household groups under study in the following two sections are not mutually exclusive.

## 2. **Methodology and Statistics used: -**

In each of the sections, detailed analysis is done at all-India level separately for rural and urban sector. Then the same has been extended to more disaggregated level (i.e. State/ UT) for both the sectors.

The significance of difference in share of expenditure on food/education/health care over the two NSS rounds (66<sup>th</sup> and 61<sup>st</sup>) has been tested using the following statistics based on the alternative hypothesis chosen.

$$Z = \frac{(p_2 - p_1)}{\sqrt{\text{Var}(p_1) + \text{Var}(p_2)}} \quad \text{or} \quad Z = \frac{(p_1 - p_2)}{\sqrt{\text{Var}(p_1) + \text{Var}(p_2)}}$$

Where  $p_i = \frac{y_i}{x_i}$  ;  $y_i$  = monthly expenditure on food/education/health care by the target group of households;  $x_i$  = total monthly consumer expenditure by those households.

As  $p_i$  is a ratio estimate, the variance may be computed as follows.

$$\text{VAR}(p_i) = \frac{(y_{i1} - y_{i2})^2 + (x_{i1} - x_{i2})^2 p_i^2 - 2p_i(x_{i1} - x_{i2})(y_{i1} - y_{i2})}{4x_i^2} \quad i=1,2$$

$x_{ij}, y_{ij}$  = estimate corresponding to  $j^{\text{th}}$  sub-sample of  $i^{\text{th}}$  round;  $j=1,2$

## Section-1

### 3. Household expenditure on Education: -

The issue of expenditure on education in India has generally been studied from a macroeconomic perspective, considering in particular the extent of public expenditure on education. However, in this paper it is attempted to analyse the share of expenditure on education among the households, which have children of school-going age. **Engel's law** is an observation in economics stating that as income rises, the proportion of income spent on food falls, even if actual expenditure on food rises. In other words, the income elasticity of demand of food is between 0 and 1. Therefore, it is expected that if the share of food in total expenditure is declining among households with school-going children, it will be reflected into increase in education expenditure of those households. Education is backbone of the society. If there is increase in share of expenditure in education, that will have multiplicative effect on the growth rate and other indices. However, this paper does not consider the actual increase in expenditure on education as that can be merely triggered by price rise.

Non-food expenditure may be divided into four main categories namely education, health, fuel and 'other' expenditure. Health expenditure in this paper consists of both medical institutional as well as medical non-institutional expenditure. Other expenditure includes expenditure on intoxicants, personal care, travelling, durables, conveyance, rents and taxes.

Initially, the households with at least one child in the age group of 5-14 years have been culled out of the entire households of both 61<sup>st</sup> and 66<sup>th</sup> round. In case of 61<sup>st</sup> round, 64,632 households out of total 1,24,624 households have at least one school going child. Similarly in 66<sup>th</sup> round, 48,432 households out of total 1,00,855 households (Type-I) are satisfying the same criteria.

Before the discussion on detailed analysis starts, it is required to mention the basic assumption made in this paper. Many of these households might be having students above school level and the expenditure incurred by the household in education may not be fully on school education of the kid belonging to 5-14 years age group. However, in this paper it is assumed that the increase or decrease in expenditure on education by a household with school-going aged kid will have direct impact on the educational facilities provided to the school going children of those households.

### 3.1 Share of Education in total Expenditure at All-India Level:-

At all-India level, the analysis is separately done for both rural and urban India. In India, education system has both public and private participation. A small segment comes from Non-profit Institutions. In rural India, households are mainly dependent on public education system whereas urban India has dependence on both the sectors. Therefore, all the estimates in this paper are generated separately for rural and urban India.

**Table 1: Share of Food and Education in HHD total consumption expenditure**

Round	Sector	Share of Food (in %)	Share of Education (in %)	Total no. of Samples (n)
61 <sup>st</sup> (p <sub>2</sub> )	Rural	50.90	3.93	43114
66 <sup>th</sup> (p <sub>1</sub> )	Rural	48.29	4.28	30196
61 <sup>st</sup> (p <sub>2</sub> )	Urban	38.04	8.20	21518
66 <sup>th</sup> (p <sub>1</sub> )	Urban	36.37	9.30	18236

From the above table it is clear that, share of expenditure in food has gone down both in rural and urban India for the selected section of households. In the following section, it is attempted to check whether the fall in food expenditure and rise in educational expenditure are statistically significant.

#### **Test 1:-**

**H<sub>0</sub>:-**  $p_2 = p_1$

**H<sub>1</sub>:-** Share of food in total expenditure in 66<sup>th</sup> Round < Share of food in total expenditure in 61<sup>st</sup> Round (i.e.  $p_2 > p_1$ ) for the households with at least one member belonging to 5-14 years age group.

#### **Assumptions:-**

As the sample is quite large, it can very well be assumed that  $Z \sim N(0,1)$  distribution under null hypothesis. Therefore, the significance of hypothesis may be tested using Z-test.

	Rural India	Urban India
<b>Z(computed)</b>	<b>64.855</b>	<b>6.262</b>

The computed value of Z-statistics is much above 1.645 for both rural and urban sectors. Therefore, alternative hypothesis may be accepted with 5% level (even 1% level; critical value 2.33) of significance. It may be concluded that there is significant decrease in share of food expenditure in total expenditure over the two rounds for the households having children of school-going age in both rural and urban India.

**Test 2:-**

**H<sub>0</sub>:-  $p_2 = p_1$**

**H<sub>1</sub>:- Share of education in total expenditure in 66<sup>th</sup> Round > Share of education in total expenditure in 61<sup>st</sup> Round (i.e.  $p_1 > p_2$ ) for the households with at least one member belonging to 5-14 years age group**

	<b>Rural India</b>	<b>Urban India</b>
<b>Z(computed)</b>	<b>25.883</b>	<b>8.086</b>

Above table shows that at all-India level share of education in HHD monthly consumption expenditure has increased in both rural and urban India which can be considered as direct manifestation of Engel’s law. Therefore, it may be concluded that increase in the level of income has benefited the household members of school going age at all-India level. Now attempt will be made to see whether the same shifting in share of expenditure holds well in disaggregated (State) level too.

**3.2 Share of Education in total Expenditure at disaggregated level:-**

At the first step, it is to be tested whether share of food has declined in total household expenditure in rural and urban sectors of each of the states. However, results regarding north-eastern states and other smaller states with very small sample size may be viewed with caution. **Annexure Table-1R and 1U** will provide state-wise share of food in HHD monthly consumption expenditure for rural and urban India respectively along with values of test statistics and whether below mentioned hypothesis is significantly accepted/rejected in all those cases (for target household groups).

### **Test 3:-**

**H<sub>0</sub>:-  $p_2 = p_1$**

**H<sub>1</sub>:- Share of food in total expenditure in 66<sup>th</sup> Round < Share of food in total expenditure in 61<sup>st</sup> Round (i.e.  $p_2 > p_1$ ) for the households with at least one member belonging to 5-14 years age group for each of the State/ UT**

In rural India, all the major states have significant fall in share of food in expenditure other than Punjab and Haryana (for target group). In fact in these two states there is near significant increase in share of food expenditure.

On the other side, in urban India, many of the major states have significant fall in share of food expenditure. Only exceptions are Punjab, Haryana, Uttar Pradesh, Bihar, Assam, Jharkhand and Chhattisgarh. Among these states, other than Haryana and Bihar remaining five states have hike in share of food expenditure.

### **Test 4:-**

This section of the paper will look into the aspect of change in share of education in total household expenditure for the households with at least one child of school going age for each of the states. Our aim is to see whether fall in share of food expenditure in total consumer expenditure has resulted into increase in share of educational expenditure for those households at state/ UT level.

**H<sub>0</sub>:-  $p_2 = p_1$**

**H<sub>1</sub>:- Share of education in total expenditure in 66<sup>th</sup> Round > Share of education in total expenditure in 61<sup>st</sup> Round (i.e.  $p_1 > p_2$ ) for the households with at least one member belonging to 5-14 years age group for each of the state/ UT**

From the Appendix **Table-2R and 2U** it can be seen that, in rural India among major states, J & K, Punjab, Haryana, Bihar, Uttarakhand, West Bengal, MP, Maharashtra and Odisha did not have significant increase in share of household expenditure in education for the target group of households. Whereas J&K, West Bengal, Odisha, Maharashtra and MP have a nominal increase in the said share other four states have decrease in it.

In urban India, most of the major states have not shown statistically significant increase in share of education in household expenditure for the target group of household. Only exceptions are Andhra Pradesh and Rajasthan.

Rural Punjab and Haryana had rise in share of food expenditure. As a consequence, these states did not have much scope for increase in share of educational (school) expenditure in the target group. On the other hand, in urban sector of most of the major states barring two

did not have significant rise in educational expenditure for the target group. However, among these states, four states namely Punjab, Assam, Chhattisgarh and Madhya Pradesh have fall in educational expenditure. In urban Punjab, Chhattisgarh and Assam there is parity between rise in food share and fall in educational share.

Rural Uttarakhand & Bihar and urban Madhya Pradesh have fall in both shares of food and educational expenditure. Target group of households are expected to put more stress on educational expenditure, whereas the data of these two rounds do not substantiate that notion for these three states. Therefore, in the next section (para-3.3) it will be analysed whether there is any change in other type of non-food expenditure for the target group of households belonging to these three states.

Following table provides the drop-out rates of class I-X for the states for which share of education in household consumer expenditure has gone down substantially either in rural or urban sector.

**Table 2: Gross Enrolment ratio and Drop Out rate**

States	Drop Out Rate		Gross Enrolment Ratio	
	2004-05	2009-10	2004-05	2009-10
Assam	73.96	77.60	91.92	83.54
Bihar	83.06	77.56	65.16	93.72
Madhya Pradesh (including Chhattisgarh)	64.70	65.71	114.09	131.81
Uttar Pradesh (including Uttarakhand)	43.77	23.83	87.04	95.42
Punjab	44.06	40.42	72.57	101.83
Haryana	32.48	19.84	80.01	85.79
<b>India</b>	<b>61.92</b>	<b>52.76</b>	<b>93.54</b>	<b>102.47</b>

*Source:-Selected Education Statistics, M/o HRD, GOI*

It is seen from the above table that Gross Enrolment Ration has gone up in case of all the states under discussion but drop-out rate is also quite high in case of Bihar and Madhya Pradesh (Chhattisgarh separately not available). In case of Uttar Pradesh although the drop-out rate has gone down in combined I-X group, it is observed that drop-out rate has gone up in I-V group (from 12.05 to 42.06) and I-VIII group (from 41.94 to 52.78). Dropout rate of Punjab almost remained at the same level.

### **3.3 Special case of Rural Bihar & Uttarakhand and Urban Madhya Pradesh**

In case of rural Bihar and Uttarakhand and urban Madhya Pradesh, the fall in share of food expenditure did not result into rise in educational expenditure for the household group

under consideration. So, it will be interesting to analyse which part of the non-food expenditure has got more attention for the household group under study. Following table will show the share of medical, fuel and ‘other’ expenditure for rural sectors of these three states over two rounds. These shares are specific to households having 5-14 years age group children.

**Table 3: Share of medical expenses, fuel and others in HHD total consumption expenditure**

State	Share of Health in Consumer Expenditure in		Share of Fuel in Consumer Expenditure in		Share of ‘Others’ in Consumer Expenditure in	
	66 <sup>th</sup> Rnd	61 <sup>st</sup> Rnd	66 <sup>th</sup> Rnd	61 <sup>st</sup> Rnd	66 <sup>th</sup> Rnd	61 <sup>st</sup> Rnd
<b>Rural</b>						
Uttarakhand	0.0592	0.0491	0.0987	0.1216	0.3354	0.2718
Bihar	0.0341	0.0301	0.0998	0.1078	0.2698	0.2417
<b>Urban</b>						
Madhya Pradesh	0.0534	0.0531	0.0959	0.1109	0.4270	0.3675

The above table shows that there is hike in share of medical and ‘other’ expenditure along with fall in share of fuel expenditure for all the three cases among target group of HHDs. A detailed analysis at more disaggregated level of item group may be required to make a conclusion regarding these three states.

## Section 2

### 4. Household Expenditure on Health in India

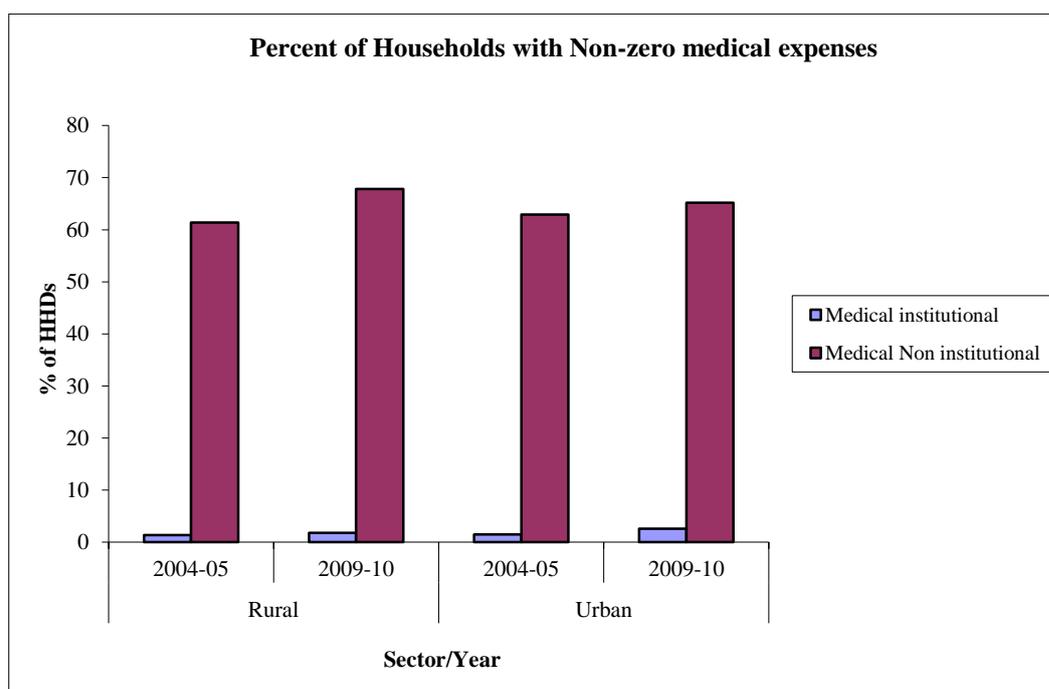
Health expenditure in India is dominated by private spending and more precisely by household spending. According to National Health Accounts report 2001-02 and 2004-05 of Ministry of Health and Family Welfare, household expenditure on healthcare in India has increased to 71.1% in 2004-05 from 68.8% in 2001-02. This high out-of-pocket expense on health care indicates disproportionate burden for health care on households, which is worse for the poor household particularly.

In this section broad patterns of household medical expenses (both institutional and non institutional) in India are analyzed and linked with the share of food in HHD monthly consumption expenditure and with dependency ratio. For the purpose of this paper dependency ratio is defined as number of persons with age 60 years and above per working person (person in the age group 14 to 59 years).

For analysis of medical expenses at disaggregate (State/UT) level, we have concentrated on the group of households having at least one senior citizen (aged 60years and more) in the family. The underlying assumption is that household expenditure on health care is likely to be inevitable and hence more in this group of HHD. In 66<sup>th</sup> round (Type-I) 28,044 HHDs and in 61<sup>st</sup> Round 28,571 HHDs were selected for detailed study in this section.

#### 4.1. Pattern of Household Expenditure on Health in India (Considering all the Households)

As per the NSS reports 538 and 508, share of medical expenses in total consumption expenditure decreases from 7% in 2004-05 to 5.4% in 2009-10 in rural India. However, in urban India share of medical expenses remains almost similar (5%) over the survey period for NSS 61<sup>st</sup> round (June 2004 to July 2005) and NSS 66<sup>th</sup> round (June 2009 to July 2010). Percent of household with non-zero medical expenses has increased from 2004-05 to 2009-2010 both in rural and urban India.



Source: NSS report No 538, 66<sup>th</sup> round (July 2009-June 2010)

Increase in life expectancy and in percentage of households with non zero medical expenses along with decreasing or stagnant share of medical expenses in household total consumption expenditure may be an indication towards increased public expenditure on health care in India, otherwise the required level of health care is far to reach by the Indian household particularly in rural sector. More detailed empirical analysis of expenditure on health care by different sources is necessary to draw any further conclusion.

#### 4.2. Pattern of Household Expenditure on Health in India by the target group of households:

As in case of the first section of population (households having children with age 5-14 years), in this target group too share of food in household total consumption expenditure has decreased significantly both in rural and urban India over the two NSS survey periods.

The following table gives the share of medical expenses separately for rural and urban India.

**Table 4: Share of medical expenses in household total consumption expenditure**

NSS rounds	Rural		Urban	
	Share in Medical Expenditure	Sample number of HHD	Share in Medical Expenditure	Sample number of HHD
66 <sup>th</sup>	7.46	17150	7.41	10905
61 <sup>st</sup>	7.86	19040	7.40	9531
Z computed	1.12		-0.06	

Share of medical expenses over the two NSS survey period is compared for the following hypothesis.

**Test 5:**

**H<sub>0</sub>**:-  $p_2 = p_1$

**H<sub>1</sub>**:- Share of medical expenses in total expenditure in 66<sup>th</sup> Round < Share of medical expenses in total expenditure in 61<sup>st</sup> Round (i.e.  $p_1 < p_2$ ) for the households with at least one member with age 60 years and above.

Share of medical expenses to the household total consumption expenditure is higher in the target group of HHDs when compared to the share of medical expenses by the HHDs in the country as a whole for both rural and urban sector. In the target group of HHD, over the period, share of medical expenses has decreased in rural HHDs, though the decrease is not statistically significant. In urban HHDs share of medical expenditure remains almost the same over the two survey periods.

### **4.3. Pattern of Household Expenditure on Health in Indian States by the target group of households:**

#### **4.3.1. Share of medical expenses in 2009-10:**

**Table 3** in the appendix gives the detail of share of medical expenses by the Indian states both in rural and urban sector. Household's share of medical expenses in total consumption expenditure is highly unequal across the states of India. Among the bigger states, share of medical expenses in this particular group of household is highest in Kerala for both rural and urban sector. Share of medical expenses is lowest in rural Chhattishgarh and Urban Jammu & Kashmir.

In rural sector, Jammu & Kashmir, Punjab, Haryana, Uttar Pradesh, Madhya Pradesh, Maharashtra, Andhra Pradesh, Kerala and Tamil Nadu have shown share of medical expenses in this target group is higher than all India average. Himachal Pradesh, West Bengal, Gujarat, Maharashtra, Kerala and Tamil Nadu have shown higher share of medical expenses than all India average in urban sector.

#### **4.3.2. Comparative status of share of medical expenses for NSS 61<sup>st</sup> and 66<sup>th</sup> round:**

In this section state-wise share of food and medical expenses in the NSS 61<sup>st</sup> and 66<sup>th</sup> round has been compared by using the test statistics described in the methodology in para 2 separately for rural and urban sector.

##### **Test 6:**

**H<sub>0</sub>**:-  $p_2 = p_1$

**H<sub>1</sub>**:- Share of food/medical expenses in total expenditure in 66<sup>th</sup> Round < Share of food/medical expenses in total expenditure in 61<sup>st</sup> Round (i.e.  $p_1 < p_2$ ) for the households with at least one member with age 60 years and above for each of the state/ UT

**Table 4R and 4U** gives the state wise share of food and **Table 5R and 5U** gives the state wise share of medical expenses in household total consumption expenditure (for the target group of HHDs) along with computed value of the test-statistics. However, results regarding north-eastern states and other smaller states with very small sample size may be viewed with caution.

In rural sector, share of food in HHD monthly consumption expenditure has significantly increased in Punjab with non significant decrease in medical expenditure from 2004-05 to 2009-10.

Rural Jammu & Kashmir, Himachal Pradesh, Uttar Pradesh, Assam, West Bengal, Odisha, Maharashtra, Kerala and Tamil Nadu have experienced significantly decreased share of food from 2004-05 to 2009-10. Among these states decreased share of food has not reflected in significant increased share of medical expenses by this particular target group of household. The reason for the same may be significantly increased dependency ratio in these states. **Table 6R and 6U** give the state-wise figure of dependency ratio along with the comment whether dependency ratio changes significantly over the two NSS survey periods.

In Rural Andhra Pradesh, Bihar, Gujarat, Karnataka, Madhya Pradesh, and Rajasthan share of food in HHD monthly consumption over the period 2004-05 to 2009-10 has decreased though the decrease is not statistically significant. In this group of states, share of medical expenses has increased but not significantly in Andhra Pradesh, Bihar and Karnataka. Whereas in Gujarat, Madhya Pradesh, and Rajasthan share of medical expenses has decreased but not significantly. Interestingly, for this group of states, except for Gujarat, dependency ratio has significantly increased over the two survey periods.

Rural Haryana has shown significant increase in share of medical expenses with non significant increase in share of food in HHD monthly consumption expenditure and significant increase in dependency ratio. In addition, rural Haryana also experienced increased share of education, decreased share of fuel and others in household's total expenditure. Hence, in case of rural Haryana, over the two-survey period share of expenditure on three important components (food, medical and education) have increased in this target population.

Share of food has significantly decreased from 2004-05 to 2009-10 only in urban Jammu & Kashmir and Himachal Pradesh. However, in urban Jammu & Kashmir share

of medical expenses has significantly increased where as in urban Himachal Pradesh share of medical expenses has significantly decreased.

In urban Punjab, Haryana, Rajasthan Assam, Andhra Pradesh and Tamil Nadu share of food in household total expenses has increased from 2004-05 to 2009-10 though the increase is statistically significant only for Assam and Tamil Nadu. Among these states, in Punjab, Haryana, Assam and Andhra Pradesh share of medical expenses has decreased, though not significantly, from 2004-05 to 2009-10. However, share of medical expenses has significantly increased in Rajasthan

In Urban Bihar, Uttar Pradesh, Odisha, West Bengal, Madhya Pradesh, Gujarat Maharashtra, Karnataka and Kerala share of food has decreased but not significantly during the period under study. For these states, only in Bihar, Odisha, Madhya Pradesh and Gujarat share of medical expenses has increased and in rest of the states it has decreased. However, none of these changes in share of medical expenses over the two survey period are statistically significant.

In urban sector dependency ratio in all the major states has significantly increased during the period 2004-05 to 2009-10 except Rajasthan, where Dependency ratio has significantly decreased during the same period. Hence no clear and direct linkage can be made between the dependency ratio and households share in medical expenses in this particular group of households.

### **Conclusion:**

This is a preliminary study, which has sought to consider the broad patterns of household spending on education and health in India and link them with the pattern of expenditure on food. The analysis has been conducted both at the all India and State level.

At All India level, share of food in household's total expenditure in the target groups of households has decreased significantly both in rural and urban sector. Further, as the income of the household with 5-14 age group child increases over the years, the share of food has declined and share of education has increased over the years in both rural and urban India. At disaggregate level, barring few states, this finding holds good for the major states both in rural and urban sector. However, in case of urban India this increase in expenditure is not significant for most of the states. Therefore, at State/ UT level, the decrease in share of food expenditure might not have significant impact in increase of share of educational expenditure.

At all India level, share of medical expenses has decreased in rural households and remains the same in urban sector in the target group of households over the period of five years (2004-05 to 2009-10). Whereas, percent of household with non zero medical expenses has increased during the same period both in rural and urban India.

At State level, significantly decreased share of food in HHD monthly consumption expenditure could not be reflected in significant increased in share of medical expenses in this particular group of households both in rural and urban sector. However, the scenario of health care of the people aged 60 years and more in urban India seems to be better than that of the rural India. Moreover no direct and clear linkage between the increased dependency ratio and the change in share of medical expenditure during the period 2004-05 to 2009-10 could be established.

These conclusions must be refined by more rigorous empirical analysis of the relevant components of household consumption expenditure. Therefore this study also points to a number of areas of future research that are extremely relevant given that broad trends that have been observed as well as the pattern of variation across states. The disaggregated impact of two most important components of household consumption expenditure after food (i.e education and health) on particular groups specifically for socially disadvantaged communities and regions may be a major area for further research.

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Table1R: Share of Food in Total Consumer Expenditure for the households having at least one 5-14 child over two rounds								
State	Rural						Z-STAT	Whether there is significant fall in share of food expenditure* in study group?
	66th Round			61st Round				
	Estimated Share of Food (P1)	Var(P1)	Sample Size (n1)	Estimated Share of Food (P2)	Var(P2)	Sample Size (n2)		
JK	0.4537	0.0000753	772	0.5229	0.00000047	1057	7.951	Y
HP	0.4173	0.0000013	633	0.4658	0.00000651	1014	17.382	Y
<b>Punjab</b>	<b>0.4224</b>	<b>0.0000300</b>	<b>707</b>	<b>0.4085</b>	<b>0.00000071</b>	<b>1345</b>	-2.499	<b>N</b>
Chandigarh	0.1626	0.0008032	13	0.4337	0.00000601	33	9.531	Y
Uttarakhand	0.4533	0.0000003	523	0.4989	0.00000000	847	88.268	Y
<b>Haryana</b>	<b>0.4685</b>	<b>0.0000000</b>	<b>745</b>	<b>0.4330</b>	<b>0.00014679</b>	<b>975</b>	<b>-2.931</b>	<b>N</b>
Delhi	0.3823	0.0003884	30	0.4378	0.00000012	26	2.818	Y
Rajasthan	0.4855	0.0000001	1526	0.5126	0.00000012	2209	59.275	Y
UP	0.5011	0.0000001	3741	0.5113	0.00000003	5085	29.222	Y
Bihar	0.5671	0.0000100	2145	0.5900	0.00000351	2765	6.254	Y
Sikkim	0.4295	0.0000002	295	0.4738	0.00000145	492	34.156	Y
Ar. P.	0.4435	0.0000000	645	0.5151	0.00005113	964	10.007	Y
Nagaland	0.4562	0.0000582	370	0.4901	0.00005314	608	3.210	Y
Manipur	0.5185	0.0000704	824	0.4924	0.00000020	1138	-3.103	N
Mizoram	0.4591	0.0000025	350	0.4966	0.00006734	472	4.484	Y
Tripura	0.5342	0.0000391	617	0.5823	0.00000580	963	7.187	Y
Meghalaya	0.4513	0.0000238	485	0.4854	0.00000835	677	6.008	Y
Assam	0.5601	0.0000806	1539	0.5930	0.00000044	2018	3.662	Y
WB	0.5254	0.0000063	1672	0.5632	0.00000106	2724	13.963	Y
Jharkhand	0.5104	0.0000032	1009	0.5758	0.00000083	1426	32.648	Y
Odisha	0.5072	0.0000040	1436	0.5588	0.00000000	1994	25.800	Y
Chhattisgarh	0.4664	0.0000111	758	0.5323	0.00000135	1123	18.659	Y
MP	0.4698	0.0000092	1484	0.4798	0.00000891	2246	2.348	Y
Gujrat	0.4931	0.0000370	844	0.5125	0.00000478	1150	3.003	Y
Daman	0.4162	0.0000163	29	0.3822	0.00003561	40	-4.713	N
Dadra	0.5591	0.0000940	52	0.4670	0.00001336	90	-8.880	N
Maharashtra	0.4450	0.0000019	1798	0.4673	0.00002059	2422	4.685	Y
AP	0.4703	0.0000023	1628	0.4902	0.00001646	2536	4.607	Y
Karnataka	0.4445	0.0000009	944	0.4738	0.00000030	1377	26.599	Y
Goa	0.4027	0.0000130	59	0.4475	0.00000111	61	11.917	Y
Lakhshadweep	0.5458	0.0000052	29	0.4860	0.00035514	41	-3.151	N
Kerala	0.3444	0.0000883	1064	0.4180	0.00000121	1398	7.786	Y
Tamilnadu	0.4114	0.0000025	1247	0.4695	0.00000012	1603	35.802	Y
Puduchery	0.4096	0.0004784	53	0.4019	0.00014244	68	-0.309	N
A&N	0.4328	0.0000069	130	0.4081	0.00088752	127	-0.824	N
<b>All-India</b>	<b>0.4829</b>	<b>0.0000002</b>	<b>30196</b>	<b>0.5090</b>	<b>0.000000002</b>	<b>43114</b>	<b>64.855</b>	<b>Y</b>

\* At 10% Level of Significance

Rise in food share is marked in **bold**.

Table1U: Share of Food in Total Consumer Expenditure for the households having at least one 5-14 child over two rounds								
State	Urban						Z-STAT	Whether there is significant fall in share* of food expenditure in study group?
	66th Round			61st Round				
	Estimated Share of Food (P1)	Var(P1)	Sample Size (n1)	Estimated Share of Food (P2)	Var(P2)	Sample Size (n2)		
JK	0.4415	0.0000091	567	0.4608	0.00003026	402	3.083	Y
HP	0.3245	0.0000434	143	0.3564	0.00011701	164	2.518	Y
<b>Punjab</b>	<b>0.3420</b>	<b>0.0003469</b>	<b>651</b>	<b>0.3419</b>	<b>0.00000039</b>	<b>909</b>	-0.004	<b>N</b>
Chandigarh	0.2889	0.0000002	98	0.3122	0.00002151	111	5.001	Y
Uttarakhand	0.4026	0.0000271	352	0.4207	0.00000539	372	3.171	Y
Haryana	0.3640	0.0000061	554	0.3693	0.00002068	540	1.028	N
Delhi	0.3249	0.0000623	324	0.3708	0.00007350	493	3.939	Y
Rajasthan	0.3963	0.0000073	807	0.4132	0.00006338	875	2.008	Y
<b>UP</b>	<b>0.4124</b>	<b>0.0000962</b>	<b>1725</b>	<b>0.4100</b>	<b>0.00007848</b>	<b>1968</b>	-0.182	<b>N</b>
Bihar	0.4626	0.0006593	699	0.4792	0.00026735	824	0.545	N
Sikkim	0.3911	0.0000761	54	0.3616	0.00003439	67	-2.808	N
Ar. P.	0.3948	0.0000451	343	0.4657	0.00002426	268	8.509	Y
Nagaland	0.4079	0.0002808	176	0.4045	0.00000322	186	-0.201	N
Manipur	0.4617	0.0000041	654	0.4305	0.00008485	548	-3.314	N
Mizoram	0.3977	0.0000050	454	0.4070	0.00001674	637	1.993	Y
Tripura	0.4589	0.0000194	211	0.4695	0.00006809	241	1.141	N
Meghalaya	0.3469	0.0000016	213	0.3479	0.00000423	251	0.405	N
<b>Assam</b>	<b>0.4568</b>	<b>0.0000016</b>	<b>430</b>	<b>0.4457</b>	<b>0.00004513</b>	<b>437</b>	-1.623	<b>N</b>
WB	0.3732	0.0000046	993	0.4001	0.00003858	1187	4.089	Y
<b>Jharkhand</b>	<b>0.4204</b>	<b>0.0000764</b>	<b>488</b>	<b>0.4073</b>	<b>0.00001622</b>	<b>588</b>	-1.358	<b>N</b>
Odisha	0.3891	0.0001196	478	0.4468	0.00007470	590	4.140	Y
<b>Chhattisgarh</b>	<b>0.3896</b>	<b>0.0001986</b>	<b>353</b>	<b>0.3864</b>	<b>0.00015301</b>	<b>391</b>	-0.166	<b>N</b>
MP	0.3485	0.0001329	977	0.3757	0.00001548	1142	2.233	Y
Gujrat	0.3870	0.0000018	690	0.3931	0.00001219	908	1.630	Y
Daman	0.3972	0.0000208	34	0.3712	0.00057218	35	-1.066	N
Dadra	0.4475	0.0002152	36	0.3226	0.00000095	42	-8.495	N
Maharashtra	0.3239	0.0001606	1552	0.3421	0.00000314	2231	1.418	Y
AP	0.3451	0.0000027	1136	0.3582	0.00002803	1293	2.366	Y
Karnataka	0.3298	0.0001432	754	0.3529	0.00001391	943	1.842	Y
Goa	0.3574	0.0000131	98	0.3623	0.00005697	97	0.582	N
Lakhshadweep	0.4273	0.0004038	74	0.4741	0.00000010	87	2.332	Y
Kerala	0.3290	0.0000004	731	0.3765	0.00006568	785	5.840	Y
Tamilnadu	0.3556	0.0000480	1117	0.3687	0.00000020	1533	1.879	Y
Puduchery	0.3290	0.0002167	166	0.3731	0.00000001	227	2.999	Y
A&N	0.3081	0.0000343	104	0.3521	0.00000569	146	6.959	Y
<b>All-India</b>	<b>0.3637</b>	<b>0.0000058</b>	<b>18236</b>	<b>0.3804</b>	<b>0.00000131</b>	<b>21518</b>	<b>6.262</b>	<b>Y</b>

\*At 10% Level of Significance.

Rise in food share is marked in **bold**.

Table2R: Share of Education in Total Consumer Expenditure for the households having at least one 5-14 child over two rounds									
STATE	Rural							Z-Statistics	Whether there is significant rise in share of educational expenditure* in study group?
	66th Round			61st Round					
	Estimated Share of Education(P1)	Var(P1)	Sample Size (n1)	Estimated Share of Education(P2)	Var(P2)	Sample Size (n2)			
JK	0.0694	0.0000426	772	0.0619	0.00000057	1057	1.141	N	
HP	0.0640	0.0000087	633	0.0514	0.00000012	1014	4.257	Y	
<b>Punjab</b>	<b>0.0702</b>	<b>0.0000016</b>	<b>707</b>	<b>0.0748</b>	<b>0.00000248</b>	<b>1345</b>	<b>-2.249</b>	<b>N</b>	
Chandigarh	0.0441	0.0000545	13	0.0580	0.00000381	33	-1.821	N	
<b>Uttarakhand</b>	<b>0.0534</b>	<b>0.0000071</b>	<b>523</b>	<b>0.0584</b>	<b>0.00000010</b>	<b>847</b>	<b>-1.864</b>	<b>N</b>	
<b>Haryana</b>	<b>0.0828</b>	<b>0.0000053</b>	<b>745</b>	<b>0.0958</b>	<b>0.00006050</b>	<b>975</b>	<b>-1.604</b>	<b>N</b>	
Delhi	0.0927	0.0004721	30	0.0716	0.00006298	26	0.908	N	
Rajasthan	0.0449	0.0000001	1526	0.0306	0.00000002	2209	37.721	Y	
UP	0.0463	0.0000000	3741	0.0407	0.00000047	5085	8.054	Y	
<b>Bihar</b>	<b>0.0292</b>	<b>0.0000003</b>	<b>2145</b>	<b>0.0303</b>	<b>0.00000132</b>	<b>2765</b>	<b>-0.868</b>	<b>N</b>	
Sikkim	0.0550	0.0000037	295	0.0596	0.00000764	492	-1.353	N	
Ar. P.	0.0416	0.0000051	645	0.0257	0.00000005	964	7.017	Y	
Nagaland	0.0868	0.0000150	370	0.0978	0.00000589	608	-2.392	N	
Manipur	0.0887	0.0000014	824	0.0814	0.00000060	1138	5.173	Y	
Mizoram	0.0328	0.0000013	350	0.0424	0.00000028	472	-7.725	N	
Tripura	0.0633	0.0000011	617	0.0595	0.00000083	963	2.744	Y	
Meghalaya	0.0470	0.0000012	485	0.0455	0.00000094	677	1.076	N	
<b>Assam</b>	<b>0.0289</b>	<b>0.0000010</b>	<b>1539</b>	<b>0.0345</b>	<b>0.00000085</b>	<b>2018</b>	<b>-4.063</b>	<b>N</b>	
WB	0.0469	0.0000000	1672	0.0463	0.00000032	2724	0.947	N	
Jharkhand	0.0357	0.0000016	1009	0.0272	0.00000020	1426	6.375	Y	
Odisha	0.0323	0.0000036	1436	0.0322	0.00000252	1994	0.013	N	
Chhattisgarh	0.0251	0.0000002	758	0.0211	0.00000060	1123	4.314	Y	
MP	0.0313	0.0000129	1484	0.0284	0.00000000	2246	0.801	N	
Gujrat	0.0291	0.0000042	844	0.0213	0.00000035	1150	3.632	Y	
Daman	0.0215	0.0000106	29	0.0389	0.00001330	40	-3.553	N	
Dadra	0.0240	0.0000008	52	0.0243	0.00000056	90	-0.284	N	
Maharashtra	0.0284	0.0000001	1798	0.0268	0.00000218	2422	1.094	N	
AP	0.0518	0.0000011	1628	0.0343	0.00000010	2536	15.654	Y	
Karnataka	0.0320	0.0000001	944	0.0270	0.00000004	1377	12.218	Y	
Goa	0.0193	0.0000000	59	0.0670	0.00006308	61	-6.007	N	
Lakshadweep	0.0095	0.0000005	29	0.0049	0.00000010	41	5.681	Y	
Kerala	0.0595	0.0000082	1064	0.0535	0.00000052	1398	2.005	Y	
Tamilnadu	0.0461	0.0000004	1247	0.0425	0.00000000	1603	5.696	Y	
Puduchery	0.0755	0.0000091	53	0.0496	0.00003535	68	3.889	Y	
A&N	0.0352	0.0000000	130	0.0300	0.00000559	127	2.165	Y	
<b>All-India</b>	<b>0.0428</b>	<b>0.0000000000004</b>	<b>30196</b>	<b>0.0393</b>	<b>0.00000002</b>	<b>43114</b>	<b>25.883</b>	<b>Y</b>	

\*At 10% Level of Significance.

Fall in education share is marked in **bold**.

Table2U: Share of Education in Total Consumer Expenditure for the households having at least one 5-14 child over two rounds								
State	Urban						Z-STAT	Whether there is significant rise in share of educational expenditure *in study group?
	66th Round			61st Round				
	Estimated Share of Education (P1)	Var(P1)	Sample Size (n1)	Estimated Share of Education(P2)	Var(P2)	Sample Size (n2)		
JK	0.1035	0.0175579	567	0.0886	0.00001801	402	0.113	N
HP	0.1148	0.0006832	143	0.0998	0.00007072	164	0.544	N
<b>Punjab</b>	<b>0.0992</b>	<b>0.0006621</b>	<b>651</b>	<b>0.1082</b>	<b>0.00000034</b>	<b>909</b>	-0.346	<b>N</b>
Chandigarh	0.1396	0.0346593	98	0.1189	0.00000001	111	0.111	N
Uttarakhand	0.1171	0.0198019	352	0.1069	0.00000637	372	0.073	N
Haryana	0.1293	0.0006370	554	0.1267	0.00000808	540	0.102	N
Delhi	0.1240	0.0003161	324	0.0788	0.00000181	493	2.535	Y
Rajasthan	0.1015	0.0001969	807	0.0750	0.00001643	875	1.816	Y
UP	0.0966	0.0005372	1725	0.0875	0.00000002	1968	0.393	N
Bihar	0.0800	0.0002681	699	0.0746	0.00000711	824	0.329	N
Sikkim	0.1187	0.0062124	54	0.0896	0.00004808	67	0.368	N
Ar. P.	0.0581	0.0012098	343	0.0454	0.00000002	268	0.365	N
Nagaland	0.1128	0.0000532	176	0.1162	0.00000974	186	-0.427	N
Manipur	0.1106	0.0000030	654	0.1013	0.00004138	548	1.400	N
Mizoram	0.0598	0.0000261	454	0.0595	0.00000005	637	0.044	N
Tripura	0.1021	0.0121918	211	0.0902	0.00000491	241	0.108	N
Meghalaya	0.0859	0.7609587	213	0.0926	0.00000428	251	-0.008	N
<b>Assam</b>	<b>0.0726</b>	<b>0.0006374</b>	<b>430</b>	<b>0.0753</b>	<b>0.00003787</b>	<b>437</b>	-0.106	<b>N</b>
WB	0.1000	0.0003719	993	0.0921	0.00000079	1187	0.409	N
<b>Jharkhand</b>	<b>0.0974</b>	0.0001202	488	<b>0.0916</b>	0.00001138	588	0.507	N
Odisha	0.0851	0.0009307	478	0.0811	0.00000028	590	0.131	N
<b>Chhattisgarh</b>	<b>0.0734</b>	<b>0.0084598</b>	<b>353</b>	<b>0.0815</b>	<b>0.00000340</b>	<b>391</b>	-0.088	<b>N</b>
<b>MP</b>	<b>0.0752</b>	<b>0.0003643</b>	<b>977</b>	<b>0.0927</b>	<b>0.00003439</b>	<b>1142</b>	-0.877	<b>N</b>
Gujrat	0.0758	0.0003780	690	0.0701	0.00000975	908	0.290	N
Daman	0.0304	211.0978056	34	0.0661	0.00014126	35	-0.002	N
Dadra	0.0512	122.0314128	36	0.0935	0.00000308	42	-0.004	N
Maharashtra	0.0910	0.0002111	1552	0.0762	0.00000015	2231	1.016	N
AP	0.1006	0.0003960	1136	0.0744	0.00000000	1293	1.318	Y
Karnataka	0.0788	0.0005305	754	0.0697	0.00000034	943	0.394	N
Goa	0.0438	0.1516349	98	0.0441	0.00000101	97	-0.001	N
Lakhshadweep	0.0132	122.0037511	74	0.0164	0.00001444	87	0.000	N
Kerala	0.0709	0.0002075	731	0.0667	0.00000219	785	0.289	N
Tamilnadu	0.0875	0.0005112	1117	0.0751	0.00000166	1533	0.547	N
Puduchery	0.1190	0.0010811	166	0.0790	0.00000096	227	1.216	N
A&N	0.0603	0.0002938	104	0.0775	0.00005833	146	-0.917	N
<b>All-India</b>	<b>0.0930</b>	<b>0.0000007</b>	<b>18236</b>	<b>0.0820</b>	<b>0.00000120</b>	<b>21518</b>	<b>8.086</b>	<b>Y</b>

\*At 10% Level of Significance.

Fall in education share is marked in **bold**.

**Table 3: Consumption Expenditure on health care by the households having senior citizens in NSS 66th round (July 2009 - June 2010)**

State	Rural				Urban			
	Sample HHD (in number)	Medical expenses (in Rupees)	Total expenditure (in Rupees)	% share of medical expenses in total expenditure	Sample HHD (in number)	Medical expenses (in Rupees)	Total expenditure (in Rupees)	% share of medical expenses in total expenditure
JK	493	675.31	7879.06	8.57	391	403.89	10743.12	3.76
HP	618	444.43	6711.12	6.62	75	809.26	9872.37	8.20
<b>Punjab</b>	595	715.76	8720.99	8.21	437	891.65	12314.33	7.24
Chandigarh	5	242.97	12315.97	1.97	49	1272.89	16378.78	7.77
Uttarakhand	365	356.46	5440.52	6.55	158	576.69	9368.71	6.16
<b>Haryana</b>	462	724.82	8722.37	8.31	282	615.07	11101.49	5.54
Delhi	7	55.57	5609.93	0.99	110	712.46	13269.82	5.37
Rajasthan	732	337.00	6286.79	5.36	405	647.45	9713.06	6.67
UP	1900	454.96	5217.30	8.72	822	576.31	8405.29	6.86
Bihar	691	194.86	4101.19	4.75	253	409.60	6480.01	6.32
Sikkim	99	72.98	5665.29	1.29	18	136.05	7946.21	1.71
Ar. P.	182	192.41	6495.80	2.96	33	1034.56	11890.28	8.70
Nagaland	76	54.40	6313.94	0.86	45	63.27	9121.95	0.69
Manipur	359	110.60	5506.88	2.01	299	166.30	5608.01	2.97
Mizoram	113	114.75	5232.53	2.19	183	218.41	9991.34	2.19
Tripura	375	298.84	4535.29	6.59	145	672.34	7098.09	9.47
Meghalaya	117	134.34	5469.22	2.46	68	185.80	8141.60	2.28
Assam	668	137.25	5294.85	2.59	189	229.08	8458.11	2.71
WB	896	256.74	4047.63	6.34	847	777.45	7908.34	9.83
Jharkhand	401	186.74	4043.98	4.62	239	325.76	8542.52	3.81
Odisha	982	190.18	3651.01	5.21	244	430.73	7780.84	5.54
Chhattisgarh	364	146.15	3413.66	4.28	174	312.14	7854.19	3.97
MP	679	343.52	4432.63	7.75	487	483.64	7533.78	6.42
Gujrat	497	292.01	5801.33	5.03	500	793.78	10231.87	7.76
Daman	16	39.43	6115.82	0.64	17	115.22	7198.40	1.60
Dadra	15	17.49	7592.67	0.23	16	13.72	8606.07	0.16
Maharashtra	1481	450.13	5061.97	8.89	1191	951.76	11873.73	8.02
AP	1014	373.79	4152.62	9.00	664	593.59	8286.27	7.16
Karnataka	662	257.33	4561.66	5.64	531	542.94	9848.91	5.51
Goa	70	574.44	7971.38	7.21	96	593.90	9082.46	6.54
Lakshadweep	9	67.51	5861.80	1.15	47	638.67	16921.18	3.77
Kerala	1087	885.33	7656.47	11.56	769	1125.34	9521.25	11.82
Tamilnadu	993	292.68	3462.52	8.45	927	499.82	6266.95	7.98
Puduchery	41	499.83	6273.12	7.97	137	794.64	10929.92	7.27
A&N	86	74.25	7753.92	0.96	57	762.32	13715.42	5.56
<b>All india</b>	<b>17150</b>	<b>378.59</b>	<b>5069.07</b>	<b>7.47</b>	<b>10905</b>	<b>679.60</b>	<b>9171.60</b>	<b>7.41</b>

Table4R: Share of Food in Total Consumer Expenditure for the households having at least one member above 60yrs over two rounds								
State	Rural						Z-STAT	Whether there is significant fall in share of food expenditure* in study group?
	66th round			61st round				
	Sample Size (n)	Var(p1)	Estimated share of food(p1)	Sample Size (n)	Var(p2)	Estimated share of food(p2)		
JK	493	0.00092155	0.45	459	0.00000729	0.52	2.54	Y
HP	618	0.00001867	0.43	661	0.00012548	0.46	2.69	Y
<b>Punjab</b>	<b>595</b>	<b>0.00014901</b>	<b>0.42</b>	<b>685</b>	<b>0.00004369</b>	<b>0.39</b>	<b>-1.79</b>	
Chandigarh	5	0.00036887	0.34	17	0.00559114	0.47	1.58	Y
Uttarakhand	365	0.00074985	0.45	418	0.00005800	0.50	1.54	Y
<b>Haryana</b>	<b>462</b>	<b>0.00003067</b>	<b>0.46</b>	<b>496</b>	<b>0.00312536</b>	<b>0.41</b>	<b>-0.90</b>	
Delhi	7	0.00133216	0.44	13	0.00128000	0.33	-2.10	
Rajasthan	732	0.00041053	0.48	843	0.00010799	0.50	1.08	
UP	1900	0.00000863	0.49	2024	0.00000187	0.51	4.44	Y
Bihar	691	0.00002783	0.57	858	0.00000147	0.57	1.04	
Sikkim	99	0.00016830	0.46	178	0.00005050	0.50	2.35	Y
Ar. P.	182	0.00016650	0.45	185	0.00071829	0.54	2.86	Y
Nagaland	76	0.00044963	0.54	119	0.00012328	0.56	0.97	
Manipur	359	0.00007390	0.52	414	0.00018779	0.51	-0.88	
Mizoram	113	0.00004104	0.46	120	0.00053405	0.51	2.02	Y
Tripura	375	0.00001543	0.55	372	0.00012476	0.60	3.96	Y
Meghalaya	117	0.00000818	0.41	117	0.00000104	0.47	18.42	Y
Assam	668	0.00004350	0.56	647	0.00002534	0.60	4.14	Y
WB	896	0.00000643	0.53	1156	0.00000075	0.54	4.66	Y
Jharkhand	401	0.00011623	0.51	421	0.00001902	0.56	4.26	Y
Odisha	982	0.00002917	0.51	1057	0.00000303	0.55	5.97	Y
Chhattisgarh	364	0.00008162	0.48	478	0.00005953	0.52	3.79	Y
MP	679	0.00014232	0.46	881	0.00000098	0.47	0.82	
Gujrat	497	0.00045938	0.48	480	0.00004546	0.50	0.68	
Daman	16	0.00035236	0.43	10	0.00008533	0.43	0.16	
Dadra	15	0.00040933	0.55	22	0.00140505	0.58	0.72	
Maharashtra	1481	0.00002048	0.44	1536	0.00000737	0.47	4.16	Y
AP	1014	0.00001101	0.48	1297	0.00013715	0.48	0.75	
Karnataka	662	0.00007461	0.46	664	0.00002321	0.47	0.76	
Goa	70	0.00029538	0.42	63	0.00008767	0.41	-0.04	
Lakshadweep	9	0.00025116	0.57	20	0.00171698	0.43	-3.20	
Kerala	1087	0.00026306	0.34	1145	0.00017761	0.41	3.26	Y
Tamilnadu	993	0.00002421	0.43	1064	0.00000746	0.46	5.13	Y
Puduchery	41	0.00609205	0.40	43	0.00069364	0.41	0.20	Y
A&N	86	0.00008791	0.45	77	0.00902931	0.41	-0.38	
<b>All India</b>	<b>17150</b>	<b>0.000000649</b>	<b>0.469</b>	<b>19040</b>	<b>0.000000025</b>	<b>0.489</b>	<b>24.67</b>	<b>Y</b>

\*At 10% Level of Significance.

Rise in food share is marked in **bold**.

Table 4U: Share of Food in Total Consumer Expenditure for the households having at least one member above 60yrs

State Name	Urban						Z-STAT	Whether there is significant fall in share of food expenditure* in study group?
	66th round			61st round				
	Sample Size (n)	Var(p1)	Estimated share of food(p1)	Sample Size (n)	Var(p2)	Estimated share of food(p2)		
JK	391	0.00012069	0.36	192	0.00200156	0.44	1.59	Y
HP	75	0.00101064	0.33	68	0.00026979	0.41	2.20	Y
<b>Punjab</b>	<b>437</b>	<b>0.00075719</b>	<b>0.33</b>	<b>424</b>	<b>0.00264862</b>	<b>0.33</b>	<b>-0.08</b>	
Chandigarh	49	0.00088575	0.25	33	0.00069635	0.25	0.12	
Uttarakhand	158	0.00002413	0.40	127	0.00010670	0.43	2.50	Y
<b>Haryana</b>	<b>282</b>	<b>0.00042157</b>	<b>0.36</b>	<b>202</b>	<b>0.00080161</b>	<b>0.35</b>	<b>-0.23</b>	
Delhi	110	0.00000002	0.28	175	0.00152550	0.30	0.52	
Rajasthan	<b>405</b>	<b>0.00001681</b>	<b>0.40</b>	<b>323</b>	<b>0.00024389</b>	<b>0.39</b>	<b>-0.64</b>	
UP	822	0.00032969	0.39	678	0.00171925	0.40	0.27	
Bihar	253	0.00067949	0.44	248	0.00112184	0.47	0.64	
Sikkim	18	0.00128842	0.43	14	0.03289172	0.40	-0.15	
Ar. P.	33	0.00411859	0.34	17	0.05169748	0.43	0.36	
Nagaland	45	0.00123306	0.39	12	0.01709179	0.49	0.69	
Manipur	299	0.00004639	0.47	202	0.02091639	0.45	-0.14	
Mizoram	183	0.00014294	0.40	190	0.00031085	0.40	-0.04	
Tripura	145	0.00011904	0.45	125	0.00186986	0.50	1.03	
Meghalaya	68	0.00001560	0.32	50	0.00051226	0.33	0.40	
Assam	<b>189</b>	<b>0.00043822</b>	<b>0.49</b>	<b>139</b>	<b>0.00003860</b>	<b>0.43</b>	<b>-2.85</b>	
WB	847	0.00013834	0.35	724	0.00207372	0.36	0.20	
Jharkhand	<b>239</b>	<b>0.00038617</b>	<b>0.42</b>	<b>199</b>	<b>0.00388638</b>	<b>0.40</b>	<b>-0.34</b>	
Odisha	244	0.00013877	0.37	217	0.00481243	0.45	1.10	
Chhattisgarh	<b>174</b>	<b>0.00013261</b>	<b>0.40</b>	<b>141</b>	<b>0.00473929</b>	<b>0.39</b>	<b>-0.13</b>	
MP	487	0.00002506	0.36	441	0.00155142	0.37	0.12	
Gujrat	500	0.00001055	0.35	474	0.01066477	0.39	0.38	
Daman	17	0.00050471	0.42	23	0.01468837	0.41	-0.11	
Dadra	16	0.00693850	0.41	9	0.01305802	0.38	-0.17	
Maharashtra	1191	0.00066044	0.30	1195	0.00043093	0.33	0.94	
AP	<b>664</b>	<b>0.00097466</b>	<b>0.35</b>	<b>472</b>	<b>0.00003573</b>	<b>0.33</b>	<b>-0.45</b>	
Karnataka	531	0.00203536	0.30	438	0.00353065	0.32	0.22	
Goa	96	0.00004474	0.38	57	0.04635744	0.30	-0.35	
Lakshadweep	47	0.00013020	0.45	32	0.02830008	0.50	0.27	
Kerala	769	0.00000564	0.30	730	0.00197017	0.35	1.02	
Tamilnadu	<b>927</b>	<b>0.00017172</b>	<b>0.35</b>	<b>984</b>	<b>0.00000018</b>	<b>0.33</b>	<b>-1.33</b>	
Puduchery	137	0.00042044	0.32	138	0.00899210	0.37	0.60	
A&N	57	0.00065128	0.30	38	0.03096653	0.39	0.46	
<b>All India</b>	<b>10905</b>	<b>0.000000602</b>	<b>0.343</b>	<b>9531</b>	<b>0.000001212</b>	<b>0.355</b>	<b>8.99</b>	<b>Y</b>

\* At 10% Level of Significance.

Rise in food share is marked in **bold**.

Table5R: Share of Healthcare in Total Consumer Expenditure for the households having at least one member above 60yrs over two rounds								
State	Rural						Z STAT	Whether there is significant rise in share of medical expenditure* in study group?
	66th round			61st round				
	Sample Size (n)	Var(p1)	Estimated share of healthcare (p1)	Sample Size (n)	Var(p2)	Estimated share of healthcare (p2)		
JK	493	0.001558	0.086	459	0.003568	0.029	0.796	
HP	<b>618</b>	<b>1.49E-06</b>	<b>0.066</b>	<b>661</b>	<b>0.000252</b>	<b>0.086</b>	<b>-1.231</b>	
<b>Punjab</b>	<b>595</b>	<b>3.81E-06</b>	<b>0.082</b>	<b>685</b>	<b>3.77E-05</b>	<b>0.087</b>	<b>-0.733</b>	
Chandigarh	5	0.000525	0.020	17	0.000227	0.025	-0.177	
Uttarakhand	365	6.48E-05	0.066	418	0.005423	0.048	0.237	
<b>Haryana</b>	462	6.86E-05	0.083	496	0.000206	0.059	1.484	Y
Delhi	7	1.05E-05	0.010	13	6.19E-07	0.012	-0.663	
Rajasthan	<b>732</b>	<b>0.000207</b>	<b>0.054</b>	<b>843</b>	<b>0.000135</b>	<b>0.067</b>	<b>-0.700</b>	
UP	<b>1900</b>	<b>5.98E-06</b>	<b>0.087</b>	<b>2024</b>	<b>0.000341</b>	<b>0.096</b>	<b>-0.471</b>	
Bihar	691	5.04E-06	0.048	858	9.88E-05	0.039	0.810	
Sikkim	99	4.02E-06	0.013	178	0.000403	0.008	0.231	
Ar. P.	182	2.72E-05	0.030	185	0.000242	0.020	0.561	
Nagaland	76	9.69E-08	0.009	119	0.000189	0.010	-0.130	
Manipur	359	7.53E-06	0.020	414	0.001969	0.028	-0.182	
Mizoram	113	4.8E-06	0.022	120	8.12E-05	0.031	-0.948	
Tripura	375	9.76E-06	0.066	372	1.94E-05	0.042	4.362	Y
Meghalaya	117	9.17E-06	0.025	117	0.001011	0.019	0.160	
Assam	668	1.62E-06	0.026	647	7.71E-05	0.026	0.041	
WB	<b>896</b>	<b>1.1E-06</b>	<b>0.063</b>	<b>1156</b>	<b>0.00318</b>	<b>0.083</b>	<b>-0.355</b>	
Jharkhand	<b>401</b>	<b>4.19E-05</b>	<b>0.046</b>	<b>421</b>	<b>4.43E-06</b>	<b>0.049</b>	<b>-0.345</b>	
Odisha	<b>982</b>	<b>7.1E-06</b>	<b>0.052</b>	<b>1057</b>	<b>0.001081</b>	<b>0.060</b>	<b>-0.254</b>	
Chhattisgarh	<b>364</b>	<b>0.000158</b>	<b>0.043</b>	<b>478</b>	<b>0.000327</b>	<b>0.080</b>	<b>-1.680</b>	
MP	<b>679</b>	<b>0.00035</b>	<b>0.077</b>	<b>881</b>	<b>0.001919</b>	<b>0.089</b>	<b>-0.237</b>	
Gujrat	<b>497</b>	<b>9.91E-06</b>	<b>0.050</b>	<b>480</b>	<b>0.001707</b>	<b>0.072</b>	<b>-0.518</b>	
Daman	16	4.12E-05	0.006	10	0.000128	0.037	-2.333	
Dadra	15	3.43E-06	0.002	22	0.000136	0.023	-1.778	
Maharashtra	1481	0.000108	0.089	1536	0.001667	0.084	0.124	
AP	1014	0.000184	0.090	1297	0.002322	0.085	0.103	
Karnataka	662	0.000163	0.056	664	0.001567	0.053	0.071	
Goa	70	0.000272	0.072	63	0.001407	0.072	0.006	
Lakshadweep	9	0.000131	0.012	20	0.000769	0.145	-4.465	
Kerala	<b>1087</b>	<b>7.36E-06</b>	<b>0.116</b>	<b>1145</b>	<b>0.006121</b>	<b>0.129</b>	<b>-0.165</b>	
Tamilnadu	993	2.81E-05	0.085	1064	0.002041	0.084	0.001	
Puduchery	41	0.001189	0.080	43	0.001133	0.101	-0.440	
A&N	86	4.73E-06	0.010	77	0.001467	0.017	-0.189	
<b>All India</b>	<b>17150</b>	<b>0.000000019</b>	<b>0.075</b>	<b>19040</b>	<b>0.000012371</b>	<b>0.079</b>	<b>-1.12</b>	<b>N</b>

\* At 10% Level of Significance.

Fall in health share is marked in **bold**.

Table5U: Share of Healthcare in Total Consumer Expenditure for the households having at least one member above 60yrs over two rounds								
State	Urban						Z STAT	Whether there is significant rise in share of medical expenditure *in study group?
	66th round			61st round				
	Sample Size (n)	Var(p <sub>1</sub> )	Estimated share of healthcare (p <sub>1</sub> )	Sample Size (n)	Var(p <sub>2</sub> )	Estimated share of healthcare (p <sub>2</sub> )		
JK	391	2.57E-05	0.038	192	6.41E-06	0.025	2.140	Y
HP	<b>75</b>	<b>2.91E-05</b>	<b>0.082</b>	<b>68</b>	<b>0.000239</b>	<b>0.101</b>	<b>-1.159</b>	
<b>Punjab</b>	<b>437</b>	<b>4.69E-05</b>	<b>0.072</b>	<b>424</b>	<b>2.36E-06</b>	<b>0.077</b>	<b>-0.623</b>	
Chandigarh	49	5.43E-05	0.078	33	1.82E-06	0.037	5.491	Y
Uttarakhand	158	0.000253	0.062	127	0.000831	0.052	0.286	
<b>Haryana</b>	<b>282</b>	<b>0.000105</b>	<b>0.055</b>	<b>202</b>	<b>2.44E-06</b>	<b>0.059</b>	<b>-0.305</b>	
Delhi	110	3.76E-06	0.054	175	8.4E-09	0.027	13.767	Y
Rajasthan	405	1.1E-06	0.067	323	2.57E-05	0.058	1.602	Y
UP	<b>822</b>	<b>0.000118</b>	<b>0.069</b>	<b>678</b>	<b>5.3E-05</b>	<b>0.069</b>	<b>-0.007</b>	
Bihar	253	0.000423	0.063	248	5.29E-05	0.040	1.079	
Sikkim	18	4.26E-07	0.017	14	1.92E-06	0.014	1.926	Y
Ar. P.	33	0.000517	0.087	17	0.000133	0.032	2.147	Y
Nagaland	45	1.24E-06	0.007	12	0.00035	0.007	-0.009	
Manipur	299	1.5E-06	0.030	202	0.003592	0.028	0.022	
Mizoram	183	1.08E-07	0.022	190	0.001241	0.019	0.094	
Tripura	145	3.54E-06	0.095	125	0.000197	0.094	0.081	
Meghalaya	68	1.28E-05	0.023	50	7.88E-05	0.017	0.643	
Assam	<b>189</b>	<b>1.75E-07</b>	<b>0.027</b>	<b>139</b>	<b>0.000122</b>	<b>0.037</b>	<b>-0.903</b>	
WB	<b>847</b>	<b>2.34E-05</b>	<b>0.098</b>	<b>724</b>	<b>0.000451</b>	<b>0.100</b>	<b>-0.085</b>	
Jharkhand	<b>239</b>	<b>1.07E-05</b>	<b>0.038</b>	<b>199</b>	<b>6.69E-06</b>	<b>0.061</b>	<b>-5.429</b>	
Odisha	244	8.32E-05	0.055	217	0.000556	0.050	0.208	
Chhattisgarh	<b>174</b>	<b>2.62E-06</b>	<b>0.040</b>	<b>141</b>	<b>0.003583</b>	<b>0.086</b>	<b>-0.769</b>	
MP	487	1.41E-05	0.064	441	0.000209	0.057	0.513	
Gujrat	500	0.000435	0.078	474	1.6E-05	0.070	0.372	
Daman	17	6.48E-05	0.016	23	0.00043	0.037	-0.934	
Dadra	16	1.19E-06	0.002	9	0.00057	0.059	-2.412	
Maharashtra	1191	4.84E-08	0.080	1195	0.000166	0.084	-0.303	
AP	<b>664</b>	<b>7.15E-05</b>	<b>0.072</b>	<b>472</b>	<b>0.00151</b>	<b>0.082</b>	<b>-0.255</b>	
Karnataka	<b>531</b>	<b>3.88E-05</b>	<b>0.055</b>	<b>438</b>	<b>2.6E-07</b>	<b>0.060</b>	<b>-0.706</b>	
Goa	96	0.000349	0.065	57	3.9E-06	0.112	-2.492	
Lakshadweep	47	0.00013	0.038	32	0.000172	0.078	-2.342	
Kerala	<b>769</b>	<b>1.46E-05</b>	<b>0.118</b>	<b>730</b>	<b>0.006496</b>	<b>0.137</b>	<b>-0.230</b>	
Tamilnadu	927	1.88E-05	0.080	984	0.001112	0.068	0.364	
Puduchery	137	3.15E-05	0.073	138	0.006168	0.097	-0.310	
A&N	57	0.000271	0.056	38	0.00016	0.055	0.012	
<b>All India</b>	<b>10905</b>	<b>0.000004768</b>	<b>0.0741</b>	<b>9531</b>	<b>0.000008478</b>	<b>0.0739</b>	<b>0.06</b>	<b>N</b>

\* At 10% Level of Significance.

Fall in health share is marked in **bold**.

**Table6R: Dependency ratio for the households having at least one senior citizen in the family over two rounds**

State	Rural							Z-STAT	Whether there is significant rise in dependency ratio* in study group?
	66th Round			61st Round					
	Estimated Dependency ratio (P1)	Var(P1)	Sample Size (n1)	Estimated Dependency ratio (P2)	Var(P2)	Sample Size (n2)			
JK	0.3962	6.03148E-05	493	0.3485	5.8466E-05	459	4.376	Y	
HP	0.5148	2.43536E-05	618	0.4716	2.7065E-05	661	6.025	Y	
<b>Punjab</b>	0.5266	0.000383806	595	0.4606	6.2141E-04	685	2.082	Y	
Chandigarh	0.7390	0.488071305	5	0.3902	5.3969E-04	17	0.499	N	
Uttarakhand	0.6258	0.003654757	365	0.4799	4.6679E-05	418	2.399	Y	
<b>Haryana</b>	0.4956	0.000283995	462	0.4258	3.0993E-04	496	2.865	Y	
Delhi	0.2847	0.000731717	7	0.6048	1.1901E-02	13	-2.848	N	
Rajasthan	0.4598	0.00073204	732	0.4615	3.0881E-04	843	-0.055	N	
UP	0.4954	2.21817E-05	1900	0.4526	4.4029E-04	2024	1.989	Y	
Bihar	0.4664	0.000112729	691	0.4461	2.0050E-06	858	1.900	Y	
Sikkim	0.4101	0.002943682	99	0.4171	2.8312E-04	178	-0.122	N	
Ar. P.	0.4385	0.000490028	182	0.3562	2.8990E-05	185	3.612	Y	
Nagaland	0.4897	0.004580349	76	0.4054	1.9553E-03	119	1.043	N	
Manipur	0.4506	2.33402E-05	359	0.3777	2.0378E-05	414	11.018	Y	
Mizoram	0.5060	0.001615598	113	0.3349	2.3859E-06	120	4.255	Y	
Tripura	0.4617	0.001064375	375	0.3760	8.4748E-05	372	2.526	Y	
Meghalaya	0.3606	5.28513E-05	117	0.3972	1.5095E-03	117	-0.927	N	
Assam	0.3587	0.000136919	668	0.3282	2.3758E-05	647	2.409	Y	
WB	0.4593	0.000315759	896	0.3809	7.5071E-09	1156	4.413	Y	
Jharkhand	0.4511	0.001311768	401	0.3955	1.6111E-04	421	1.450	Y	
Odisha	0.5355	8.06726E-05	982	0.4134	3.0305E-04	1057	6.234	Y	
Chhattisgarh	0.4936	0.00057245	364	0.4891	6.5668E-04	478	0.127	N	
MP	0.4893	0.000706346	679	0.4507	7.4384E-04	881	1.014	N	
Gujrat	0.4538	4.72725E-05	497	0.4944	6.9971E-06	480	-5.510	N	
Daman	0.3152	0.000855165	16	0.3787	1.1517E-01	10	-0.187	N	
Dadra	0.3521	0.002282826	15	0.3825	6.1632E-03	22	-0.331	N	
Maharashtra	0.5618	0.000428893	1481	0.4950	2.5335E-05	1536	3.133	Y	
AP	0.6308	3.00622E-05	1014	0.5756	1.2504E-04	1297	4.430	Y	
Karnataka	0.4339	2.14945E-09	662	0.3624	8.3214E-04	664	2.478	Y	
Goa	0.4581	0.005519849	70	0.3547	2.4326E-04	63	1.362	Y	
Lakhshadweep	0.3596	0.001849794	9	0.2648	1.9806E-03	20	1.532	N	
Kerala	0.5646	1.73512E-08	1087	0.4811	8.5099E-06	1145	28.590	Y	
Tamilnadu	0.7010	0.000345813	993	0.5960	1.3615E-05	1064	5.534	Y	
Puduchery	0.5568	0.028028111	41	0.6513	1.2327E-04	43	-0.563	N	
A&N	0.4709	0.00017047	86	0.3376	1.5862E-03	77	3.180	Y	

\*At 10% Level of Significance.

Table6U: Dependency ratio for the households having at least one senior citizen in the family over two rounds

State	Urban						Z-STAT	Whether there is significant rise in dependency ratio* in study group?
	66th Round			61st Round				
	Estimated Dependency ratio (P1)	Var(P1)	Sample Size (n1)	Estimated Dependency ratio (P2)	Var(P2)	Sample Size (n2)		
JK	0.4128	7.74063E-07	391	0.3842	1.8050E-04	192	2.130	Y
HP	0.5127	0.000736978	75	0.4655	3.6604E-06	68	1.736	Y
<b>Punjab</b>	0.4759	6.44381E-05	437	0.4115	7.3262E-05	424	5.485	Y
Chandigarh	0.6613	0.020362223	49	0.4564	1.0084E-02	33	1.174	Y
Uttarakhand	0.3869	0.001695737	158	0.4175	4.2098E-04	127	-0.663	N
<b>Haryana</b>	0.4903	6.37256E-05	282	0.4926	3.0296E-03	202	-0.042	N
Delhi	0.5356	0.002301997	110	0.4555	2.2919E-04	175	1.592	Y
Rajasthan	0.4188	0.000142837	405	0.4418	3.5154E-06	323	-1.902	N
UP	0.4158	0.000136201	822	0.3716	1.3423E-04	678	2.684	Y
Bihar	0.4793	8.59844E-05	253	0.3297	3.3526E-03	248	2.551	Y
Sikkim	0.4019	0.010491304	18	0.2514	1.8319E-07	14	1.469	Y
Aru N.	0.3302	0.003060336	33	0.2661	1.9982E-02	17	0.422	N
Nagaland	0.5208	7.19566E-05	45	0.3373	4.5682E-03	12	2.694	Y
Manipur	0.4939	0.000124401	299	0.4053	4.2423E-03	202	1.341	N
Mizoram	0.4349	2.15365E-05	183	0.4163	1.6049E-04	190	1.378	Y
Tripura	0.4915	0.000326338	145	0.4266	3.6854E-03	125	1.024	N
Meghalaya	0.3522	0.001156342	68	0.3333	4.2012E-03	50	0.258	N
Assam	0.3433	0.000258957	189	0.3319	2.5353E-04	139	0.503	N
WB	0.5413	9.35126E-05	847	0.4594	6.2895E-04	724	3.044	Y
Jharkhand	0.3942	0.000246231	239	0.3742	1.5020E-04	199	1.002	N
Odisha	0.4260	0.004152648	244	0.3450	1.6132E-04	217	1.233	N
Chhattisgarh	0.3809	0.002264865	174	0.4053	3.8133E-04	141	-0.473	N
MP	0.4437	0.00019388	487	0.4090	3.8627E-04	441	1.439	Y
Gujrat	0.4430	0.000101168	500	0.4522	2.1300E-03	474	-0.195	N
Daman	0.4000	0.004626195	17	0.3748	1.7093E-02	23	0.171	N
Dadra	0.3245	9.38286E-06	16	0.2975	6.1178E-03	9	0.345	N
Maharashtra	0.4796	2.68392E-05	1191	0.4553	1.9868E-05	1195	3.568	N
AP	0.4997	0.000368851	664	0.4612	1.5634E-04	472	1.682	Y
Karnataka	0.4349	0.002623473	531	0.3917	1.8788E-04	438	0.816	N
Goa	0.5292	0.011189467	96	0.3762	1.0800E-03	57	1.381	Y
Lakhshadweep	0.2442	0.001413319	47	0.2038	1.8279E-05	32	1.069	N
Kerala	0.5536	1.9142E-05	769	0.4868	1.6160E-04	730	4.966	Y
Tamilnadu	0.6789	0.001497551	927	0.5661	1.3363E-04	984	2.795	Y
Puduchery	0.5417	3.06232E-05	137	0.5752	2.5462E-05	138	-4.469	N
A&N	0.5055	0.00228568	57	0.4374	2.0858E-02	38	0.448	N

\*At 10% Level of Significance.

# The Imaginary Growth in Consumption Expenditure

Results of 66<sup>th</sup> Round NSSO Survey

Purnachandrarao<sup>1</sup>

## *Abstract*

*Finding of research reveal that the monthly per capita consumption expenditure (MPCE) has increased tremendously over the years. The variation among household types has narrowed down, agriculture labour in rural and casual labour in urban areas registered a remarkable growth during the period 2004/05 - 2009/10. It was observed from the analysis the high growth in consumption expenditure is resulted by the high inflation rate during the same period. It also believes the income generating activities have a limited impact on the pattern of consumption expenditure. The regression results showed there is an inverse relation between MPCE growth and poverty reduction indicates the growth in consumption expenditure was the factor that mattered for poverty reduction. But the weak linear reliability pinpoints that the growth in consumption expenditure is effected by the hike in prices and reduction in poverty ratio is the result of lower poverty lines which do not seem to have considered the inflation rate.*

**Keywords:** Monthly Per capita Consumption Expenditure, Household types, Poverty, Inflation.

## **I. Introduction**

The results of 66<sup>th</sup> Round National Sample Survey Organisation (NSSO) Survey clocked some interesting insights on consumption expenditure. The mesmerizing growth in Monthly Per Capita Consumption Expenditure (MPCE) over the years draws attention on living standards of people. Because MPCE is a welfare and poverty status indicator since it aggregates the monetary value of goods and services consumed in a particular period of time and it also exhibit a less seasonal variability. With this reason Indian Government has been estimating the poverty status for last four decades using MPCE as the major determinant. The obvious question is that the consumption expenditure is really increasing, and the declining variations in MPCE among household types for rural and urban areas are the reason that has seen in poverty reduction. If it is true, what are the parameters that influencing to these developments. In other words, the greater

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reduction in poverty over the period is the result of MPCE growth or lower poverty lines fixed by the government. To investigate these issues, this paper uses the average MPCE data of 55<sup>th</sup> (1999-2000), 61<sup>st</sup> (2004-2005) and 66<sup>th</sup> (2005-2009) quinquennial rounds of NSSO survey. The results of the data can provide some useful insights into wide changes in MPCE when compared with previous years. Due to the limitations of data for all states in three rounds, only 15 states have been selected for analysis purpose. The structure of the paper as follows: Section 1 gives the brief introduction. Section 2 analyses the change in MPCE across states between rural and urban areas. Section 3 looks at the variations in consumption expenditure between household types. The association between MPCE growth and poverty reduction discusses in Section 4. Finally, Section 5 offers some concluding remarks and policy implications.

## **II. Change in the pattern of Monthly Per capita Consumption Expenditure**

The results of the analysis showed the pattern of consumption expenditure has been increasing in all the states over the years. During the period 1999/00 to 2004/05 the change in monthly per capita consumption expenditure is very low in rural areas when compared to the urban areas (Table-1). But the dramatic change was registered between 2004/05 and 2009/10 in both rural and urban areas. This drastic change in consumption expenditure may attribute to the increase in inflation rate<sup>2</sup>. As estimated nearly 57% of total increase in consumption expenditure is mainly due to the high inflation rate. It means the limited change is influenced by the increase in income generation from Mahatma Gandhi National Rural Employment Guarantee Act (MNREGA), agriculture sector and un-organised sector. During the period 2004/5 - 2009/10, except Andhra Pradesh, Maharashtra, Orissa and Haryana none of the states experienced significant MPCE growth in urban areas. In the rural areas such states are Andhra Pradesh, Madhya Pradesh, Orissa, Maharashtra and Karnataka. The states like Bihar, Rajasthan, Gujarat and Uttar Pradesh were showing below the national average during the period 1999/00 – 2004/05, however, improved between 2004/05 and 2009/10. The inter-state disparities on MPCE showed a declining trend over the years due to the lowering gaps in wage rates. At all India level the MPCE being too low further dropped from 1999/00 to 2004/05 after which it has increased during 2004/05 - 2009/10 for both rural and urban areas. The coefficient of variation (C.V) in the pattern of consumption expenditure is very high during the period 1999/00 - 2004/05 in both

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<sup>2</sup> The rate of inflation increased from 4.25% in 2005 to 12.11% in 2010, highest in the decade of 2001-2010.

rural and urban areas. The most recent period, between 2004/05 and 2009/10 has been characterized by a significant reduction in C.V for both rural and urban areas especially in the states of Madhya Pradesh, Orissa, Punjab, Rajasthan, Tamil Nadu, Andhra Pradesh, Assam, West Bengal and Haryana. Therefore, it is clear that the states which have achieved higher MPCE level during the period 2004/05 – 2009/10 also shortened rural-urban divergence.

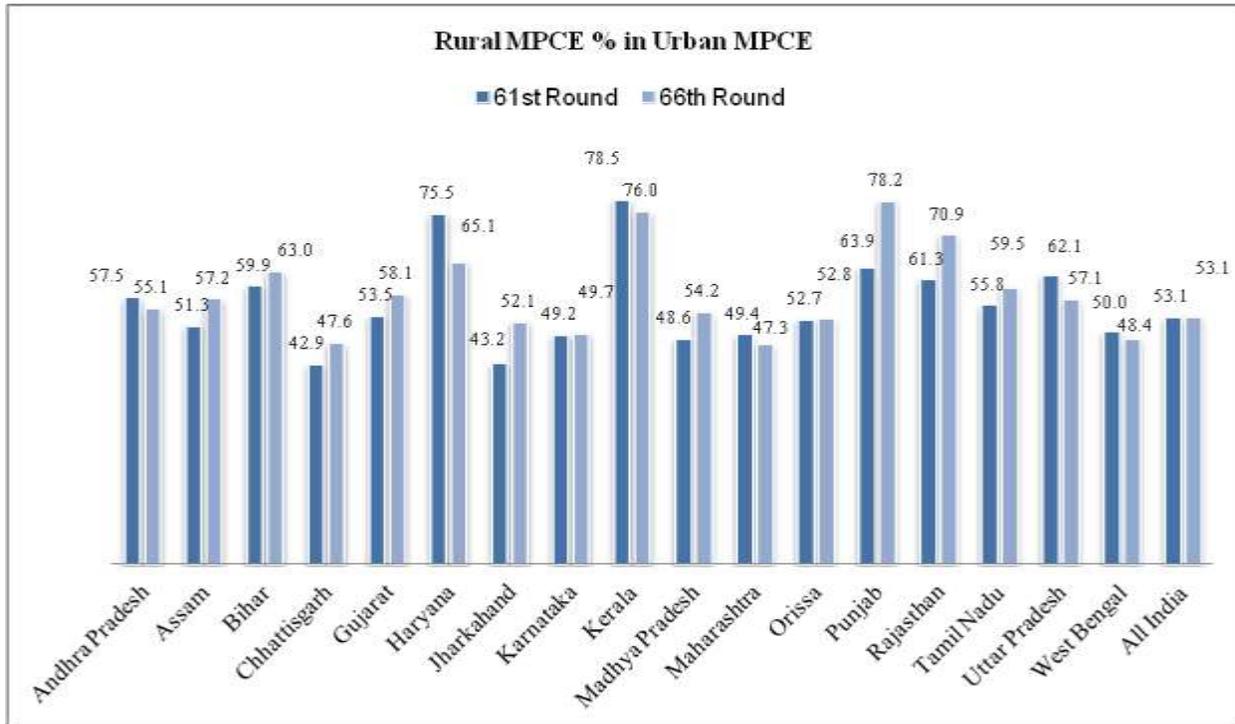
**Table-1**

Percent change in the average MPCE, 55th Round (1999-2000) to 66th Round (2009-10)						
State	Rural			Urban		
	1999/00-2004/05	2004/05-2009/10	1999/00-2009/10	1999/00-2004/05	2004/05-2009/10	1999/00-2009/10
AP	29.3	110.7	172.4	31.8	119.7	189.5
Assam	27.5	84.7	135.4	30.0	65.9	115.6
Bihar	8.6	87.0	103.1	15.7	77.8	105.6
Gujarat	8.2	86.2	101.5	25.0	71.2	114.0
Haryana	20.9	75.0	111.5	25.3	103.2	154.5
Karnataka	1.7	100.6	104.0	13.4	98.7	125.4
Kerala	32.3	81.1	139.6	38.5	86.9	158.9
MP	9.5	105.7	125.2	30.4	84.4	140.4
Maharashtra	14.2	103.1	132.0	18.0	112.2	150.5
Orissa	6.9	105.1	119.3	22.5	104.4	150.5
Punjab	14.1	94.7	122.2	47.5	59.0	134.6
Rajasthan	7.6	99.5	114.8	21.1	72.5	108.9
Tamil Nadu	17.2	92.6	125.7	11.2	80.4	100.6
Uttar Pradesh	14.3	68.8	92.9	24.2	83.7	128.1
West Bengal	23.8	69.4	109.7	29.7	74.9	126.9
All India	15.0	88.6	116.9	23.1	88.5	132.0
C.V	0.58	0.15	0.16	0.37	0.20	0.18

Source: Estimated from the data of various NSSO Rounds

Furthermore, the high inflation rate also made the rural and urban areas as much as closer. Figure-1 depicts the rural MPCE as a percent in urban MPCE is greater in the states of Haryana, Kerala, Punjab and Rajasthan. It pinpoints the pattern of consumption expenditure for rural households are more or less the same as compared to their urban counter parts between 2004/5 and 2009/10. The most effected states were Assam, Bihar, Chhattisgarh, Jharkhand, Gujarat, Madhya Pradesh, Punjab, Rajasthan and Tamil Nadu as these states improved their rural MPCE percent in urban MPCE during the same period. But the states like Andhra Pradesh, Haryana, Kerala, Maharashtra, Uttar Pradesh and West Bengal were showing the declining trend.

**Figure-1**



Source: Estimated from the data of various NSSO Rounds

### III. Variations between Household types

It can be seen from the Table-2, the average MPCE in rural areas for the self-employed in non-agriculture rose from 1999/00 to 2009/10 at a Compound Annual Growth Rate (CAGR) of 7.5%. This is true in all types of households like Agriculture labour (7.2%), self-employed in agriculture (7.1%) and other labour (6.5%). But the faster growth was registered in agriculture labour households (12.2%) during the period 2004/05 - 2009/10. This is greater particularly in the states of Maharashtra, Andhra Pradesh, Tamil Nadu, Karnataka, Orissa, Bihar, Gujarat and Kerala. In the case of self-employed in non-agriculture, the states of Madhya Pradesh, Orissa, Karnataka, Bihar and Andhra Pradesh improved their growth from 2004/05 to 2009/10. The highest growth in self-employed in agriculture was recorded in the states of Madhya Pradesh, Rajasthan, Orissa, Punjab, Karnataka and Andhra Pradesh. The lowest growth rates among the self-employed in agriculture and non-agriculture households was recorded in the states of Uttar Pradesh and West Bengal during the period 2004/5 - 2009/10. Similar type of picture is visible between 1999/00 and 2009/10 especially in the states of Andhra Pradesh, Madhya Pradesh, Tamil Nadu, Kerala, Maharashtra and Punjab. The states like Uttar Pradesh, West Bengal,

Rajasthan, Orissa, Karnataka, Gujarat and Bihar were below the national average. It was observed that the agricultural sector must have played a significant role and in fact to presume that the states which performed better in terms of growth rates.

**Table-2**

Compound Annual Growth Rate (CAGR) in the Household Type Consumption Expenditure from 55th round (1999-00) to 66th round (2009-10) -Rural Areas															
State	1999-00 to 2004-05					2004-05 to 2009-10					1999-00 to 2009-10				
	Self-empl in non-agriculture	Agri.la bour	Other labour	Self-empl in agriculture	Other	Self-empl in non-agriculture	Agri.la bour	Other labour	Self-empl in agriculture	Other	Self-empl in non-agriculture	Agri.la bour	Other labour	Self-empl in agriculture	Other
Andhra Pradesh	5.7	3.1	5.2	3.9	3.4	12.2	13.7	13.2	12.5	16.4	9.7	9.1	10.0	8.9	10.6
Assam	3.4	5.2	3.7	4.0	5.0	11.7	9.2	10.2	10.4	11.2	8.2	7.9	7.5	7.8	8.9
Bihar	1.4	0.0	2.4	2.0	0.0	12.0	12.5	11.1	10.5	12.2	7.2	6.7	7.3	6.7	6.5
Gujarat	3.4	0.7	2.7	0.6	2.5	8.9	12.0	11.4	10.7	10.4	6.7	6.8	7.6	6.1	7.0
Haryana	1.4	-0.5	1.1	1.7	10.2	11.7	10.6	11.4	11.9	4.1	7.0	5.3	6.7	7.3	7.8
Karnataka	-0.9	-0.4	1.0	0.3	5.6	13.4	12.8	13.2	12.5	6.9	6.6	6.5	7.6	6.8	6.8
Kerala	6.0	3.3	3.2	5.8	4.3	8.9	12.5	10.6	10.9	9.8	8.2	8.5	7.5	9.1	7.7
Madhya Pradesh	0.5	0.6	1.1	1.4	3.9	17.2	11.7	12.3	13.9	9.3	9.3	6.6	7.2	8.2	7.1
Maharashtra	2.0	1.0	-0.4	2.9	4.5	11.7	14.6	11.8	11.8	9.7	7.3	8.3	6.1	7.9	7.7
Orissa	2.2	0.3	-0.8	-0.1	2.3	12.5	12.3	12.8	12.8	12.8	7.9	6.7	6.3	6.7	8.1
Punjab	4.1	0.6	1.0	2.5	4.1	11.1	11.1	11.0	12.3	11.5	8.2	6.2	6.4	8.0	8.5
Rajasthan	1.4	0.1	0.7	1.4	1.8	11.0	11.4	12.7	13.1	10.6	6.7	6.1	7.2	7.8	6.7
Tamil Nadu	5.5	0.4	0.1	3.5	5.3	10.9	13.5	12.0	11.0	9.7	9.0	7.4	6.5	7.8	8.2
Uttar Pradesh	3.4	1.6	0.1	2.0	3.7	8.9	10.5	9.7	9.1	9.7	6.7	6.5	5.3	6.0	7.3
West Bengal	5.4	2.2	1.9	3.3	3.4	8.6	11.0	10.0	9.5	9.1	7.7	7.1	6.4	7.0	6.8
All India	3.1	1.2	1.2	1.9	3.9	10.7	12.2	10.9	11.2	11.3	7.5	7.2	6.5	7.1	8.2

Source: Estimated from the data of various NSSO Rounds

The variation in the average MPCE between rural households type explains the highest variation was slated for agriculture labour in 1999/00 - 2004/-05 but it was declined dramatically during the period 2004/-05 - 2009/10 (Figure-2). However, this is not the indication of improvement in command over commodities, it is primarily the impact of inflation rate. Between 2004/05 and 2009/10 about 42% of total increase in MPCE is resulted by the high rate of inflation<sup>3</sup>. It means only 58% is the reflective of the special impact of MNREGA, wage rate growth, minimum support price and access to employment bearing fruits in the following years. There is a shift in the MNREGA beneficiaries earning in the range of (Rs.10,000 - Rs.15,000) and (Rs.15,000 - Rs.20,000) increased from 33% and 20% to 44% and 26.3% respectively as a result of impact of

<sup>3</sup> Inflation rate for agriculture labour estimated using the Consumer Price Index (CPI) of rural labour from Labour Bureau statistics, Ministry of Labour and Employment, Government of India.

the scheme<sup>4</sup>. The improvement in Minimum Support Price (MSP) in most of the commodities<sup>5</sup>, drought relief recommended by Commission for Agricultural Costs and Prices (CASP)<sup>6</sup> and rural un-organised sector<sup>7</sup> especially mining & quarrying and construction sectors have a greater impact on consumption expenditure. It also believes the improvement in consumption expenditure due to high inflated prices is the indication of pressure on rural labour to fulfill their minimum basic needs for survival<sup>8</sup>. On the other hand the annual growth rate of persons by household type per 1000 distribution was declining in the case of agriculture labour and self-employed in agriculture. It shows the distribution of persons was declining over the years, thereafter provided more number of working days and increasing demand of resources reflects on the command over commodities.

In terms of CAGR in urban areas, it shows the MPCE grew at a rate of 11.1% per annum during the period 2004/05 - 2009/10 in casual labour households, roughly nine times of the growth rate clicked in the same household type between 1999/00 and 2004/05 (Table-3). This is particularly in the states of Andhra Pradesh, Kerala, Uttar Pradesh and West Bengal. Despite having declining trend in 1000 distribution of employment, it was surprising that the regular wage/salary earning and self-employed households show a high rate of growth in 1999/00-2004/05 and continuing the same trend in 2004/05-2009/10. The highest growth in consumption expenditure for self-employed was recorded in the states of Kerala, Punjab, Assam, Haryana, and Uttar Pradesh in 1999/00-2004/05. The change in consumption expenditure in regular wage/salary

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<sup>4</sup> All India Report on Evaluation of NREGA - A Survey of twenty districts, Institute of Applied Manpower Research, New Delhi, 2007.

<sup>5</sup> The increase in MSP in 2008-9 over 2007-8 Rs. per quintal: Kharif Crops (31.8% in Paddy, 40% in jowar, 35.5% in maize, 52.5% in ragi, 38.9% in cotton and 48.4% in black soyabean); Rabi Crops (8% in wheat, 4.6% in barley, 8.1% in gram) and other crops like jute by 18.5%).

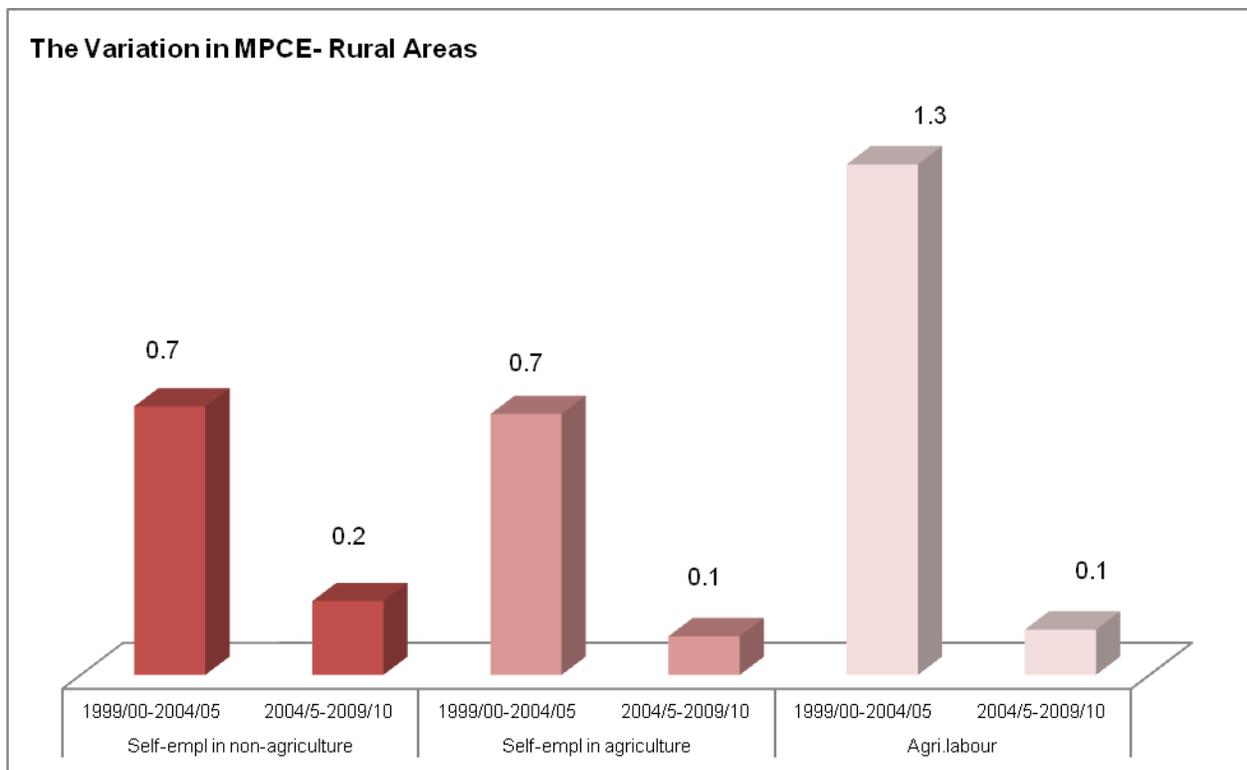
<sup>6</sup> As against 78.84 lakh new farmers provided with credit from various institutional sources, the corresponding numbers during the subsequent years were 78.73 lakhs (2005-06), 83.5 lakhs (2006-07) 85.19 lakhs (2007-08) and 94.9 lakhs (2008-09).

<sup>7</sup> During the period 2004-05 - 2009-10, the distribution of employed persons per 1000: Mining & quarrying (increased from 6 - 8 for male and no change for female), Construction (increased from 68 - 113 for male and 15 - 52 for female).

<sup>8</sup> It can be observed from the trends in percentage composition of consumer expenditure, the share in total consumer expenditure in rural areas is higher than urban areas for 2009-10: Expenditure on food (53.6% in rural, 40.7% in urban), fuel & light (9.5% in rural and 8% in urban), clothing (4.9% in rural and 4.7% in urban).

earning households is highest in Punjab, West Bengal and Kerala for the same year. During the period 2004/05-2009/10, the states such as Andhra Pradesh, Maharashtra, Haryana and Bihar were showing the highest growth for self-employed households. Among the states the highest growth in casual labourers was recorded in the states of Bihar, Karnataka, and Tamil Nadu while Uttar Pradesh and Assam showing the lowest growth. At all India level, during the period 1999/00-2009/10 there is a significant growth of 8.2% in regular wage/salary earning households followed by self-employed and casual labour.

**Figure-2**



Source: Estimated from the data of various NSSO Rounds

**Table-3**

Compound Annual Growth Rate (CAGR) in the Household Type Consumption Expenditure from 55th round (1999-00) to 66th round (2009-10) -Urban Areas												
State	1999-00 to 2004-05				2004-05 to 2009-10				1999-00 to 2009-10			
	Self employed	Regular wage/salary earning	Casual labour	Others	Self employed	Regular wage/salary earning	Casual labour	Others	Self employed	Regular wage/salary earning	Casual labour	Others
Andhra Pradesh	3.7	4.0	4.6	8.9	14.5	14.1	11.5	13.4	9.8	9.8	8.8	12.2
Assam	5.1	3.0	0.5	4.8	6.8	11.0	8.9	14.4	6.5	7.6	5.0	10.4
Bihar	2.5	3.0	2.5	5.2	11.9	7.4	12.8	8.7	7.8	5.6	8.2	7.6
Gujarat	3.2	3.3	0.7	4.5	9.7	9.8	9.3	9.6	7.0	7.1	5.4	7.7
Haryana	4.4	2.1	-1.5	7.9	12.1	12.5	10.5	15.3	9.0	7.8	4.7	12.7
Karnataka	2.0	2.0	1.0	6.4	11.6	11.7	13.6	14.2	7.3	7.4	7.8	11.2
Kerala	7.4	5.0	4.1	2.2	9.2	12.5	10.1	14.0	9.0	9.5	7.7	8.7
Madhya Pradesh	4.3	4.3	2.4	6.3	9.6	12.7	11.5	11.4	7.6	9.2	7.5	9.7
Maharashtra	2.7	2.9	1.2	3.4	13.2	12.9	11.8	15.1	8.6	8.5	7.0	10.0
Orissa	3.1	4.6	0.5	7.4	11.2	13.7	11.8	13.8	7.8	9.9	6.6	11.6
Punjab	5.7	8.1	0.3	8.0	8.1	7.5	11.2	9.8	7.5	8.5	6.1	9.7
Rajasthan	2.3	4.6	0.4	6.6	10.2	8.4	11.3	12.9	6.7	7.1	6.3	10.6
Tamil Nadu	1.6	2.5	-6.0	6.6	10.8	11.2	13.3	8.8	6.7	7.4	3.5	8.5
Uttar Pradesh	4.4	3.1	3.9	1.4	8.1	11.8	8.9	22.2	6.8	8.0	6.9	12.4
West Bengal	3.2	5.4	3.9	7.6	9.7	9.7	9.5	9.1	7.0	8.3	7.3	9.1
All India	3.2	3.6	1.2	5.8	10.7	11.5	11.1	13.0	7.5	8.2	6.6	10.2

Source: Estimated from the data of various NSSO Rounds

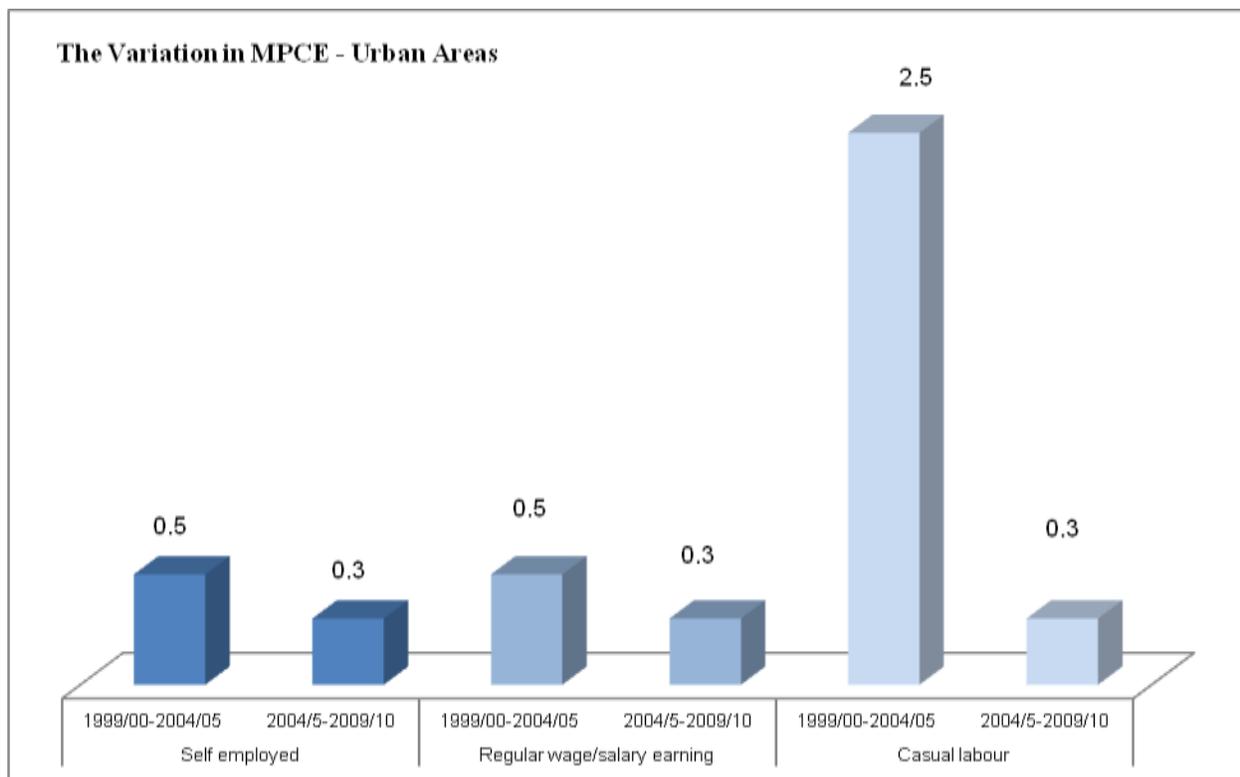
The data on annual growth rate of persons by household type per 1000 distribution tells there is a fivefold increase in casual labour households between 2004/05 and 2009/10. The number of persons in regular wage and salary earned households has been declining over the period of time. It means, people in the urban areas tend to choose either self-employment or casual labour as their livelihood. The variation in the average MPCE was declined in all type of households during the period 2004/05-2009/10 (Figure-3). But it is most significant in case of casual labour households. It is this un-expected growth process in casual labour is primarily led by the high inflated prices due to lack of governance more importantly corruption. The estimates showed roughly 59% of the MPCE for casual labour is affected by the increase in inflation rate<sup>9</sup>. It also believes during the period the opportunities in un-organised sector<sup>10</sup> like construction, trade,

<sup>9</sup> Inflation rate in urban areas estimated based on the data of CPI of industrial workers from Labour Bureau Statistics of Ministry of Labour and Employment, Government of India.

<sup>10</sup> Per 1000 distribution of usually employed persons in urban areas changed between 2004/05 and 2009/10: Manufacturing (235-218 for male, 282-279 for female), construction (92-114 for male and 38-47 for female), trade, hotels & restaurants (280-270 for male and 122-121 for female), Transport, storage & communications (107-104 for male and 14-14 for female) and other services (208-219 for male and 359-393 for female).

hotels, transport, and real estate has a limited impact on the reduction in the variation for the particular households.

**Figure-3**



Source: Estimated from the data of various NSSO Rounds

#### **IV. Association between MPCE growth and poverty reduction**

As we have seen in India, the reduction in poverty has been spectacular. But progress in the declining absolute number of poor and rural-urban poverty gaps during the past three decades has been limited. This slow progress and decline in influence of government interventions has prompted new thinking on poverty and its relation with consumption expenditure. Because it was trusted by the government the higher growth in consumption expenditure tends to yield rapid rates of poverty reduction. The correlation coefficient between MPCE growth and poverty reduction in 2004/5-2009/10 has come out to be significant negative in both rural and urban areas. The results of correlation coefficient (R) showed there is an inverse relation between consumption expenditure growth and poverty reduction in both rural and urban areas. The

obtained R-value is -0.354 for rural and -0.391 for urban areas implying that the monthly per capita consumption expenditure increases as the ratio of poverty decreases. The value of coefficient of determination ( $R^2$ ) explains there is a weak linear reliability was observed between MPCE growth and poverty reduction in both rural and urban areas (see Table-4). The obtained  $R^2$  value is 0.125 for rural and 0.153 for urban areas which means 12% change in rural poverty can be explained by the fact that change in the monthly per capita expenditure during the period. Other 88% of change in poverty remains unexplained. In the urban areas it is only 15% of change in poverty is pointed out by the change in MPCE, 85% change is said to be the effect of high rate of inflation or it is straightforward, the greater poverty reduction caused by the estimates of poverty based on the lower poverty lines<sup>11</sup>. Therefore the linear regression results also support the same argument that high inflation rate has a greater impact on the growth in consumption expenditure and reduction in poverty is resulted by the lower poverty lines.

**Table-4**

Linear Regression				
Details	R		$R^2$	
	Rural	Urban	Rural	Urban
MPCE change vs. Poverty reduction (2004/05 - 2009/10)	-0.354	-0.391	0.125	0.153

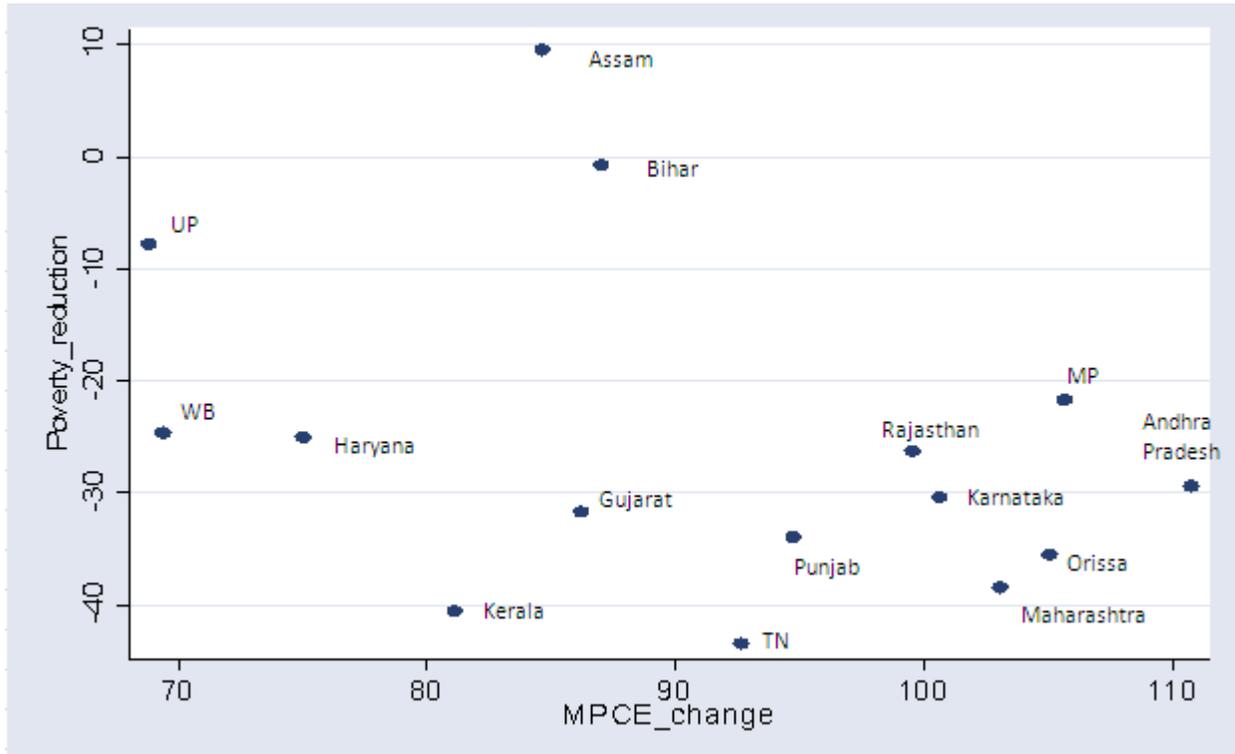
It is quite obvious from Figure-4 that Maharashtra, Orissa, Karnataka, Punjab, Tamil Nadu and Andhra Pradesh form a group with high MPCE growth and high poverty reduction. On the other end Assam, Bihar and Uttar Pradesh among the sample states with low poverty reduction and low MPCE growth, and rest of the states more or less represent high MPCE growth with low to moderate poverty reduction in rural areas during the period 2004/05 - 2009/10.

But in urban areas we find quite a different scenario. The empowered group states like Madhya Pradesh and Rajasthan having as high poverty reduction and MPCE growth as the rich states of Kerala or Tamil Nadu (Figure-5). Similarly Rajasthan and Maharashtra have same level of poverty reduction though MPCE of former is almost half that of the latter. The richer states like

<sup>11</sup> Government poverty line: monthly per capita Rs.672.8 for rural and 859.6 for urban, 2009-10.

Punjab and Haryana also following the same. Thus it can't generally be said that poorer states have seen not able to maintain MPCE growth or richer states have failed to reduce poverty in urban areas.

**Figure-4: MPCE change vis-a-vis Poverty reduction (Rural Areas)**

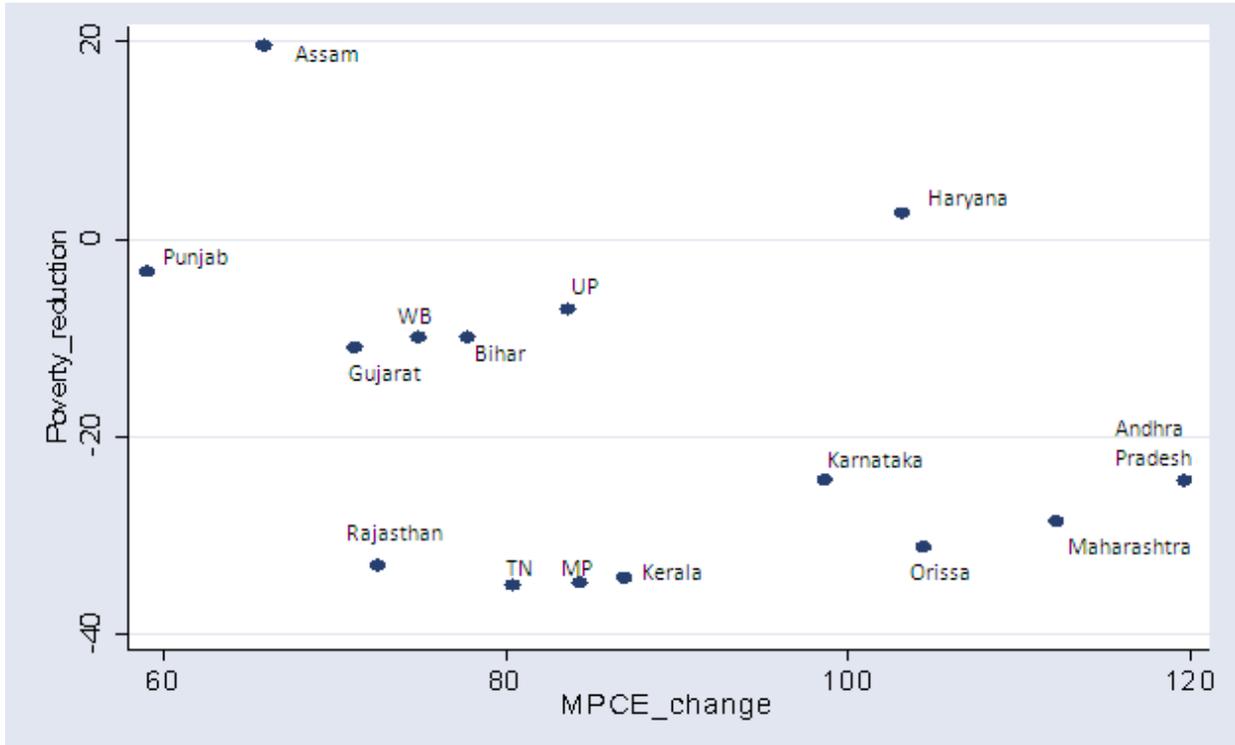


In view of the above, if the improvement in consumption expenditure was the only key factor that mattered for poverty reduction, India has witnessed greater reduction in poverty. But growth in consumption expenditure is not trustworthy, it is only the growth in inflation. During the period 2004-05-2009/10, the poverty ratio was declined around 19 points each in both rural and urban areas<sup>12</sup>. This rate of reduction is not influenced<sup>12</sup> by the growth in consumption expenditure alone, this is the result of improvement in the access to income generation activities and government interventions. On the other hand poverty has many dimensions and it is multi-formation. The rising living standards is not determined by consumption expenditure or income alone, the non-economic factors such as life expectancy, mortality, nutrition, literacy completion

<sup>12</sup> Poverty ratio based on the methodology of Suresh Tendulkar.

rate, housing characteristics, security, access to information, safe drinking water, and availability of public utilities are also important measures.

**Figure-5: MPCE change vis-a-vis Poverty reduction (Urban Areas)**



## V. Conclusion

The main issue emerged from the analysis overall there is a significant growth in MPCE and declining trend in the variations of consumer spending. The casual labour in urban areas and agriculture labour in rural areas have seen impressive growth in their consumption basket. During the period 2004/05 - 2009/10 there is adequate evidence towards declining rural-urban divide across the states. The growth in the average monthly consumption expenditure was most striking during the period 2004/05-2009/10. It believes that the highest percent of inflation involved in the increase in the pattern of MPCE, while the lower poverty line which was showing the drastic decline in poverty ratio. The policy interventions with regard to income generation and other welfare schemes also helped to increase the purchasing power of people. The other factor which helped the poor was growth in wage rates. It is a greater need that the

agriculture sector and rural employment should be strengthened. It is also important that the agricultural sector needs higher public investments and better support in terms of promoting institutional lending. In this context an effective way to counter landlessness is to implement land reforms and better market-mediation structures need to be developed to make rural sector more equitable. It should be followed the minimum wage policy to reduce inter-state disparities. Government should concentrate on lowering the hike in prices. Meanwhile people are pledging not to pay high prices touched the sky. It also noted that total consumption expenditure on food items is higher in rural than urban areas. Therefore government should lower the prices mainly food prices which has raised 5 fold during the short period. In urban areas the better performance of industry and services particularly manufacture sector need to be broadened up in favour of labour intensive to raise income levels. The states like Assam, Bihar, Gujarat, Rajasthan, Uttar Pradesh and West Bengal have registered the lowest MPCE. Scaling-up the employment opportunities both casual and self-employment and making lower prices will help to increase the pattern of real consumption expenditure in these states and also to be seen reduction in poverty. The lower poverty line is misrepresenting the real incidence of poverty. Therefore the government poverty line should follow the inflation rate to trace the real picture of poor in India.

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**Food Consumption and Calorie Intake in India:  
An Analysis of 50<sup>th</sup>, 61<sup>st</sup> and 66<sup>th</sup> Round NSS Quinquennial survey**

**Niranjan Chichuan**

**Abstract**

The quinquennial consumer expenditure surveys of the NSSO make the estimation of the per capita intake of different food items and consequent supply of calorie, proteins, fat. In this paper various surveys of consumer expenditure estimates are presented which show a paradoxical trend that an average per capita calorie intake has been declining both in rural and urban areas even as real per capita monthly expenditure has been increasing during the same period. At the same time quantities of consumption of food items show that the share of cereals in the food basket has gone down. On the other hand, the share of many non-food items is on the rise particularly, education, along with health, durable goods, and consumer services. It is also important to note that the latest India Human Development Report 2011 report reveals an abysmal level of hunger and malnutrition in several states across India.

**Key word: Calorie, Hunger, Malnutrition, Food Consumption and Expenditure on food and non-food**

## **Introduction**

Despite of achieving self-sufficiency in food grains at macro level and rising its “middle class with an improving diet”<sup>1</sup>, India still remains home to millions of poor. It is because the majority of the poor depend on the weekly or monthly ration for their basic food requirement for their subsistence level living. Rice and wheat dominates the food basket in most of the families and consumption of pulses, vegetables, oil and fats and fruits continue to remain out of reach except some seasonal green leafy vegetable. Individuals need a wide range of nutrients to lead a healthy and active life. The required nutrients for different physiological groups can be derived from a well-balanced diet which can actually help in eradicating hunger and malnutrition and the consequent adverse impact on the health of children, women and men. In this context, the required amount of a balanced intake of calories, protein, fats and essential micronutrients are very important. Various National Sample Survey (NSS) reports show that over the year the number of people below the norm has consistently increased and more than three quarters of the population live in households whose per capita calorie consumption is less than the norm<sup>2</sup>.

## **Food Consumption and Expenditure**

The National Sample Survey provides periodic consumption expenditure on various food articles like cereals, pulses, vegetables, oil and fats and per capita energy consumption per person per day, for both rural and urban area. Thus the primary data on quantity of the food items are taken from all the quinquennial surveys of consumer expenditure of the NSSO<sup>3</sup>. On the basis of 66<sup>th</sup> round figures for 2009-10, along with 50th and 61st rounds, the paper try to identify some trends of food consumption and expenditure by examining the per capita expenditure on selected five food items. The analysis also

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<sup>1</sup> The Former US Secretary of State Condoleezza Rice made a statement saying that consumption of better diets in India and China led to global food crisis because the government s forced to reduce the supply to meet its domestic demand.

<sup>2</sup> Report of the Expert Group to Advise the Ministry of Rural Development on the methodology for Conducting the BPL Census for 11th Five Year Plan, (New Delhi: Ministry of Rural Development, Government of India, August 2009), p.6.

<sup>3</sup> Mainly the quinquennial survey of 50<sup>th</sup>, 61<sup>st</sup> and 66<sup>th</sup> round survey data has used for analysis.

focuses on monthly per capita consumer expenditure (MPCE) on food and calorie intakes. The paper used the data from the “thick sample” survey reports on consumer expenditure conducted by the NSS for the years 1993-94, 2004-05 and 2009-10.

The 66<sup>th</sup> round data shows that all-India average MPCE has slightly increased in rural and urban areas. In rural area, it has increased from Rs 281 in 1993-94 to Rs 928 in 2009-10, and in urban areas from Rs 458 to Rs 1,786 (Table 1). But the same data do not show any major increase in the real monthly per capita food expenditure during the same period. The growth in food expenditure has been lower than the increase in overall expenditure on all goods between 1993-94 and 2009-10. It means an increasing share of expenditure going to non-food items in both rural and urban areas. The shares of various food items in total food expenditure are given in Table 2 and 3. It shows the trends of reallocation of consumer food expenditure go from cereals towards other food items.

**Table 1: Growth in Real Average per Capita Expenditure on All Goods and Average per Capita Expenditure on Food (Rs)**

Year	Average per capita expenditure at 1993-94 Prices		Average per capita expenditure on Food at 1993-94 prices	
	Rural	Urban	Rural	Urban
1993-94	281.4	458	177.8	250.3
2004-5	323	523.6	184.2	240.5
2009-10	347.5	637.8	184.8	244.9

Source: calculated from NSS data and deflated by using the Consumer Price Index – Agricultural Labourers, CPI-AL, July-June 1993-94 base) and Consumer Price Index – Industrial Workers, CPI-IW, April-March 1993-94 base.

**Table 2: Share in total consumer expenditure (Rs)**

Year	Rural	Urban
1993-94	63.2	54.7
2004-05	55	42.5
2009-10	53.6	40.7

Source: calculations from NSS data based on non-deflated MPCE

**Table 3: Composition of Food Consumption**

Item group	Rural			Urban		
	Share in total consumer expenditure in					
	1993-94	2004-05	2009-10	1993-94	2004-05	2009-10
Cereals	24.2	18	15.6	14	10.1	9.1
Gram	0.2	0.1	0.2	0.2	0.1	0.1
Cereal substitutes	0.1	0.1	0.1	0.1	0	0
Pulses & products	3.8	3.1	3.7	3	2.1	2.7
Milk & products	9.5	8.5	8.6	9.8	7.9	7.8
Edible oil	4.4	4.6	3.7	4.4	3.5	2.6
Egg, fish & meat	3.3	3.3	3.5	3.4	2.7	2.7
Vegetables	6	6.1	6.2	5.5	4.5	4.3
Fruits & nuts	1.7	1.9	1.6	2.7	2.2	2.1
Sugar	3.1	2.4	2.4	2.4	1.5	1.5
Salt & spices	2.7	2.5	2.4	2	1.7	1.5
Beverages, etc.	4.2	4.5	5.6	7.2	6.2	6.3
<b>Total food</b>	<b>63.2</b>	<b>55</b>	<b>53.6</b>	<b>54.7</b>	<b>42.5</b>	<b>40.7</b>

Source: Compiled from NSSO Reports, Various Rounds

### Actual Food consumption

The total monthly per capita food consumption for cereals, pulses, edible oil, milk and sugar in terms of physical quantities is given in Table 4. The monthly per capita cereal consumption has declined from 13.4 kgs to 11.35 kgs in rural area during 1993-94 to 2009-10, while the corresponding decrease in the urban area is from 10.6 kgs to 9.37 kgs. It clearly shows that there has been some decline in cereal consumption in both rural and urban area during the same period. There was also seen a significant reduction in coarse

cereals from 2.29 to 0.85 kg in the rural areas and from 1.03 to 0.38 kg in the urban areas. There was also a decline in the consumption of pulses from 0.76 kg to 0.65 kg in the rural areas and from 0.86 to 0.79 kg per capita in the urban areas. On the other hand, oil consumption has increased from 0.37 kg to 0.64 kg per capita in the rural areas and from 0.56 to 0.82 kg in the urban areas.

**Table 4: MPCC of five selected Food Items-All India**

Food Items	Rural			Urban		
	1993-94	2004-05	2009-10	1993-94	2004-05	2009-10
Total Cereals	13.4	12.12	11.35	10.6	9.94	9.37
Total Pulse	0.76	0.71	0.65	0.86	0.82	0.79
Total Edible Oil	0.37	0.48	0.64	0.56	0.66	0.82
Milk	3.94	3.87	4.12	4.89	5.11	5.36
Sugar	0.77	0.74	0.71	0.96	0.87	0.82

Source: Compiled from NSSO Reports, Various Rounds

It is also important to note that the proportion of rice in total cereals is higher in rural and urban area (Table 5). The decline in rice consumption is -12.86 per cent and -12.06 per cent in both rural and urban areas respectively. The decline in wheat consumption is -0.91 per cent in rural area and -7.02 in urban areas. The consumption of jowar is also declined upto -63.75 per cent and maize is also declined by -50 percent. The decline of Bajra is -44 per cent and -10 per cent both in rural and urban areas respectively.

**Table 5: Monthly per capita consumption of cereals (in kg)**

Food Items	Rural			Urban		
	1993-94	2009-10	percentage of Change	1993-94	2009-10	percentage of Change
Rice	7	6.14	-12.86	5.3	4.66	-12.06
Wheat	4.4	4.36	-0.91	4.7	4.37	-7.02
Jowar	0.8	0.29	-63.75	0.4	0.18	-55
Bajra	0.5	0.28	-44	0.1	0.09	-10
Maize	0.4	0.2	-50	0	0.02	0
Other cereals	0.3	0.11	-63.33	0.1	0.08	-20
Total cereals	13.4	11.35	-15.3	10.6	9.37	-11.6

Sources: Level and Pattern of Household consumption expenditure, Compiled from NSSO Reports, 1993-94- 2009-10 Rounds

The total expenditure on food also depends on the share of expenditure on non-food items and the total expenditure of the household. Various NSS data shows the share of the non-food articles like Pan, tobacco and intoxicants are declining in urban areas, while fuel and light show an increase in share in urban area. Clothing and bedding show an overall fall and the share of durable goods appears to be picking up. The larger share of expenditure is increasing towards the “miscellaneous goods and services” that includes non-food-essentials like education, medical care (Table 6). Table 7 shows increasing spending on education for children and healthcare in India.

**Table 6: Non-food consumer expenditure**

Items group	Rural			Urban		
	1993-94	2004-05	2009-10	1993-94	2004-05	2009-10
	share in consumer expenditure					
Pan, tobacco, intox.	3.2	2.7	2.2	2.3	1.6	1.2
Fuel & light	7.4	10.2	9.5	6.6	9.9	8
Clothing & bedding	5.4	4.5	4.9	4.7	4	4.7
Footwear	0.9	0.8	1	0.9	0.7	0.9
Misc. & services	17.3	23.4	24	27.5	37.2	37.8
Durable goods	2.7	3.4	4.8	3.3	4.1	6.7
<b>Non-food total expenditure</b>	<b>36.8</b>	<b>45</b>	<b>46.4</b>	<b>45.3</b>	<b>57.5</b>	<b>59.3</b>

Sources: Source: Compiled from NSSO Reports, Various Rounds

**Table 7: Spending on children's education and healthcare**

	Rural		Urban	
	2004-05	2009-10	2004-05	2009-10
% of households spending on children's education and healthcare				
Education	40	63	57	73
Medical (institutional)	1.3	13	1.5	14
Medical (non-institutional)	61	68	63	65

Compiled from NSSO Reports, 1993-94- 2009-10 Rounds

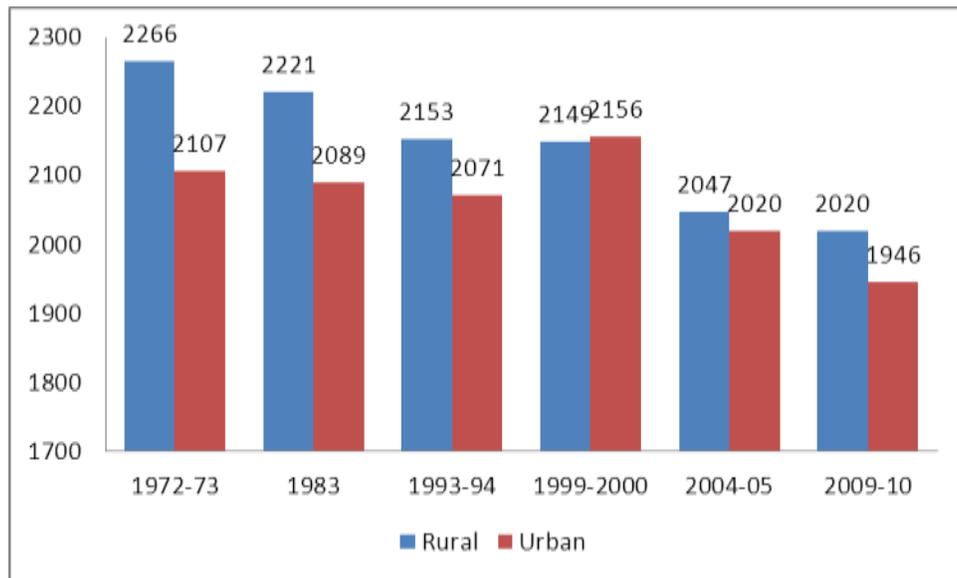
### Food Intake:

#### Calorie

Food intake is one of the most important measures of well-being of the people and for judging the nutritional situation in the country. In India, it is quite evident from Figure 1 that the overall per capita intake of calorie has declining consistently from 1983 to 2009-

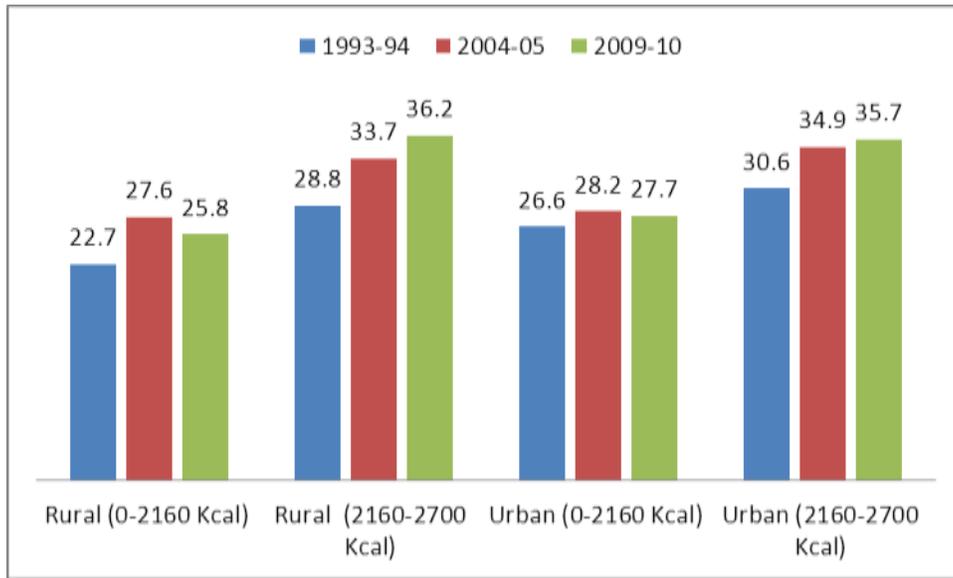
10. According to the 66<sup>th</sup> round NSS data rural calorie consumption per capita fell 27 per cent from 2047 to 2020 kcal. Similarly, the calorie consumption fell by 74 per cent from 2020 to 1946 in urban area. Average calorie intake figures have been consistently falling over time despite rises in consumption expenditure in India and the Figure 2 shows people consuming less than 2700 calorie per consumer unit per day.

**Figure 1: Declining of Calorie Intake**



Source: Compiled from NSSO Reports, Various Rounds

**Figure 2: Population consuming less than 2700 Kcal per day (%)**



Source: Jayati Ghosh (Agrarian and Food Crisis in India)

### **Some Trends**

Different viewpoints have been put forward by different economists explaining declining of the calorie consumption intake in India. Deaton and Dreze (2009) provide a comprehensive analysis of the facts of calorie and nutritional intakes from 1983 to 2004-05 rounds NSS survey. The findings say that estimated average calorie intake in rural areas declined by about 10 percent and slight decline of average calorie intake in urban areas. Real average MPCE is increased around 22 per cent in rural areas during same period. The same trend continued and average 6 per cent calorie intake has declined in 66<sup>th</sup> round of NSS survey in 2009-10. Real average MPCE increased by 17 per cent in rural areas. The requirement of calorie was not met in the past and over time its intake has been declining. As per the estimation of average calorie intake per capita and consumer unit across MPCE decile classes in 2009-10 more than 30 per cent of the population do not get the required recommended calories per day per consumption unit intake in both rural and urban areas.

*Increased in the share of non-cereals:* India has been witnessing a continued decline of the calorie intake since 1983 (Figure 1) and the share of food in total expenditure

continued falling in both rural and urban from 1993-94 to 2009-10 (Table 3). In rural area, the share of non-cereals such as milk and milk products, eggs, fish and meat, and fruits and nuts, vegetables, beverages, has noticeably increased. Apart from cereals, the shares of sugar and pulses have also been declined noticeably. In urban area, not only has the share of cereals and pulses fallen, but there has been a steady falling the share of other food groups as well; such as milk and milk products, edible oil, eggs, beverages, and sugar. However, the increase in the share of non-cereals is not enough to compensate for the decline in cereal consumption.

*Deficiency in Recommended Calorie:* The minimum daily calorie requirements of 2400 Kcal in rural areas and 2100 Kcal in urban areas were fixed by the Planning Commission to determine the poverty line based on the base year 1973–74. Since then, it continued till Prof. Suresh Tendulkar Committee recommends a single norm of 1800 Kcal per day in 2009. It is hardly surprised that poor people toiling hard as casual wage labour under public wage employment programmes would not increase their calorie intake. According to the study conducted by National Nutrition Monitoring Bureau there are nearly 51 per cent of rural people are engaged in moderate work<sup>4</sup> (Table 9). Taking many issues into account the Indian Council of Medical Research (ICMR) recommended the required amount of calorie and protein per capita per day. The poor consume much below this recommended level of calories in both rural and urban areas. It recommended 60 gm protein per capita per day. Deficiency of protein intake is increasing in the rural area which has reduced to 5 gm in 2009-10, whereas in urban area it is continuously falling from the recommended requirement. The daily recommended fats consumption per consumer unit is 40 gm. The poor are not only experienced decline in calorie intake they also experiencing both deficiency and surplus of their intake of protein and fat (Figure 3 and 4).

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<sup>4</sup> Report Of Second Repeat Survey-Rural (1996-97), NNMB Technical Report No.18, National Nutrition Monitoring Bureau, National Institute of Nutrition, Indian Council of Medical Research ,Hyderabad, 1999.

**Table 8: ICMR Recommended energy requirement**

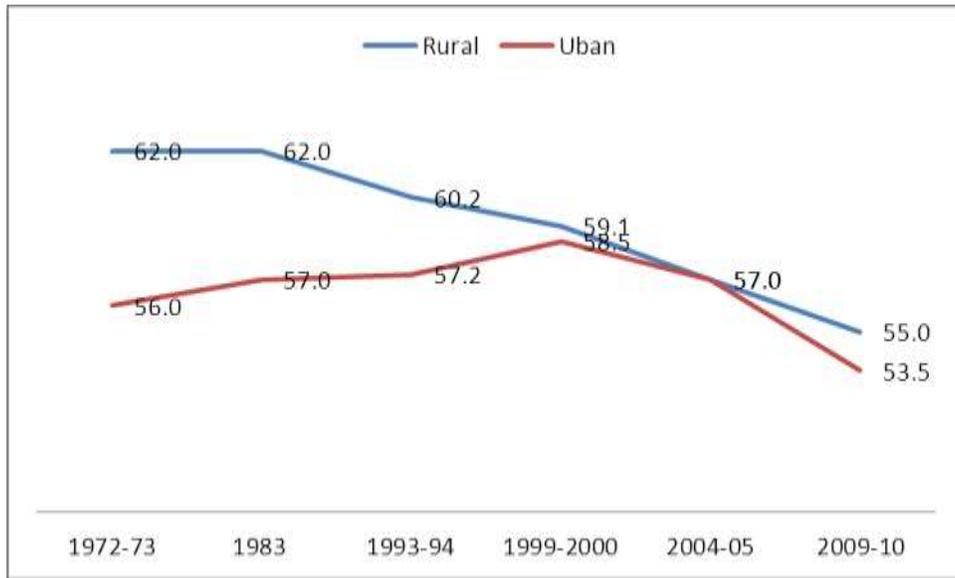
Recommended energy requirement			
Age groups	Category	Requirements Kcal/day (2010)	Difference from 1989 RDA Kcal/day
<b>Man</b>	Sedentary	2318	-107
	Moderate work	2727	-148
	Heavy work	3485	-315
<b>Woman</b>	Sedentary	1899	24
	Moderate work	2234	-9
	Heavy work	2854	-71

Major lifestyles, energy expenditure, ICMR 2010, p.56

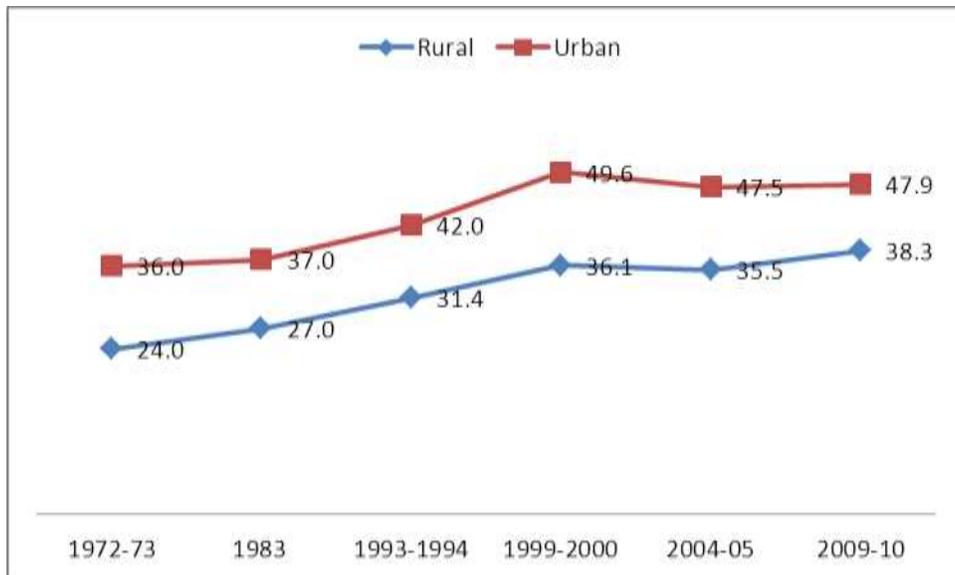
**Table 9: Report of Second Repeat Survey-Rural (1996-97), National Nutrition Monitoring Bureau, National Institute of Nutrition**

Activity Status in Rural India						
Activity Status	Men		Wome n		Tota l	
	n	%	n	%	n	%
Sedentary	134	33.	2705	62.	411	48.
	9	3		7	4	6
Moderate	265	66.	4282	37	428	50.
	0	5			2	6
Heavy	48	1.2	14	0.3	62	0.8
Pooled	404	100	4411	100	845	100
	7				8	
n=Sample size						

**Figure 3: Protein Consumption (in gm)**



**Figure 4: Fat Consumption (in gm)**



*Huge gap in spending pattern between top and bottom decile Groups:*

The NSSO report 2009-10 reveals the disparities in scale and levels of expenditure and consumption between top and bottom decile groups in rural and urban areas. The average monthly per capita expenditure was Rs 1054 in rural area and Rs 1984 in urban area. The per capita expenditure level of the urban population was on an average 88 per cent higher than the rural counterpart. The consumption inequality within the rural population has also increasing marginally. The top 10 per cent of rural population having an average monthly per capita expenditure is Rs 2517 which is 5.6 times that of the poorest 10 per cent whose average monthly per capita expenditure is Rs 453. The average rural monthly per capita expenditure is Rs 895 which is coming around Rs 30 per day. This indicates that half of the rural population had monthly per capita expenditure below this level. It also shows that 40 per cent of the rural population had per capita expenditure below Rs 800 and 60 per cent had monthly per capita expenditure below Rs 1000. In urban areas, half of the population had an average per capita expenditure below Rs 1500, about 70 per cent of population had monthly per capita expenditure above Rs 1100, nearly 30 per cent had per capita expenditure above Rs 2100, and 20 per cent had per capita expenditure above Rs 2600. It clearly shows how the inequality affects nutritional requirements in India.

Analysis of the nutritional trends of NSS Survey suggests that hunger and malnutrition in India continue to remain a cause of concern. Commenting on the continues decline of calorie NC Saxena committee report says that “the decline in calorie consumption of the top quartile in various NSSO rounds could be due to more sedentary life style or increasing diversity in food intake, but the decline for the bottom quartile cannot be interpreted as a sign of prosperity. The latest India Human Development Report 2011 also highlights state-wise Hunger index for 17 states across India. The lowest hunger index is above 10. The best performing state is Punjab, with a Hunger Index of 13.63, categorized as having a serious problem of hunger, in spite of its fairly high per capita income. Madhya Pradesh is 17th rank in terms of hunger and malnutrition. These appalling levels of hunger and malnourishment are not just due to the limited access to

food and healthcare but due to extremely low level of food grain consumption, particularly, women and children in poor households.

### **Conclusion and Key findings**

The analysis brings out some of the key findings; first per capita consumption of cereals was higher in rural areas as compared to urban areas and declining continuously in both rural and urban areas. On consumption of pulse is higher in urban area, but data shows a declining trend in both rural and urban area. Edible oil and milk has been increasing over the years but consumption is higher in urban areas compared to rural areas. Sugar consumption has been declining in both rural and urban areas, but continues to be higher in urban area. Second, an average nutritional intake has declined from 2,153 Kcal per person per day in 1993-94 to 2020 in 2009-10 in rural areas and from 2071 to 1946 Kcal in urban areas. Between 2004-05 and 2009-10, calorie intake per person per day reduced from 2047 to 2020 in rural areas and from 2020 to 1946 in urban areas. Protein consumption too has fallen from 60.2 gm to 55 gm per person per day in rural areas and from 57.2 gm to 53.5 gm in the urban areas between 1993-94 and 2009-10. Fat consumption has risen by about 7 gm in rural and 6 gm in urban areas. Average daily fat consumption per person was 38 gm in rural areas and about 48 gm in urban areas. The data suggest that around 80 per cent of the poorest tenth of the population consume less than 2160 Kcal both in rural and urban area. Average calorie intake among the poorest tenth of the population is 1619 Kcal in rural areas and 1584 Kcal in urban areas. The richest 10 per cent of the population consumes 2922 Kcal in rural and 2855 Kcal in urban area on an average. It means bottom eight deciles in 2009-10 were below the minimum ICMR norm of 2318 Kcal per capita per day. On the other hand, continuous increasing in spending on education for their children, and to avail better healthcare services at the expenses of basic needs like food.

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# Consumption of the quantity by selected commodities of items of both Rural and Urban Sectors by the NSS Zonewise

**Altaf Hussain Haji**

## **1 Introduction:-**

1.1 The National Sample Survey Office (NSSO) conducts nationwide household consumer expenditure surveys at regular intervals as part of its “rounds”, each round normally of a year’s duration. These surveys are conducted through interviews of a representative sample of households selected randomly through a scientific design and cover almost the entire geographical area of the country.

1.2 The household consumer expenditure survey (CES) is generally conducted as one of the main subjects of the NSS survey at quinquennial intervals. This provides a series of CES’s. The 66th round survey (July 2009 - June 2010) was the eighth such survey of this quinquennial series, the seventh having been conducted during the 61st round (July 2004 - June 2005). Key indicators on household consumption in India during 2009-10 based on this survey have already been released.

## **2 Objective of the NSS 66<sup>th</sup> round survey**

2.1 The NSS consumer expenditure survey aims at generating estimates of average household monthly per capita consumer expenditure (MPCE), its distribution over households and persons, and its break-up by commodity group, separately for the rural and urban sectors of the country, for States and Union Territories, and for different socioeconomic groups. These indicators are amongst the most important measures of the level of living of the respective domains of the population. The distribution of MPCE highlights the differences in level of living of the different segments of the population and is an effective tool to study the prevalence of poverty and inequality. These numbers enable the apex planning and decision-making process to allocate the nation’s resources among sector.

**2.2 Household consumer expenditure:** The expenditure incurred by a household on domestic consumption during the reference period is the household’s consumer expenditure. Expenditure incurred towards productive enterprises of households is excluded from household consumer expenditure. Also excluded are expenditure on purchase and construction of residential land and building, interest payments, insurance premium payments, payments of fines and penalties, and expenditure on gambling including lottery tickets. Money given as remittance, charity, gift, etc. is not consumer expenditure. However, self-consumed produce of own farm or other household enterprise is valued and included in household consumer expenditure. So are goods and services received as payment in kind or free from employer, such as accommodation and medical care, and travelling allowance excluding allowance for business trips.

**2.3** For articles of food (including *pan*, tobacco and intoxicants) and fuel, household consumption is measured by the *quantity of the article actually used* by the household during the reference period, irrespective of the expenditure incurred on it.

For articles of clothing and footwear, consumption by a household is considered to occur at the moment when the article is brought into maiden or first use by any household member. The consumption may be out of (a) purchases made in cash or credit during the reference period or earlier; (b) home-grown stock; (c) receipts in exchange of goods and services; (d) any other receipt like gift, charity, borrowing and (e) free collection. Home produce is evaluated at the ex farm or ex factory rate.

**2.4 Monthly per capita expenditure (MPCE):-** Normally, the concept of per capita income – or per capita (overall) expenditure, if income data are not available – is used for comparison of average living standards between countries, between regions, and between social or occupational groups. For studies of poverty and inequality *within* populations, however, average income or average expenditure is not enough. One needs to assign a value that indicates level of living to *each individual*, or at least to each household, in a population in order to know the level of inequality in living standards of the population, or the proportion living in poverty. The NSS concept of MPCE, therefore, is defined first at the household level (household monthly consumer expenditure ÷ household size). This measure serves as the indicator of the Household's level of living.

**3 Selected Commodities for study Consumption:-** This paper is prepared for monthly per capita quantity of consumption of selected commodities by states /UT of the following namely (1) Rice, (2) Wheat, (3) Arhar and Moong, (4) Milk, (5) Fish, (6) Meat, (7) Banana, (8) Potato, (9) Onion and (10) Tomato

**4 Results of NSS 66<sup>th</sup> round :-**The report of NSS 66th round for household Consumption of various goods and services in India of above selected commodities shows that :

**4.1 Cereals:-**There is general decline in cereal consumption which is seen to affect all the individual cereals such as rice, wheat, jowar (including jowar products), etc. Here in this paper only rice and wheat are taken in account for study of consumption index.

**4.2 Pulses and pulse products:-** There has been a general fall in consumption of pulses between 2004-05 and 2009-10, the decline being steeper in both relative and absolute terms for the rural sector. Overall consumption of the pulses group has dropped since 2004-05 from 0.71 kg to 0.65 kg per capita in the rural sector and from 0.82 kg to 0.79 kg per capita in the urban sector. At the level of individual cereals, there has been a decline both in per capita consumption and incidence of consumption (measured by percentage of households reporting consumption) in case of arhar, moong and masur. Here in this paper only moong is taken in account for study of consumption index.

**4.3 Milk, Fish and Meat:-** Milk, Egg, fish and Meat are the four sources of animal-protein-rich foods available to the Indian population. In the report of NSS 66th milk and milk products commanded a share of 7.6% of consumer expenditure in rural India and 6.9% in urban area. The group "Egg, Fish, Meat" on the other hand

had a share of 4.7% in rural and 3.6% in urban consumer expenditure. Consumption of milk and milk products is relatively concentrated in the northern and western region of the country and that of eggs, fish and meat in the eastern, north eastern and southern regions. Here in this paper only milk , eggs and meat are taken in account for study of consumption index.

**4.4 Vegetables:-** In view of the great diversity of vegetables consumed all over the country, the vegetables group was assigned a total of 30 items in the schedule of enquiry including the residual “other vegetables” item. At all-India level, monthly per capita consumption of vegetables was estimated as Rs.87.33 in rural India (8.3% of rural MPCE) and Rs.112.44 in urban India (5.7% of urban MPCE). Consumption of carrots, lemons, cauliflowers, cabbages, tomatoes, cucumbers, lady’s fingers and bitter gourd was appreciably more common in urban India than in rural India. While pumpkins, potatoes, onions, brinjal, jhinga, leafy vegetables and green chillies were consumed by a greater percentage of households in rural areas, the difference from the urban percentage was not as marked. The average rural Indian consumed about 1 kg 670 g of potatoes a month, about 300g more than the average urban residence. Here in this paper Potato, onion and Tomato are taken in account for study of consumption index.

**4.5 Fruits and Nuts :-** Fruits and nuts accounted for only 2.4% (Rs.25.57) of consumer expenditure in rural India and 3.2% (Rs.62.76) in urban India. The schedule of enquiry listed 18 fresh fruits including “other fresh fruits” and 9 dry fruits and nuts. The eight fresh fruits listed in Table T10 together accounted for around 84% of the value of fresh fruits consumed in rural areas and 86% of the value in urban areas. In case of each fruit and nut, per capita urban consumption outstripped rural consumption not only in value but also in quantity terms. Rural-urban disparities in consumption were relatively low in case of groundnuts, coconuts, bananas and mangoes, and high for apples, grapes and even papayas. The average urban household spent Rs.12 per person per month on bananas and an equal amount on apples. So that here in this paper only fruit banana is taken in account under study of consumption index.

**Table 1(a):- Results of Monthly per capita quantity of consumption of selected commodities of Cereals and Pulse ( Rice, Wheat and Moong)**

State/UT	Rice(kg)		Wheat(kg)		Moong (Kg)	
	Rural	Urban	Rural	Urban	Rural	Urban
1	2	3	4	5	6	7
Andhra Pradesh	10.569	8.764	0.77	0.656	0.083	0.095
Arunachal pradesh	12.228	10.490	0.301	0.763	0.042	0.079
Assam	12.123	10.246	0.442	1.109	0.040	0.105
Bihar	6.174	5.804	5.473	5.732	0.050	0.059
Chhattisgarh	11.100	7.643	0.838	2.686	0.022	0.024
Delhi	2.058	1.238	5.601	5.149	0.114	0.106
Gao	7.340	5.845	1.235	1.691	0.096	0.159
Gujarat	1.703	1.910	4.090	5.276	0.164	0.187
Haryana	0.701	1.062	8.852	7.635	0.110	0.139
Himachal Pradesh	4.075	3.654	6.243	5.373	0.083	0.125
Jammu and Kashmir	8.581	8.196	3.446	3.386	0.080	0.107
Jharkhand	8.369	6.061	3.012	4.780	0.024	0.050
Karnataka	5.514	5.405	0.863	1.276	0.076	0.088
Kerala	7.489	6.635	0.729	0.828	0.106	0.126
Madhya Pradesh	2.130	1.720	8.068	7.271	0.084	0.127
Maharashtra	3.102	2.763	4.127	4.150	0.130	0.137
manipur	14.034	13.295	0.023	0.106	0.009	0.013
Meghalaya	10.228	9.261	0.096	0.0325	0.030	0.053
Mizoram	12.766	11.757	0.035	0.129	0.010	0.020
Nagaland	13.093	12.287	0.008	0.093	0.007	0.013
Orissa	12.793	9.908	0.537	1.736	0.162	0.124
Punjab	0.784	1.130	8.383	7.205	0.151	0.179
Rajasthan	0.238	0.476	80542	80876	0.130	0.126
Sikkim	9.398	8.971	0.618	0.884	0.009	0.033
Tamil Nadu	9.120	8.276	0.435	0.626	0.050	0.070
Tripura	13.212	11.754	0.212	0.341	0.022	0.044
Uttar Prashdesh	4.238	2.795	7.540	6.934	0.023	0.045
Uttarakhand	4.465	4.008	5.331	5.497	0.026	0.046
West Bengal	9.693	6.765	1.103	1.942	0.034	0.093
A & N Islands	9.919	7.009	1.019	1.796	0.204	0.082
Chandigarh	2.016	1.799	7.199	5.290	0.044	0.127
Dadra & N. Haveli	6.722	5.022	1.983	3.679	0.079	0.092
Daman & Diu	5.216	2.951	2.526	3.607	0.166	0.129
Lakshadeep	7.458	5.850	0.760	0.758	0.096	0.182
Puducherry	9.838	2.209	0.590	0.767	0.053	0.075
All India	6.002	4.520	4.244	4.077	0.073	0.104

**Table 1(b):- Results of monthly per capita quantity of consumption of selected commodities ( Milk , Fish and Meat)**

State/UT	Milk liquid(litre)		Fish(kg)		Meat(goat)(Kg)	
	Rural	Urban	Rural	Urban	Rural	Urban
1	8	9	10	11	12	13
Andhra Pradesh	3.370	4.578	3.911	4.388	0.074	0.149
Arunachal pradesh	0.776	1.350	5.245	5.875	0.059	0.071
Assam	1.548	1.734	3.381	5.384	0.023	0.068
Bihar	2.668	3.997	1.049	1.663	0.039	0.056
Chhattisgarh	0.758	2.892	1.184	1.205	0.009	0.050
Delhi	6.999	8.860	2.555	1.855	0.013	0.069
Gao	2.794	4.442	2.272	5.260	0.005	0.046
Gujarat	6.178	6.750	0.446	0.886	0.030	0.051
Haryana	13.404	9.549	0.263	1.492	0.008	0.026
Himachal Pradesh	9.512	9.369	0.769	2.057	0.138	0.093
Jammu and Kashmir	8.137	8.484	2.799	3.085	0.100	0.241
Jharkhand	1.705	3.635	1.200	1.211	0.055	0.121
Karnataka	3.785	4.991	2.196	2.989	0.093	0.124
Kerala	3.056	3.644	3.378	3.690	0.010	0.017
Madhya Pradesh	3.999	4.814	0.673	1.333	0.057	0.064
Maharashtra	3.046	4.980	1.367	2.865	0.091	0.127
manipur	0.215	0.396	1.110	1.020	0.005	0.001
Meghalaya	0.773	0.989	1.808	2.769	0.006	0.010
Mizoram	0.345	1.713	3.808	6.099	0.007	0.002
Nagaland	0.196	0.455	3.026	4.644	0.002	0.003
Orissa	1.073	2.407	1.588	2.436	0.018	0.084
Punjab	11.560	10.239	0.765	1.534	0.015	0.022
Rajasthan	9.861	8.126	0.213	0.884	0.050	0.109
Sikkim	5.872	3.116	2.677	0.671	0.046	0.072
Tamil Nadu	3.195	5.015	3.495	4.157	0.106	0.145
Tripura	1.222	1.900	3.300	5.470	0.012	0.041
Uttar Prashdesh	4.587	5.394	0.634	1.429	0.034	0.051
Uttarakhand	6.651	6.293	1.527	2.126	0.069	0.070
West Bengal	1.386	2.559	4.589	5.954	0.021	0.080
A & N Islands	1.228	2.154	4.690	4.189	0.001	0.029
Chandigarh	7.721	10.019	3.673	32.783	0.000	0.011
Dadra & N. Haveli	2.328	4.117	1.126	3.459	0.018	0.007
Daman & Diu	3.085	4.279	4.226	3.615	0.001	0.044
Lakshadweep	0.347	0.395	7.427	5.605	0.066	0.000
Puducherry	4.042	6.281	3.891	6.464	0.044	0.082
All India	4.117	5.358	1.733	2.674	0.047	0.091

**Table 1(c):- Results of monthly per capita quantity of consumption of selected commodities of Fruits and Vegetables (Banana, Potato, Onion and Tomato)**

State/UT	Banana(no.)		Potato (kg)		Onion(kg)		Tomato(kg)	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
1	14	15	16	17	18	19	20	21
Andhra Pradesh	5.398	8.380	0.425	0.531	0.961	1.021	0.990	1.058
Arunachal pradesh	5.831	5.351	1.658	2.123	0.443	0.635	0.309	0.582
Assam	4.791	7.627	1.342	1.565	0.362	0.483	0.233	0.360
Bihar	3.563	4.632	3.033	2.868	0.797	0.905	0.230	0.378
Chhattisgarh	1.569	3.871	1.164	1.314	0.618	0.879	1.190	1.492
Delhi	11.460	8.444	2.120	1.471	0.680	0.769	0.633	0.866
Gao	9.168	12.383	0.982	1.056	1.060	1.326	0.894	0.928
Gujarat	2.970	4.463	1.215	1.461	0.775	0.878	0.653	0.954
Haryana	4.397	6.363	1.585	1.718	0.940	1.037	0.755	0.962
Himachal Pradesh	2.986	6.815	1.412	1.483	0.880	1.079	0.653	0.878
Jammu & Kashmir	3.043	3.703	1.187	1.036	0.910	0.819	0.607	0.638
Jharkhand	1.709	3.228	2.261	2.317	0.753	0.930	0.503	0.674
Karnataka	6.029	8.739	0.291	0.453	0.802	0.901	0.676	0.842
Kerala	9.717	9.551	0.348	0.389	0.746	0.792	0.528	0.536
Madhya Pradesh	2.952	5.668	1.138	1.186	0.715	0.848	0.640	0.766
Maharashtra	5.676	8.122	0.692	0.766	0.797	0.903	0.548	0.674
Manipur	2.363	2.569	0.741	0.741	0.268	0.312	0.140	0.213
Meghalaya	2.332	2.134	1.229	1.163	0.388	0.337	0.263	0.311
Mizoram	3.039	3.781	0.853	1.591	0.289	0.373	0.131	0.377
Nagaland	2.100	2.465	0.760	1.286	0.160	0.283	0.358	0.538
Orissa	2.752	5.210	2.041	1.965	0.575	0.704	0.580	0.795
Punjab	3.244	5.242	1.478	1.522	1.146	1.263	0.487	0.639
Rajasthan	2.972	4.731	0.906	0.954	0.777	0.786	0.601	0.813
Sikkim	1.865	3.371	1.204	1.768	0.381	0.432	0.390	0.621
Tamil Nadu	5.236	7.351	0.380	0.504	0.757	0.877	0.800	0.941
Tripura	8.329	10.665	1.439	1.724	0.359	0.520	0.303	0.381
Uttar Pradesh	2.545	6.363	2.814	2.577	0.674	0.688	0.435	0.631
Uttarakhand	3.917	5.062	1.388	1.658	0.631	0.778	0.496	0.707
West Bengal	3.366	5.244	2.818	3.035	0.651	0.728	0.178	0.323
A & N Islands	8.014	9.146	0.766	0.896	0.634	1.004	0.380	0.801
Chandigarh	7.246	8.183	2.147	1.794	1.017	1.315	0.897	1.068
Dadra & N. Haveli	2.786	4.955	1.157	1.217	1.158	1.239	1.079	1.402
Daman & Diu	7.745	6.113	0.601	1.215	1.111	0.997	1.089	0.984
Lakshadweep	7.297	7.989	0.498	0.712	0.652	1.080	0.678	0.713
Puducherry	5.470	8.869	0.497	0.530	1.022	1.162	1.062	1.142
All India	3.861	6.647	1.666	1.368	0.741	0.854	0.537	0.757

## **5 NSS classification of states and UT's into NSS zones.**

The National Sample Survey office, Ministry of statistics and Programm implemnation , Government of India have classified the whole country into six NSS zone and the detail is as under

**I Northern Zone :- The following states of the north zone are as under** ( 1 ) J and K ( 2 ) Punjab (3) Haryana (4) Himachal Pardesh (5) Delhi(NUT) ( 6 ) Rajasthan and (7) Chandigrah(UT)

**II South Zone:- The following states of the south zone are as under** (1) Andra Pradesh (2 ) Pondicherry (3) Kerala (4) Karnataka (5) Tamil nadu (6 ) A & N island (UT) (7) Goa and (8 ) Lakshadweep(UT).

**III West Zone:- The following states of the south zone are as under** (1 ) Gujarat (2 ) Maharashtra (3) Daman &Diu(UT) (4) Chhattisgarh and (5) D & N Haveli(UT).

**IV Eastern Zone:- The following states of the south zone are as under** (1 ) Bihar (2) West Bengal (3) Orissa and (4) Jharkhand

**V Central Zone:- The following states of the south zone are as under** (1) Madhya Pradesh (2) Utrapradesh and (3 ) Uttraanchal.

**VI North eastern Zone:- The following states of the south zone are as under** (1) Arunachal pradesh (2) Assam (3) Meghalaya (4 ) Negaland (5) Manipur (6) Tripura (7) Sikkam and (8) Mizoram

After classification of states and using the concepts of consumption index and the definition of Consumption Index using for calculating index of consumption of the quantity of selected commodities is define as under

## **6 Definition and formula of Consumption Index (C.I)**

The Consumption Index (C.I) is defined as percentage of the sum of the number of the states/UT's falling above level the of consumption of the quantity of selected commodities at national level and divided by product of total number of states and UT's in the zone and number of parameters used.

Let 'm1' be the number of rural or urban states above the use of consumption of the quantity by commodity Rice, 'm2' be the number of rural or urban states above the use of consumption of the quantity by commodity Wheat, 'm3' be the number of rural or urban states above the use of consumption of the quantity by commodity Moog, 'm4' be the number of rural or urban states above the use of consumption of the quantity by commodity Milk, 'm5' be the number of rural or urban states above the use of consumption of the quantity by commodity Fish, 'm6' be the number of rural or urban states above the use of consumption of the quantity by commodity Meat, 'm7' be the number of rural or urban states above the use of consumption of the quantity by commodity Banana, 'm8' be the number of rural or urban states above the use of consumption of the quantity by commodity Potato, 'm9' be the number of rural or urban states above the use of consumption of the quantity by commodity Onion and 'm10' be the number of rural or urban states above the use of consumption of the quantity by commodity Tomato.

Let 'p' be the number of parameters used. Here  $p=10$

and 'n' be the number of states in the zone

Then consumption index(C.I) defined as

$$C.I = (\sum m_i/n_p) * 100, \quad i=1, 2, 3, \dots, 10$$

using the consumption index concept and classification of states by NSS zones, the consumption index of rural and urban sector is calculating as under following tables (table 2a for Rural sector and table 2b for Urban sector)

**Table (2a) Consumption index for Rural Sector**

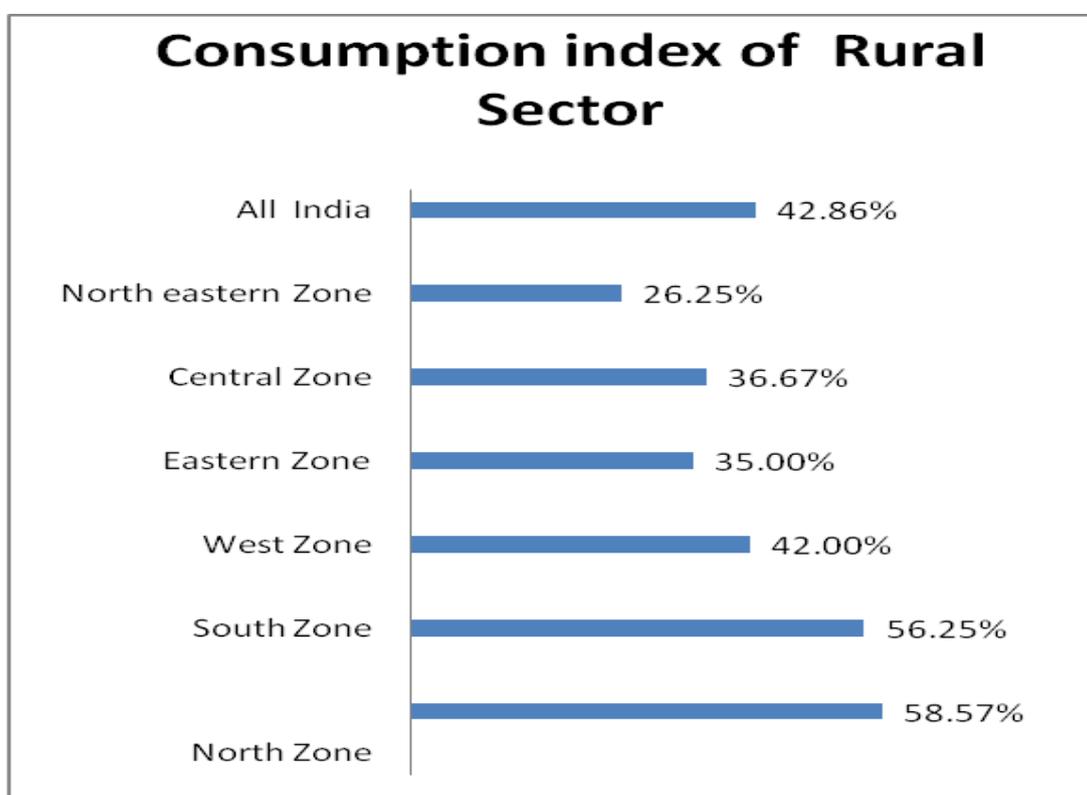
Name of the NSS zones	No. of States/UT	Number of Rural States above the consumption of the quantity of selected commodities										Consumption index (%)
		Rice	Wheat	Mango	Milk	Fish	Meat	Banana	Potato	Onion	Tomato	
<b>I North Zone</b> 1 J and K 2 Punjab 3 Haryana 4 Himachal Pardesh 5 Delhi(NUT) 6 Rajasthan 7 Chandigrah(UT)	7	1	5	6	7	4	1	4	1	6	6	(41*100/ 7*10) =58.57%
<b>II South Zone</b> 1 Andra Pradesh 2 Pondicherry 3 Kerala 4 Karnataka 5 Tamil nadu 6 A & N island (UT) 7 Goa 8 Lakshadweep(UT)	8	8	0	4	0	7	5	8	0	6	7	(45*100/ 8*10) = 56.25%
<b>III West Zone</b> 1 Gujarat 2 Maharashtra 3 Daman &Diu(UT) 4 Chhattisgarh 5 D & N Haveli(UT)	5	3	0	3	1	1	1	2	1	4	5	(21*100/ 5*10)= 42.00%
<b>IV Eastern Zone</b> 1 Bihar 2 West Bengal 3 Orissa 4 Jharkhand	4	4	1	1	0	0	1	0	4	2	1	(14*100/ 4*10)= 35.00%
<b>V Central Zone</b> 1 Madhya Pradesh 2 Utra Pradesh 3 Uttraanchal	3	0	3	1	2	0	2	1	1	0	1	(11*100/ 3*10)= 36.67%
<b>VI North eastern Zone</b> 1 Arunachal Pradesh 2 Assam 3 Meghalaya 4 Negaland 5 Manipur 6 Tripura 7 Sikkam 8 Mizoram	8	8	0	1	1	5	1	3	0	0	0	(21*100/ 8*10)= 26.25%
<b>All India</b>	<b>35</b>	<b>21</b>	<b>10</b>	<b>18</b>	<b>11</b>	<b>19</b>	<b>12</b>	<b>17</b>	<b>7</b>	<b>18</b>	<b>17</b>	(150*100/ 35*10) =42.86%

**Table (2b) Consumption index for urban sector**

Name of the NSS zones	No of States/UT	Number of Urban States above the consumption of the quantity of selected commodities										Consumption index (%)
		Rice	Wheat	Mango	Milk	Fish	Meat	Banana	Potato	Onion	Tomato	
<b>I Northern Zone</b> 1 J and K 2 Punjab 3 Haryana 4 Himachal Pardesh 5 Delhi(NUT) 6 Rajasthan 7 Chandigrah(UT)	7	1	6	7	7	3	2	3	5	4	5	$(42*100/7*10)$ = <b>60.00%</b>
<b>II Southern Zone</b> 1 Andra Pradesh 2 Pondicherry 3 Kerala 4 Karnataka 5 Tamil nadu 6 A & N island (UT) 7 Goa 8 Lakshadweep(UT)	8	7	1	3	1	8	4	8	0	7	5	$(44*100/8*10)$ = 55.00%
<b>III Western Zone</b> 1 Gujarat 2 Maharashtra 3 Daman &Diu(UT) 4 Chhattisgarh 5 D & N Haveli(UT)	5	2	2	3	1	3	1	2	1	5	4	$(24*100/5*10)$ = <b>48.00%</b>
<b>IV Eastern Zone</b> 1 Bihar 2 West Bengal 3 Orissa 4 Jharkhand	4	4	0	1	0	0	1	0	4	2	1	$(13*100/4*10)$ = <b>32.5%</b>
<b>V Central Zone</b> 1 Madhya Pradesh 2 Utra Pradesh 3 Uttraanchal	3	0	3	1	2	0	0	0	2	0	1	$(9*100/3*10)$ = <b>30.00%</b>
<b>VI North eastern Zone</b> 1 Arunachal Pradesh 2 Assam 3 Meghalaya 4 Negaland 5 Manipur 6 Tripura 7 Sikkam 8 Mizoram	8	8	0	0	0	6	1	3	4	0	0	$(22*100/8*10)$ = <b>27.50%</b>
<b>All India</b>	<b>35</b>	<b>23</b>	<b>13</b>	<b>16</b>	<b>11</b>	<b>21</b>	<b>7</b>	<b>16</b>	<b>17</b>	<b>16</b>	<b>16</b>	$(156*100/35*10)$ = 44.57%

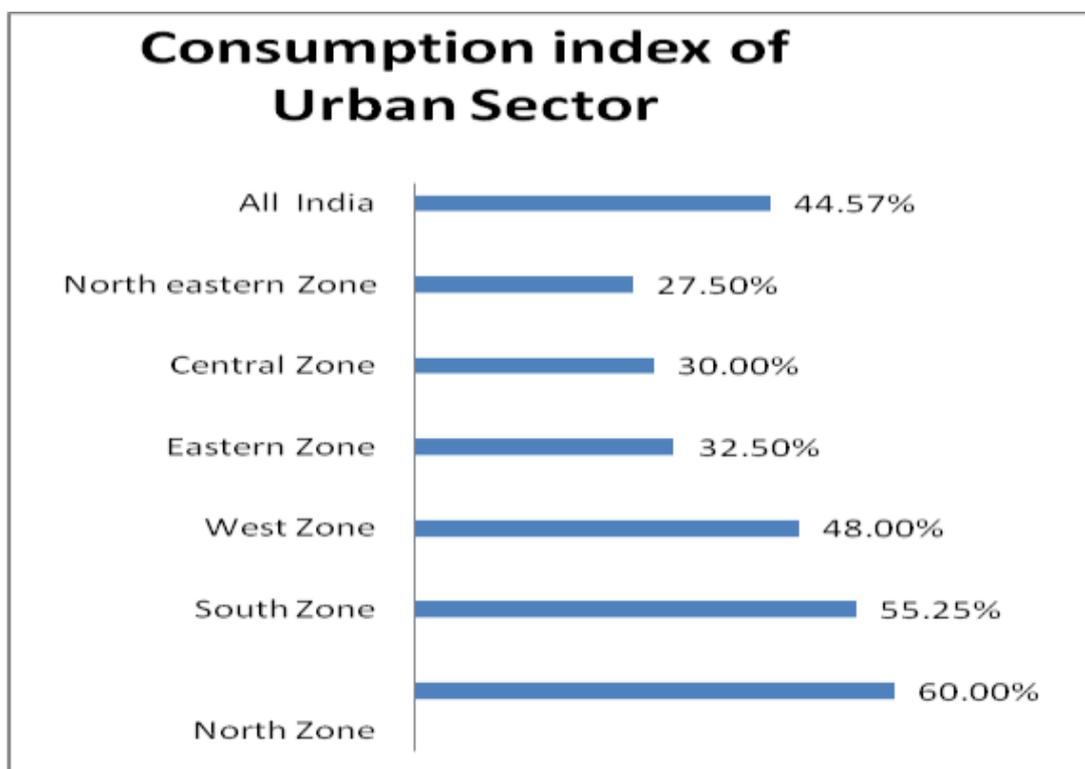
## 7 Observations and findings of using Consumption index of consumption of the quantity of selected commodities

7.1 **Consumption index of the rural sector :-** The consumption index of the rural sector of NSS zones in table (2a) shows that northern states and southern states of the country using more consumption of the quantity of selected commodities while the consumption index of the north-eastern states of the country shows that use of less consumption of the quantity of selected commodities. Further the study shows that southern states and eastern states of the country of rural sector is using more consumption of the quantity of selected commodities at all India level of rural sector . The consumption index of rural sector at all India level of rural sector is 42.86% while the consumption index is about 56.25% for southern states and 53% of eastern states. Also the study shows that North- eastern states and central states of the country of rural sector is using less consumption of the quantity of selected commodities at all India level of rural sector . The consumption index of rural sector at all India level is 42.86% which is more than the using consumption of the quantity of selected commodities having consumption index of 26.25% for north-eastern states and 36.67% of central states.



7.2 **Consumption index of the urban sector:-** The consumption index of the urban sector of NSS zones in table (2b) shows that northern states of the country also using more consumption of the quantity of selected commodities while the consumption index of the north-eastern states of the country also shows that the use of less consumption of the quantity of selected commodities. Further the study shows that southern states and northern states of the country of rural sector are using more

consumption of the quantity of selected commodities at all India level of urban sector. The consumption index of urban sector at all India level is 44.57% while the consumption index is about 55.25% for southern states and 60.00% of northern states. Also the study shows that North-eastern states, eastern states and central states of the country of urban sector are using less consumption of the quantity of selected commodities at all India level. The consumption index of urban sector at all India level is 44.57% which is more than the using consumption of the quantity of selected commodities having consumption index of 27.50% for north-eastern states , 30.00% for southern states and 30.00 % of central states.



7.3 The consumption of the quantity of selected commodities of both urban and rural sector having consumption index more than at national level are northern states and southern states of the country while the consumption of the quantity of selected commodities of both urban and rural sector having consumption index less at national level is north-eastern states.

## 8 Reference

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