सत्यमेव जयते

National Seminar on NSS 63rd Round Survey Results

2nd & 3rd June, 2010
New Delhi

NSSO

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

Introduction

The National Sample Survey Office (NSSO) under the Ministry of Statistics & Programme Implementation is responsible for collecting data regularly through nation-wide household surveys on various Socio Economic subjects. These surveys are conducted in the form of rounds generally of one year 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 preplanned scheme of tabulation of data finalized by a team of experts. In order to encourage tabulation /analysis beyond those released through reports of NSSO, 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 2003. Such Seminars provide a professional development opportunity and also a means of streamlining the analytical contribution of the in-house system managers to the Indian Statistical System. The National Seminar on the results of NSSO 63rd round (July 2006-June 2007)held at New Delhi during 2-3 June, 2010 was a part of this exercise and was eighth in the series of such seminars.

Papers were invited from ISS officers, officers of State Directorates of Economics & Statistics, Central Ministries and concerned Organizations/ Institutions for presentation and discussion in the Seminar. In all 21 papers were selected for presentation but only 20 could be presented as authors of one paper could not make it to the Seminar. The authors were asked to revise their papers, if they so desired, in view of the discussions held during the seminar. These papers are now being published in this volume. The papers are classified into the following three thematic groups: i) Household Consumer Expenditure ii) Service Sector iii) Miscellaneous .

The papers in each group cover various aspects of the survey. The purpose of the publication will be served well if the readers find it informative and useful.

Recommendations emerging from the deliberations in the Seminar have been added at the beginning for the posterity and consideration at the time of taking up of future surveys on similar subjects.

CONTENTS

Srl. No.	Title	Page No.
1	Report on Technical Sessions and Recommendations from National Seminar on the survey results of NSS 63rd Round	1
	Miscellaneous	
1	NSS 63rd round : Survey on Service Sector in India : Salient Features ***- Dr. Rajiv Mehta, Biswajit De*** **and** ***T. K. Sanyal***	11
2	Some Field Experiences of the 63rd Round of Socio-Economic Survey on Service Sector Enterprises(Excluding Trade) ***- D. Sudhakar and D. C. Pandey***	21
3	NSS 63rd Round – A Data Processing Perspective ***- G. Chattopadhyay***	30
4	Status of Public Works in Indian Villages ***- Ajay Baksi***	44
5	Rural and Urban Housing Conditions in India ***- Altaf Hussain Haji***	54
	Household Consumer Expenditure	
6	NSSO Sample Design : Allocation of FSUs and USUs with special reference to Consumer Expenditure Surveys of 63rd and 61st Rounds ***- Dr. T. K. Saha and A. K. Verma***	69
7	On the Nature of Expenditure on Durable Goods ***- Gopa Chattopadhyay and P. Chaudhary***	81
8	Well being in India : Disparity and Surprises across Districts ***- Raju Bhinge,*** **Harsha Kapoor,** ***Sachin Somaiya and Rituparna Dasgupta***	88
9	An Estimation of Economies of Scale in Consumption – Using 63rd round of Indian NSS Data ***-Siddharth Kundu***	93
10	Small Area Level Estimates for Proportion of Poor Households in the State of Uttar Pradesh in India **-Hukum Chandra, V. K. Bhatia and U. C. Sud**	100
11	On the pattern of Consumer Expenditure in Major States with Special Reference to West Bengal ***-Soma Dey***	110

Service Sector

12 Economic Inclusion of Non-farm Informal Service Sector: An Effective Safety Net 129
-V. K. Arora and Siladitya Choudhary

13 Value Added by the Services Sector in India: A Comparative Analysis Based on NSS 63rd Round Survey and National Accounts Statistics 139
- Ashish Kumar, G. C. Manna and G. S. Lakshmi

14 Private Non-Banking Financial Intermediaries in India (2006-2007)-Their Estimated number, Workers and Gross Value Added 142
- T. K. Basu

15 Comparison of the data on Hotel & Restaurant Sector in India from various sources
-Dr R. N. Pandey and K. K. Nath 152

16 Employment in Informal Manufacturing and Service Sectors : Comparison on some Key Parameters using NSSO data , exploring some issues on data quality 164
-T. R. Sreenivas

17 Growth and Structural Changes in Non-agricultural Sector-An Empirical Study
- Soumya Chakraborty, Dr Tapas Saha and Supriya Mukherjee 170

18 Identification of Key Service Sectors in India using a MCDM Technique : An Empirical Study based on 63rd round NSS data (2006-07) 182
-Dr Gopaldeb Chattopadhyay

19 NSS 63rd round enterprise survey: Certain conceptual issues and operational experience 197
-T. K. Sanyal

20 A study of Divergence in the Estimates of Number of Establishments and Workers Engaged in the Services Sector in India as per NSS 63rd Round and Economic Census 2005 203
-Ashish Kumar, G C Manna, P C Mohanan, G S Lakshmi and P S Meena

21 Observation on NSS 63rd Round by DP Centre, Bangalore Misclassification of Second Stage Strata Schedule 2.345 (Service Sector Enterprises excluding Trad e) 207
-D. Satish

Report on Technical Session and Recommendations from National Seminar on the Survey Results of NSS 63rd round

A two day National seminar on survey results of 63rd round of Socio-Economic surveys of NSSO was organized at SCOPE Complex, Lodhi Road, New Delhi during 2-3 June, 2010. This was the 8th seminar in series of such national seminars being organized by NSSO starting with first seminar organized on NSS 56th Round on 21st March 2003 with a view to discuss survey results and share the experiences of large scale sample surveys being conducted by it on different subjects and benefit there from to bring in improvement and innovation in repeat surveys of same kind and subject in future. Such seminars, besides providing forum to stake holders to discuss and deliberate on survey results, proved useful to publicise activities of the organization and create awareness among the public.

The seminar was inaugurated by Shri Sriprakah Jaiswal, Hon'ble Union Minister of State (Independent Charge), Coal and Statistics & Programme Implementation. Prof R. Radhakrishna, Chairman, National Statistical Commission delivered the Key Note address in the seminar. Host of dignitaries comprising Dr. Pranob Sen, Chief Statistician of India & Secretary, Ministry of Statistics & Programme Implementation, Prof. A. K Adhikari, Chairman of Working Group on 63rd round devoted to Service Sector Enterprises and good number of retired and serving senior officers attended the seminar. Arrangements were also made for good media presence to give proper publicity to the event. More than 20 papers mainly on survey's results of the round and experiences of conducting the survey both by officers of NSSO/CSO and outside organizations were presented in the seminar in three technical sessions chaired by eminent social scientists and practicing survey experts. A brief report summarizing the contents of the papers presented and key points emerging from discussions thereafter is given below Technical Session wise.

Technical Session I: Miscellaneous

There were total six organizational papers in the session which was chaired by Dr. Pranob Sen, Chief Statistician of India & Secretary, Ministry of Statistics & Programme Implementation. Papers were mostly by officers of NSSO discussing the experiences of the organization on issues of designing of 63rd round of NSS, data collection and data processing with a view to share the feedback and introduce innovation/improvement in future repeat surveys on the subject.

First two papers by SDRD were on Salient features of NSS 63rd round. The papers dealt with the survey results of NSS 63rd round and its design. Questions were raised about whether the list frame enterprises were included in area frame to which the answer was 'No'. Issue of documentation of value added while disseminating unit level data was raised in the light of queries received from some users about it. Issue of cases of large number of repetitions of FSUs in urban areas was also raised. It was clarified that it was due to use of PPSWR in sample selection. Further, it was pointed out that unlike population estimates from NSS household surveys, which can be compared with census estimates, no such source exists for NSS estimates of estimated number of enterprises, estimated number of workers etc. Hence, it was suggested that NSS reports should be referred by users with this caveat. There was also one suggestion that volume of Schedule 1.0 may be reduced. The response to this suggestion was that there was no scope for curtailment of Schedule 1.0 because reduction of schedule may lead to under estimation of MPCE. Another suggestion was to study the contribution of list frame in NSS 62nd and 63rd round.

The third paper entitled 'Some Field Experiences of the 63rd Round of socio-economic survey on service sector enterprises (excluding trade)' was related to some field difficulties and problems in data collection. In the paper, there is emphasis on better publicity measures, incentive to informant and motivation to field staff in order to ensure better co-operation from public and collection of quality data. Some important suggestions were (i) letters may be issued to the selected enterprises in 67th round and later

on detailed schedules may be canvassed on the lines of ASI (ii) vacant posts of field officials may be filled in. The authors suggested that more publicity should be given before the launch of the survey and during the course of the survey. Small gifts to the informants might go a long way in eliciting proper information. One of the participants raised the issue of complaints coming from the field staff that their comments are not reflected in the schedule. It was clarified that actually it is not so. The representatives of FOD attend all meetings where these schedules are discussed and also based on past experience of field-work and data processing, necessary modifications are always done at the time of designing the schedules.

The fourth paper entitled 'NSS 63rd Round A Data Processing Perspective' highlighted the mistakes noticed in filled-in schedules and problems faced by DPD on account of these mistakes while processing the data. In this context, it was suggested that FOD and DPD officials may be given training on balance sheets, profit & loss accounts, etc. before launching enterprise surveys of the nature of NSS 63rd round. This initiative would definitely lead to improvement in quality of data by reduction in the number of mistakes as noticed during data processing.

The fifth paper 'Status of Public works in Indian Villages' dealt with the status of different public works in 2006-07 based on the information collected in the listing schedule. During discussion, questions were raised that villages and Panchayat wards were interchangeably used in the paper though they are not the same in the context of Kerala. It was clarified that the paper dealt with villages only and necessary modification would be made in the paper to avoid any confusion to the users of data and analysis presented. On questions as to 'how level of satisfaction was defined', the response was that no definition on level of satisfaction was given in the paper. Level of satisfaction was decided on the basis of different codes used in the schedules for different types of information collected in the survey.

Last paper presented in the Session was entitled 'Rural and Urban Housing Conditions in India'. It compared the housing conditions in India from Census and NSS estimates of 55th round and 63rd round for rural and urban sectors and observed that there was no disagreement in different sets of estimates based on X^2 test for goodness of fit. Doubts were raised about the validity of X^2 test for goodness of fit in this case. It was pointed out that the test was not valid in this case as the sample frequencies were not compared with the population frequencies of parent population, from which the samples were drawn. Thus the basic pre-requisite for the validity of X^2 test for goodness of fit is violated here. Another pre-requisite for the validity of X^2 test was that the sample observations should be independently distributed. However, NSS follows a multi-stage hybrid sample design, where the sample observations are not strictly independently distributed. As such, both the assumptions for the validity of X^2 test for goodness of fit are violated here. Author took a note of the observation and agreed to modify the paper.

Technical Session-II : Household Consumer Expenditure

There were 5 papers in second Technical Session Chaired in parts by Prof R.Radhakrishna, Chairman, National Statistical Commission and Shri Vishnu Kumar, Ex. DG & CEO, NSSO. The papers and discussions there on are as given in paras following:

1. NSSO Sample Design: allocation of FSUs and USUs with special reference to Consumer Expenditure Surveys of 63rd and 61st Rounds

The paper makes an attempt to re-examine the sample design through (i) determining the optimum number of FSUs and USUs and (ii) comparing estimates obtained from different designs. As regards (i), the study chooses MPCE (MRP) [MRP- mixed reference period] as the parameter of concern. To examine the optimum number of USUs for the selected parameter, 2 alternatives viz. (A) 2-4-4 model data set which was full dataset for NSS 61st round, CES [Consumer Expenditure Survey] and (B) 2-2-2 model data set: 'truncated' dataset for NSS 61st CES were considered. At the All India level, hardly any difference was observed in average estimates of MPCE (MRP): food, non-food and all items, both in rural and urban areas. Similar was the case with RSEs for these estimates. The inter state differences were small(less than 5%) for most cases for both MPCE (MRP) and RSEs. The results do not differ significantly even when URP (Uniform reference period) is considered instead of MRP. Thus, significant gain in data processing time is possible as the difference between the alternatives (A) and (B) would be to the tune of nearly 50,000 sample households for CES schedules. As regards (ii), the paper argues that for any NSS Survey, it would be inadvisable to lay stress on both household as well enterprise aspects since differences in RSEs get far more pronounced in that case.

The following comments on the paper were made during discussion:

- With deeper stratification, it should be possible to address the issues raised.
- The study gives confidence to thin sample based CES Surveys.
- It was opined that more intensive studies need to be done as regards issue (ii).
- The 'truncated sample' part for 'truncated set' need to be considered for more combinations/variants before drawing conclusions.
- Four sub sets of truncated second stage units should have been considered for better understanding of reduction in sample households.
- It was expressed that the stage-wise variances are not computed by NSS but the study needs to take care of this aspect also.

2. On the nature of expenditure on durable goods

The paper states that durable goods are typically more expensive than other reusable goods, and value of durable goods acquired during a period has its uses as an indicator of the economic well-being of a population. It states that problem with the NSS estimates of expenditure on durable goods or of any sub-category of such goods is that they include expenditure on repairs and maintenance of the goods in question. While repairs and maintenance are no doubt a necessary component of expenditure for a wide range of goods, a preponderance of such expenses in the per capita expenditure on durables, especially among poorer households, would indicate that the estimate of expenditure on durables is not as good a yardstick to judge affluence as it would otherwise be. This paper shows, using 63rd round consumer expenditure data, that the share of repairs and maintenance (and materials for construction) in estimated expenditure on durables is quite sizeable and increases as MPCE level falls. The paper also examines the break-up of expenditure on durable goods for different economic strata of the population, providing interesting insights into the nature of durables expenditure of the poor and the rich.

The important comment made on the paper related to need that the quality of durable goods purchased by people also needs to be factored in the analysis.

3. Well being in India: disparity and surprises across districts

At the outset, it was remarked that the study analyses results / data from user perspective. The paper states that the issue of income versus well being has been highlighted by Prof Stiglitz and others. Well being, in the Indian context needs to consider a wide range of indicators representing material and social factors. Computing a well being index for India by district reveals wide disparities even in the same state. Even more surprising diversity amongst districts is revealed by a female security index. All organizations, Government bodies, NGOs and businesses, need to look at relevant indicators at the district level for effective action planning and results.

The paper asserts that in applying this approach in the Indian context, it is clear that such an indicator will have to include ownership of basic amenities as well as access to quality of life factors like hygiene, education and healthcare. Moreover, given the disparities across the country, it is essential to look at a smaller geographical unit say, a district, instead of a typical state. In the paper, a well being index has also been devised for India using eight key categories that broadly cover all aspects of well being, viz., Home amenities, Kitchen facilities, Education, Hygiene, Entertainment, Communication, Transportation and Healthcare. The paper further stated that while the Well Being Index (WBI) captures all major material and social parameters, it does not include a very important reality of Indian society the well being, status and treatment of women. A number of parameters can be considered for this purpose. But there is a paucity of reliable, consistent data, especially at the district level. With these constraints in mind, a Female Security Index (FSI) has been developed in the paper using gender ratio (Census 2001) and crime against women (National Crime Records Bureau 2006, 2007). This analysis of well being vividly illustrates the diversity and disparity across districts, often within the same state. Clearly, the typical state is too large a unit for any meaningful conclusions to be drawn. The breadth of consumption patterns captured at the household level in NSSO surveys enables a wide range of analyses at and within a district, the paper reiterates.

The following suggestions were made:

- The data on quinquennial round would have been used rather than that of thin sample.
- The Concept needs to shared and publicized for wider comments/views.
- The consumption patterns needs to be factored in analysis as some districts are drought prone.
- Doubts were raised on some findings presented for North-Eastern States and paper does not clearly explain computations. To this, the author clarified that in exhibit 1, scoring has been done using qualitative methods. As such, no numbers have been given .The states/geographical entities have been given only ranking. Thus, 'best' states as per WBI need not be 'best' when gender considerations are taken into account.

4. An estimation of economies of scale in consumption-using 63rd round of Indian NSS data

The paper underscores the fact that for comparison of welfare of households, the monthly per capita Consumer Expenditure (MPCE) is used as one of the indicators of living standards used in official statistics. But clearly, of two households with the same MPCE, the larger household typically enjoys a higher standard of living. Many items of consumption are of the type whose consumption need does not increase in proportion to number of members either because they can be shared, or because economies of scale are arising in some other way. This happens for both food and non-food items. Moreover, these economies of scale differ from one item group to another. In the light of foregoing facts, the paper attempts, following Engel Curve methodology, to determine whether item-specific economies of scale exist in India and, if so, their degree. The study is conducted for three specific groups of commodities, viz., food, fuel and durable goods separately for rural and urban India. It is observed that the extent of economies of scale for food is about 7% in rural and 36% in urban India.

Only one comment/suggestion was made that reasons for significantly large value of economies-of-scale parameter for food (36%) in urban as compared to 7% in rural areas need to be examined in greater detail.

5. **Small area level estimates for proportion of poor households in the state of Uttar Pradesh in India**

The paper stated that the NSSO surveys are the main source of official statistics in India and generate a range of invaluable data at the macro level (e.g. state and national level). However, the NSSO data cannot be used directly to produce reliable estimates at the micro level (e.g. district or further disaggregate level) due to small sample sizes. There is a rapidly growing demand of such micro level statistics in India as the country is moving from centralized to more decentralized planning system. In this paper the authors employ small area estimation (SAE) techniques to derive model-based estimates of proportion of poor households at district levels in the State of Uttar Pradesh in India by linking data from the **Household Consumer Expenditure Survey 2006-07** of NSSO 63rd round and the Population Census. The poverty line used in their study is same as those of year 2004-05, given by Planning Commission, Govt . Of India. In their conclusion, the authors stated that the results/analyses show that the model-based estimates are satisfactorily reliable where as the direct estimates are very unstable. Thus, this model based estimates derived using Small Area Estimation are expected to provide invaluable information to policy-analysts and decision-makers. During the discussion following queries were raised:

- The rationale of limiting the analysis to six covariates needed to be explained. To this pertinent point, the presenter replied that out of original 100 covariates originally selected, only 6 best variables were finally on the criterion of their explaining the variability after use of multivariate step-wise regression model and with help of SPSS package for calculation. However, doubts were still raised about the sanctity of the number 6 of covariates still persisted even after this explanation.
- This method can be used to estimate poverty line of the districts. It was also opined that with two different data sets, one would arrive at two estimates of district poverty lines.

Technical Session III: Service Sector Enterprises

Technical Session III of the Seminar was devoted to papers with focus on main subject of the survey namely "Service Sector Enterprises" and was chaired by Prof. A K Adhikari, Chairman of the Working Group on 63rd round of NSS. Total ten papers covering various issues emerging from data collected in 63rd round of NSS were presented in this session. Paper wise summarization of discussion and presentation is as follows:

1. **Economic Inclusion of Non-farm Informal Service Sector :**

After defining the informal sector as per UNSC and NCEUS, author tried to examine the prevalence, employability and productivity of the informal sector in India based on data of employment and unemployment surveys of NSS 55th and 61st round and enterprise surveys of NSS 55th, 56th , 57th, 62nd and 63rd round. According to author, the share of informal-non-farm workers has gone up from 80 percent in 1999-2000 to 84 percent in 2004-2005. The increase was largely in the self-employment category suggesting a relative shrinkage in wage employment opportunities of decent kind, especially those with some job protection and social security. From enterprise survey it was observed that majorities of enterprises are of own account nature and large part of them are financially excluded. In the case of Directory Establishment it is observed that number of enterprises and number of workers decreases steadily as employment size increases, however, parameters like GVA per enterprise, GVA per worker increases steadily as employment size increases. Author then defined the term *Economic Inclusion* of an enterprise or a self-employed as proper credit flow institutional sources, institutional assistance for procurement of raw materials, institutional assistance for marketing of product, training, etc. Economic inclusion, in contrast to financial exclusion, has been termed as 'economic safety nets' by the authors and the extent to which the informal sector enterprises are suffered from financial exclusion have been pointed out by the authors. They have concluded that the NSS surveys of 62nd and 63rd round could identify only a part of inclusiveness in comparison to bank lending's given by financial institutions as obtained from other sources and thus more focused study is required. It was found very much useful and also pointed out that a

separate block on rural indebtedness has been included in NSS 66th round survey on employment and unemployment which would enable for further studying the financial inclusiveness.

2. Value Added by the Services Sector in India: A Comparative Analysis Based on NSS 63rd Round Survey and National Accounts Statistics

&

4. A study of Divergence in the Estimates of Number of Establishments and Workers Engaged in the Services Sector in India as per NSS 63rd Round and Economic Census 2005

These two papers are essentially on estimating the divergence between NSS estimates and other sources. The first paper is on divergence between estimates of NSS and NAS with reference to value added by service sector and the second one is on divergence between estimates of NSS and that of Economic Census on enterprises and workers. In the 1st paper (given at serial no. 2) wide gap in the estimates of GVA from NSS and NAS was noticed and suggested to go for deeper investigation to find out the reasons for this divergence.

In the similar line, wide divergence between the estimates of enterprises and workers by type of establishment and tabulation category from NSS 63rd round and the EC-2005 was noticed. Own-Account enterprises seemed to be grossly underreported in EC. There were wide divergences in the figures of number of establishments as well as of workers in case of hotels, storage and warehousing, communications, non-banking financial intermediation, insurance and pension funding, education, health and social work. They had also cited a few plausible reasons for divergences.

It was commented that the divergence between NAS and NSS estimates may be due to (a) NAS estimates includes storage and warehousing covered under ASI but in NSS surveys these are excluded (b) Activities of Private households employing persons are excluded in NSS enterprise surveys but are included in NAS estimates. It was clarified that NAS estimates presented in this paper (at sl. no. 2) excluded manufacturing and thus storage and warehousing covered under ASI is already adjusted. Contributions of activities of Private households employing persons in GDP are nominal: however NAS figures will be looked into for its adjustment. The two serious issues were raised for forum to consider- (a) Variation of estimates emerging from various sources is large but not explainable in terms of concepts and definitions followed by various agencies (b) From user point of view adequate reasons for wide divergence should be given so that they are not misled by different sets of estimates (c) What are the solutions to the issues need to be given in order to overcome this problem. To above question, it was clarified that one should look into the direction of divergence for all activities whether it is in same or opposite direction. Divergence between NAS and NSS estimates are in same direction which is alarming and of much concern. Methodological differences in two sources are already noted in the paper. However separate survey on corporate sector is suggested. It was pointed out that the divergence in EC and NSS estimates on Hotel & Restaurants is in opposite direction and to the query 'what happens when these two activities are merged together', it was clarified that even after pooling these activities; NSS estimate would be much higher than EC estimate as estimate of number of restaurants is very high compared to hotels both in EC and NSS survey.

It was further noted /opined in the house- (a) Results presented in NSS reports are survey/round specific and no chain linkage of estimates are given for previous rounds (b) Estimate of GVA in NSS is made through Production approach and experience is that not much difference is noticed between Production approach and Factor Income approach (c) RSE of estimates at all-India level is around 5 per cent and the same at state level is very high (d) Purpose of EC is different as its result is mainly used as frame for follow up surveys and thus there need not be total convergence with NSS estimates specially due to exclusion of enterprises without fixed premises in EC and the same has been deliberated at length by the Working Group constituted for EC-2011.

In the conclusion, it was felt that there should be convergence between NSS and EC estimates but

for OAEs without fixed premises as they are excluded in EC. Regarding GVA, estimates following two approaches show considerable divergence in NSS 55th round Survey.

3. Private Non-Banking Financial Intermediaries in India (2006-2007)-Their Estimated number, Workers and Gross Value Added

The paper tried to show some features of non-banking financial intermediaries (NBFI) in India. It stated that the survey results show that a substantial number of NBFI's are existing in India and out of them significant proportion are from OAE's and concentrated mostly in rural areas. The SHGs (Self Help Group), Cooperative Credit Societies and private money lenders were dominant among them as far as number of enterprises is concerned but their share to GVA was not significant. Results also showed that this sector has a very high potential for employment generation. During feedback session no specific questions were raised.

5. Comparison of the data on Hotel & Restaurant Sector in India from various sources

In this paper, an analysis of estimates generated for hotels and restaurants sector from NSS 63rd round survey, EC-2005 and surveys & records of Ministry of Tourism has been attempted. Proportion of number of enterprises and workers in hotels and restaurants sector to all service sector enterprises as per NSS 63rd round survey were analyzed. Similar analysis was also made for Economic Cencus-2005 data. For better comparison between NSS and EC estimates, non-agriculture enterprises as per EC without Wholesale and retail trade was worked out and the comparison was made. It was observed that a total of 37.8 lakh workers in EC-2005 against 51.3 lakh of workers in NSS 63rd round are engaged in hotels and restaurants sector. On the other hand the survey commissioned by MOT in 2003 estimated 28 lakh workers. During the discussion on presentation, it was pointed out that same criteria were not followed in coverage/collection of EC data used for compilation of comparative estimates of NSS 63rd round. Approximately 30000 hotels & restaurants run by Govt. and PSU are also included in the estimate prepared from EC data. It was also pointed out that in the headings of tables presenting NSS 63rd round data, the term non-agricultural enterprises has been used. It needs to be corrected.

6. Employment in Informal Manufacturing and Service Sectors : Comparison on some Key Parameters using NSSO data , exploring some issues on data quality

In this paper, a comparison of the quality and nature of informal employment in service sector vis-a-vis manufacturing sector was attempted. The author has presented some parameters like number of enterprises, average number of workers per enterprise, average number of hired workers per enterprise, percentage of female workers per enterprise, average number of female workers per enterprise, owned assets per enterprise, GVA per enterprise, etc. for service sector based on NSS 63rd round and manufacturing sector based on NSS 62nd round of surveys. Both GVA per worker and GVA per enterprise were found to be much higher in service sector than manufacturing sector.

It was suggested that NSS 63rd round survey covered whole gamut of service sector enterprises where as NSS 62nd round covered only the unorganized sector. It is better to pool the estimates of ASI with the estimate of 62nd round for better comparability.

7. Growth and Structural Changes in Non-agricultural Sector - An Empirical Study

In this paper, the authors have studied the growth and structural change of complete non-agricultural sector. The datasets of NSS 62nd and 63rd round and ASI were used in this paper. Besides, to compare various key parameters such as number of enterprise, number of workers, Gross Value Added, fixed assets, etc., with previous round surveys, the dataset of NSS 56th and 57th round were also used. They have also discussed the estimates of the above parameters for different tabulation categories of non-agricultural sector. It was observed that asset ratio in service sector is more compared to manufacturing

sector. This may be true in organized labour intensive service sector. Comparison should also be made for unorganized service and manufacturing sectors for better comparability.

8. NSS 63rd round enterprise survey: Certain conceptual issues and operational experience

The paper has documented the experience of tabulating the results of NSS 63rd round enterprise survey. The author has highlighted the shortcomings noticed in designing the schedule and its impact on tabulation. It has also mentioned the data collection problems and its impact on the results. Data collection was predominantly through oral enquiry and multiple reference periods were used in data collection. In significant number of cases employment figures were available without compensation to workers and in many cases large number of items were non-reported. The issue of sample size in enterprise survey and the problem of covering *big* enterprises has also been mentioned and suggested that no attempt should be made in future to cover the very *big* enterprises along with micro and small enterprises. The survey also revealed that in the absence of statutory legislation, attempts to cover big enterprises through oral enquiry are not desirable.

It was appreciated that paper was an useful documentation of issues in such type surveys and much of the problems are now tackled to large extent in designing NSS 67th round survey by way of deeper stratification, uniform reference period, avoiding list frame of corporate sector and proper designing of schedule. The need for proper training of contract investigators on accountancy practices was also underscored.

Prof Adhikari, Chairman of the session also pointed out that sample size for area frame was reduced from 15000 to 13000.Most of the financial enterprises from list frame could not be netted due to inherent problems. He also mentioned structure of schedule got changed after AITOT which was undesirable. Moreover, oral questions were introduced even if books of accounts were available and NAD block on financial enterprises was made available only after the pilot survey. All these led to problems in smooth field work and collection of quality data. Such large scale and last minute changes should be avoided in future in the interest of ease in the survey and collection of quality data.

9. Observation on NSS 63rd Round by DP Centre, Bangalore, Misclassification of Second Stage Strata Schedule 2.345 (Service Sector Enterprises excluding Trade)

The main focus of the paper was to highlight the misclassification of enterprises among different second stage strata for states assigned to DP Centre, Bangalore. Out of 27522 schedules, 219 schedules were misclassified. However the pattern of misclassification error was not randomly distributed, but more concentrated in second stage stratums 4, 5, 7 and 8. During feed back session, the paper was appreciated as a valuable exercise of documenting data processing experience highlighting the need for proper training for better understanding of concepts/definitions.

The Two Day seminar ended with Valedictory session on 3rd June, 2010 chaired by Sh. S.C. Seddey, DG & CEO, NSSO. Summarizations of presentations and discussions in the technical sessions were presented by the respective rapporteurs. These form the basis of this report. In his concluding remarks, Sh. Seddey thanked the chairpersons of technical session, authors of the papers and the officials associated with organization of the seminar. He also assured that NSSO would strive hard to maintain its standard and take all necessary action to bring in innovation and improvement in its functioning so that it discharges its responsibility effectively to provide quality data in time on different socio-economic aspect for better planning. A compilation of papers received on different individuals /organizations in response to our invitation for writing papers for and participation in the Seminar is given in this booklet on Compilation of Papers presented in National Seminar on 63rd round of NSS. Some of these papers are in their modified versions based on suggestions and views emerging from the discussion in the Seminar.

Miscellaneous

NSS 63rd Round: Survey on Service Sector in India : Salient Features[1]

National Sample Survey Office
Survey Design and Research Division (SDRD)[2]

1. Introduction

1.1 Service sector is the most important and dynamic segment of economy in terms of its contribution to the overall GDP and its growth. As per the latest available National Accounts Statistics,[3] during 2008-09, the service sector (excluding construction) had a share of about 54% in the GDP at factor cost at current prices. It is a domain of diverse economic activities and varied operational characteristics of units. The entire range of units in the service sector consists of very big corporate entities accounting for bulk of output as well as large number of very small and tiny enterprises with substantial share in employment. The service sector, besides having preponderance in the overall structure of economy, is also a significant ancor of socio economic well being and livelihood. It is second only to agriculture in employment generation. However, for the sector, with vast and heterogeneous spread in the geographical domain, significant growth dynamic, major data gaps exist in respect of its various segments. The enterprise survey thus was an exclusive source of comprehensive and national and sub national data profile on estimated number of enterprises, their ownership and operational characteristics, estimates on number of workers, type of worker, nature of employment, input, output & value added, fixed assets, capital formation, assets and liabilities.

1.2 The term 'service sector enterprises' under the coverage of 63rd round of National sample Survey basically referred to all service sector enterprises, other than (a) government and public sector undertakings and (b) those covered under Annual Survey of Industries. The survey thus covered all service sector enterprises (excluding trade) engaged in the activities of:

- hotels and restaurants (Section H of NIC 04);
- transport, storage and communication (I);
- financial intermediation (J);
- real estate, renting and business activities (K);
- education (M);
- health and social work (N) and
- other community, social and personal service activities (O).

One distinct feature of this survey was inclusion of financial intermediation (J) not covered in previous surveys on unorganised service sector enterprises of NSSO.

1.3 The Results of 63rd round survey on service sector in India were brought out in two reports, Report no. 528: Service Sector in India (2006-07): Operational Characteristics of Enterprises and Report no. 529: Service Sector in India (2006-07): Economic Characteristics of Enterprises.

---

[1]National Seminar on the Survey results of NSS 63rd round, June 2nd & 3rd, 2010, New Delhi

[2]SDRD Team: **Dr. Rajiv Mehta, Shri Biswajit De, Shri T. K. Sanyal**

[3]Summary of macro-economic aggregates at current prices, 1950-51 to 2008-09 , Central Statistical Office (http://mospi.gov.in/GDP50_08_R_curr_9.9.09.pdf).

2. Items of information and method of data collection: The items of information collected through different blocks of the detail schedule (Schedule 2.345) included the following:

- Particulars of operation and background information of the enterprise
- Principal operating expenses
- Other operating expenses
- Principal receipts
- Other receipts
- Other receipts/expenditures (non-entrepreneurial) for non-financial enterprises
- Gross value added
- Employment particulars
- Compensation to workers
- Fixed assets owned and rent payable on hired assets
- Financial liabilities

2.1 The above items of information from the enterprises were collected either from books of accounts of the sample enterprises or through oral enquiry depending upon whether the enterprises maintained books of accounts and also provided data from it or not.

3. Sample Design in brief:

3.1 Enterprise surveys using only area frame for sampling had been conducted periodically by NSSO in the past. But the size distributions (by number of workers or gross value added) of the enterprises being highly skewed for many of the service sector activities, representations of few large units having very high share of GVA in the industry had most often been inadequate. Thus, it was felt essential to adopt a strategy ensuring proper representation of larger units so that efficiency of estimates of GVA is improved. Accordingly, the distinctive feature of 63rd round sampling design was adoption of dual frame, list frame and area frame.

3.2 List frame: Big enterprises in the service sector under coverage were identified through certain filtering criteria and these enterprises, which included both financial and non-financial enterprises, constituted the list frame. Keeping in view the constraints of resources, a total of 998 list frame enterprises distributed all over India were ultimately allotted for survey on a complete enumeration basis. However, among these 998 list frame units, only 438 units could ultimately be identified/surveyed because the remaining units were either not found to be eligible for survey (for example, being government or public sector enterprises) or were not identifiable in the field due to incomplete address in frame or change of locations.

3.3 Area Frame: In the area frame, a stratified multi-stage sampling design was adopted in 63rd round. First-stage units (FSUs) were villages (Panchayat wards in Kerala) in rural areas and Urban Frame Survey (UFS) blocks in urban areas. For a few towns where UFS was not conducted, towns were treated as FSUs. The ultimate stage units were service sector enterprises in both the sectors, rural as well as urban. Other salient features of the design to select the ultimate sampling units were:

- Relatively larger FSUs were sub-divided into smaller parts called hamlet-groups (hg) in the rural areas and sub-blocks in the urban areas. In case of large FSUs requiring hamlet-group (hg) / sub-block (sb) formation, one intermediate stage in the sampling involved the selection of three hg's / sb's from each FSU out of a minimum of four hg's/sb's formed in the FSU.
- One hg/sb with maximum number of enterprises of a specific type was selected with probability '1' and called segment 1 and two more hg's/sb's selected at random from the list of remaining hamlet groups of the FSU constituted segment 2.
- Within the segments as noted above, eight Second Stage Strata (SSS) classified by type of industries x enterprise types were formed. Such deeper stratification was adopted to have diverse domain representation in the sample. The ultimate stage units (USUs) i.e. the service sector

enterprises were selected from the eligible enterprises of the respective SSS of each segment by SRSWOR.

- However, within the whole FSU relatively bigger service sector enterprises having 50 or more workers that were eligible for survey (i.e. having operated for at least 30/15 days during the reference year respectively for non-seasonal/seasonal enterprises) were separately listed (segment 9) and the schedule was canvassed in all these listed enterprises of segment 9. In other words, no sampling was done in segment 9 unlike other two segments.
- As regards the first stage stratification, two basic strata were formed within each district of a State/UT: rural stratum comprising all rural areas of the district and urban stratum consisting of all urban areas of the district. However, each city with a population of one million or more as per Census 2001 was invariably treated as a separate stratum by itself.

3.3 However, only all-India estimates were prepared based on combined frame. State-wise estimates were prepared based on area frame only. This is because the list frame enterprises were very big enterprises and they had dominant share in various economic characteristics. Several of the list frame units had number of branches spread across the states. The disaggregation of their characteristics needed apportionment using some auxiliary information such as number of workers in the branches located in different states. However, such break-up was not available for a number of list frame units surveyed**.** Keeping in view this limitation of the survey, the state-wise break-up of various characteristics was given only in respect of area frame enterprises. Henceforth, unless otherwise mentioned, all estimates presented herein refer to combined frame only.

4. Main Findings:

4.1 Key Indicators: Some key indicators of enterprise sector by which the impact on the economy can be studied are size (like number of enterprises and number of workers), employment per enterprise, gross value added, etc. **Table 1** gives an overview of the Service Sector Enterprises in India during 2006-07. Henceforth, 'service sector' will mean 'service sector under coverage of NSS 63rd round'. The key indicators revealed by the survey are that about 1.65 crore[4] service sector enterprises were estimated to be existing in India during 2006-07 and about 3.35 crore persons were working in service sector enterprises during the same period. The aggregate Gross Value Added (GVA) contribution by the service sector was estimated at 2, 44, 792 Crores of Rupees. The estimated market value of owned fixed assets per enterprise for the service sector was estimated at Rs. 1,78,102. The heterogeneity of the domain of service sector was evident from the simple revelation that per enterprise value of owned fixed assets for *Establishments* (Rs 960.2 thousand) was about 22 times the same (Rs 43.7 thousand) for *Own Account Enterprises* (OAEs).[5]

Table 1: Service Sector Enterprises in India, 2006-07 at a glance

Key indicators	Total	OAE	Establishment
Estimated number of enterprises (in'000)	16512	14092	2420
Estimated number of workers (in'0000)	3352	2126	1226
Average number of workers per enterprise	2.03	1.51	5.07
Aggregate GVA (in Rs. Crore)	244792	45660	199131
Estimated value (in Rs) of fixed assets owned per enterprise	178102	43774	960260
Estimated value (in Rs) of Financial liability per enterprise	441133	21430	2884961

[4]1 crore = 10 million

[5]As per the definition adopted in the survey, an own account enterprise is a unit that operated without hiring any worker during major part of the preceding one year while the establishment referred to a unit that hired at least one worker during the said reference period.

4.2 Number of Enterprises and its Operational Characteristics: Number of enterprises and its distribution over the geographical space is a major characteristic to describe the growth of economy and the scale of economic entrepreneurship. As shown in **Table 2**, during 2006-07, about 1.65 crore enterprises were engaged in the service sector activities excluding trade, 60% of which were in rural India as against 40% in urban sector. OAEs constituted 85% of all enterprises.

Table 2: Estimated number of enterprises by enterprise types and sector in India, 2006-07

sector	number of enterprises (in '000)		
	OAE	Establishments	all
Rural	9004 (91%)	896 (9%)	9900
urban	5088 (77%)	1524 (23%)	6612
All	14092 (85%)	2420 (15%)	16512

4.2.1 Table 3 provides few important features of the service sector enterprises. Proprietary enterprises (i.e. enterprises owned by a single household) had the highest share (90%) in total number of enterprises in the country. The preponderance of informality of service sector entrepreneurship in the economic space was reflected from the fact that about 59% of all enterprises were found to be not registered under any Act or with any registration authority and this proportion was more in case of OAEs (63%) than establishments (34%). About 26% of the enterprises operated their business without any fixed location. The corresponding percentage was less in the case of establishments (10%) as compared to OAEs (29%). A vast majority (99%) of all enterprises was perennial i.e. operating more or less throughout the year. About 91% of the enterprises had worked for 9 months or more during the last 365 days. Nearly 61% of the proprietary or partnership service sector enterprises were owned by persons belonging to Scheduled Tribes (ST), Scheduled Castes (SC) and Other Backward Classes (OBC). This proportion was more in case of OAEs (64%) than establishments (48%).

Table 3: Some characteristics of enterprises by enterprise types in India, 2006-07

	Total	OAE	Establishment
Percentage of proprietary enterprises	90.2	91.0	86.0
Percentage of enterprises not registered with any agency	59.1	63.4	34.5
Percentage of enterprises without fixed premises	26.4	29.1	9.9
Percentage of enterprises operating perennially	98.6	98.6	98.3
Percentage of enterprises operating for 9 or more months	90.9	90.9	90.5
Percentage of enterprises working on contract	2.5	2.3	3.8
Percentage of SC/ST/OBC owner/partners in proprietary and partnership enterprises	61.2	63.4	48.0

4.2.2 Problems faced in operation of enterprises and status of receiving assistance: Table 4 reveals that about 22% of enterprises reported to be suffering from scarcity of capital. This percentage was little higher in case of rural India (23%) than urban India (20%).

Table 4: Percentage of enterprises reporting shortage of capital

percentage of enterprises reporting shortage of capital								
rural			urban			all		
OAE	establishment	all	OAE	establishment	all	OAE	establishment	all
22.7	23.4	22.8	20.9	16.3	19.9	22.1	18.9	21.6

4.2.3 The non-receipt of any assistance was also a constraint reported by majority of the enterprises. As seen in **Table 5**, about 86% of the enterprises did not receive any assistance in the form of loan or subsidy or training etc. Interestingly, the incidence of non receipt of any assistance was reported higher, though marginally by urban enterprises. About 12% of enterprises got it as loans only. The incidence of receiving assistance in any form was higher for establishments (22%) than OAEs (13%).

Table 5: Percentage of enterprises receiving assistance as loan and not recei ving any assistance categorized by enterprise type and sector

percentage of enterprises	rural			urban			all		
	OAE	establishment	all	OAE	establishment	all	OAE	establishment	all
receiving assistance by loan	13.5	23.6	14.4	7.6	15.4	9.4	11.4	18.5	12.4
not receiving any assistance	84.7	71.0	83.5	91.0	81.7	88.9	87.0	77.7	85.7

4.2.4 Employment in Service Sector: In India, service sector has an important role in generating employment. Number of workers in service sector in India during 2006-07 was estimated to be about 3.35 Crores, with rural and urban share being respectively 54% and 46% (vide Table 6).

Table 6: No. of workers by enterprise type and sector during 2006-07

enterprise type	estimated number of workers (in '000)		
	rural	urban	all
OAE	14548	6709	21258
Establishments	3582	8673	12255
All	**18130**	**15383**	**33513**

4.2.5 Proportion of Female Workers: Table 6a gives the proportions of female workers in different enterprise types separately for rural, urban and both sectors combined. It is seen that the female workers constituted roughly 29% of all workers in service sector enterprises and the percentage of female workers was higher in rural areas (35%) than the same in urban areas (22%).

Table 6a: Percentage of female workers by enterprise type and sector during 2006-07

enterprise type	Percentage of female worker		
	rural	urban	all
OAE	39.0	20.2	33.0
Establishments	19.4	24.0	22.6
All	**35.1**	**22.4**	**29.2**

4.2.6 Workers (full-time and part-time): **Table 6b** reveals that about 76% of workers in rural enterprises and 90% of those in urban enterprises were engaged on full-time basis. Information on hired worker (person employed directly or through any agency on payment of regular wage / salary in cash or kind including Apprentices, paid or unpaid, paid household workers, servants and resident workers of the enterprise) was also collected and Statement 6c reveals some facts about salary of hired workers for establishments in India.

Table 6b: Percentage of workers by duration of work and sector during 2006-07

Duration of work	Percentage of worker		
	rural	urban	all
Full-time	76	90	83
Part time	24	10	17
All	**100**	**100**	**100**

5. Other economic characteristics:

5.1 Table 6c reveals that annual salary for hired worker in urban areas (Rs. 57977) was more than double in case of rural India (Rs. 24816).

Table 6c: Annual salary (in Rs.) per hired worker based on Area Frame during 2006-07

Enterprise type	Annual salary per hired worker (in Rs.)		
	rural	urban	all
Establishments	24816	57977	48482

5.2 Fixed Assets Owned: Table **7** presents the estimated value of total fixed assets owned per enterprise for different enterprise types. At all-India level, the estimated market value of owned fixed assets per enterprise was estimated as Rs. 1, 78,102. The market value of owned fixed assets per enterprise in urban areas was about 5.5 times the corresponding value in rural areas. Per enterprise value of owned fixed assets for Establishments was about 22 times the same for OAEs.

Table 7: Estimated value (Rs.) of owned fixed assets per enterprise by enterprise

enterprise type	estimated value of owned fixed assets per enterprise (in Rs.)		
	rural	Urban	all
OAE	32,801	63,194	43,774
Establishments	3,67,366	13,09,118	9,60,260
All	63,096	3,50,325	1,78,102

5.3 Financial Liability: Financial liabilities included capital deployed by the partners of an enterprise, share capital, reserve and surplus amount noted in the balance sheet, long-term loans and also all short-term commitments for payments like unpaid wages, etc. The average amount of financial liability per enterprise is presented in **Table 8**. It is seen that at all-India level, the financial liability of an enterprise as on the last date of the reference year amounted to Rs. 4,41,133. The financial liability per enterprise for OAEs was Rs. 21,430 against Rs. 28,84,961 for Establishments. Thus, financial liability per Establishment was considerably higher than the same for OAEs.

Table 8: Estimated value (Rs.) of financial liability per enterprise by enterprise type

enterprise type	financial liability per enterprise (Rs.)		
	rural	urban	all
OAE	8,210	44,827	21,430
Establishments	3,84,220	43,56,395	28,84,961
All	42,258	10,38,455	4,41,133

5.4 Gross Value Added: Gross value added (GVA) is the value added to the economy by the process of production of an enterprise. **Table 9** gives an overview of GVA in the Indian economy. Aggregate annual gross value added by service sector enterprises was estimated as Rs.244,792 crore out of which rural India and urban India had shares of 15% and 85% respectively. Major contribution to GVA had come from OAEs (61%) in rural areas and from Establishments (89%) in case of urban areas. Considering both rural and urban India, establishments had the major contribution (81%) in total GVA by the service sector.

Table 9: Aggregate gross value added (Rs. in crores) by enterprise type and sector during 2006-07

enterprise type	aggregate gross value added (Rs. in crores)		
	rural	urban	all
OAE	22759 (61%)	22901 (11%)	45660 (19%)
Establishments	14660 (39%)	184472 (89%)	199131 (81%)
All	**37419 (100%) (15%)**	**207373 (100%) (85%)**	**244792 (100%) (100%)**
GVA / fixed capital	**0.60**	**0.86**	**0.83**
GVA / financial liability	**0.89**	**0.30**	**0.34**

5.5 GVA per worker based on area frame: Table 10 below gives the estimated annual gross value added per worker (GVAPW) by types of enterprise separately for rural, urban and combined sector. As expected, GVAPW were substantially high for Establishments for all sectors. At all-India level, annual GVAPW in service sector was estimated at Rs. 73038. For rural India, annual GVAPW for OAEs and Establishments were estimated as Rs15644 and Rs. 40931 respectively. The corresponding estimates for urban areas were Rs. 34132 and Rs. 212615 respectively.

Table 10: GVA per worker (in Rs.)

enterprise type	estimated GVA per workers (in Rs.)		
	rural	urban	all
OAE	15644	34132	21479
Establishments	40931	212615	162452
All	**20640**	**134782**	**73038**

5.6 Features of Service Sector Enterprises at Activity Levels: As seen in the **Table 11** below, *transport, storage & communication* (I) had the highest percentage of enterprises (38%) followed by *other community, social and personal service* activities (O) (19%). As against the total number of workers estimated as 3.35 crores, the number of workers in various activities in the service sector differed. It is seen that the estimated number of workers engaged in enterprises belonging to 'transport, storage and communication (I)' (0.84 crores) was the highest followed by 'financial intermediation (J)' (0.57 crores), 'hotels and restaurants (H)' (0.513 crores), 'other community, social and personal services(O)' (0.509 crores), and 'education(M)' (0.39 crores). It is further seen that 'Hotels (H1)' had the highest annual GVA per enterprise (Rs. 1548 thousand) at all-India level. This was followed by 'Insurance and pension funding

and auxiliary activities (J2)' (Rs. 1327 thousand) and 'Storage and warehousing (I1)' (Rs. 572 thousand). 'Other community, social and personal service activities (O)' had the lowest GVA per enterprise (Rs. 45 thousand).

Table 11: Some features of service sector enterprises at activity levels

Activities	Percentage distribution of enterprises			Estimated number of enterprises (in '000)	Estimated number of workers (in '0000)	Estimated annual gross value added per enterprise (in Rs.'000)	Estimated annual gross value added per worker (in Rs. '000)
	total	OAE	Establishment				
Hotels (H1)	0.42	0.06	2.53	69	44	1548	244
Hotels & restaurants (H)	12.47	10.99	21.13	2060	513	137	55
storage & warehousing (I1)	0.02	0.00	0.08	3	2	572	87
Transport, storage & communication (I)	37.99	40.55	23.09	6273	837	70	52
Insurance and pension funding and auxiliary activities (J2)	1.39	1.41	1.23	229	44	1327	693
Financial intermediation (J)	9.17	9.99	4.37	1514	577	327	86
Real estate, renting and business activities (K)	8.48	7.38	14.93	1401	310	483	218
Education (M)	6.31	5.06	13.58	1041	387	226	61
Health and social work (N)	6.63	5.77	11.63	1095	218	165	83
Other community, social and personal service activities (O)	18.94	20.26	11.27	3128	509	45	27
total	100	100	100	16512	3351	148	73

6. Comparative results with the past rounds: Table 12 gives comparison of the results of enterprise surveys on service sector during 2006-07 (NSS 63rd round) and during 2001-02 (NSS 57th round) and indicates that there is nominal change in the number of enterprises and number of workers over years. It is interesting also to note that top four States in terms of number of enterprises (names of the states) were identical both in 2001-02 and 2006-07 and their percentage shares did not reveal noteworthy differences.

2.15 GVA per enterprise was Rs.130,153 in 63rd round (excluding enterprises covered under financial intermediation (J)) **against Rs. 51,673 in 57th round. GVA per worker was Rs. 70,358 in 63rd round (**excluding enterprises covered under financial intermediation (J)) **against Rs. 28,160 in 57th round.**

Table 12: Comparative statements for some key indicators over previous rounds:

Key Indicators	**57th round (2001-02)**		**63rd round (2006-07)***	
Estimated number of enterprises (in'000)	14472		14998	
Estimated number of workers (in'000)	26556		27742	
Average number of workers per enterprise	1.8		1.8	
Share of top five states in total number of enterprises	UP	17.19	UP	14.71
	WB	10.79	WB	12.81
	AP	9.29	AP	9.35
	Maharashtra	8.21	Maharashtra	8.95
	Bihar	8.17	TN	6.57
	Total	53.65	Total	52.40
GVA per enterprise (in Rs,)	51673		130153	
GVA per worker(in Rs,)	28160		70358	

* Percentages and estimates calculated by excluding enterprises covered under financial intermediation (J).

7. State-wise results

7.1 Enterprises across Major States in 2006-07: Results for certain major economic characteristics are discussed in respect of 21 major states which are identified on the basis of estimated number of enterprises (exceeding 1 lakh). Across the states, the characteristics of the enterprises were differing in terms of its size, total number workers and annual GVA.

7.2 Table 13 below presents some key characteristics of enterprises in major states of India. It shows that Uttar Pradesh had the highest share in total number of enterprises (14%) followed by West Bengal (13%), Andhra Pradesh (10%), Maharashtra (9%) and Tamil Nadu (7%). These five states together accounted for more than half of the enterprises. The top five states in terms of their share of workers were Uttar Pradesh (12%), Andhra Pradesh (11%), West Bengal (10%), Maharashtra (9%) and Tamil Nadu (9%). These five states together accounted for 51% of total workers of the service sector in the country. As regards the GVA, Maharashtra had the highest share of GVA (32%) followed by Karnataka (17%), Orissa (9%) and Andhra Pradesh (7%). These four states together accounted for 65% of total GVA of the service sector in the country.

13: Key indicators of service sector enterprises for Major states in India during 2006-07

State/ut	Estimated number of enterprises in '00	% share	Estimated number of workers * in '00	% share	Aggregate Annual Gross Value Added (Rs. lakhs)	% share of GVA
Andhra Pradesh	17226	10.43	36352	10.85	1722585	7.04
Assam	5961	3.61	11285	3.37	275664	1.13
Bihar	8717	5.28	13088	3.91	288338	1.18
Chhattisgarh	1771	1.07	4498	1.34	92942	0.38
Delhi	1472	0.89	3234	0.97	181347	0.74
Gujarat	6435	3.90	12227	3.65	1247105	5.09
Haryana	3280	1.99	5724	1.71	344747	1.41
Himachal Pradesh	1147	0.69	2174	0.65	84448	0.34
Jammu & Kashmir	1388	0.84	2436	0.73	137747	0.56
Jharkhand	4348	2.63	6473	1.93	203051	0.83
Karnataka	8053	4.88	15916	4.75	4058649	16.58
Kerala	9597	5.81	21745	6.49	1188290	4.85
Madhya Pradesh	4685	2.84	10171	3.04	303547	1.24
Maharashtra	14894	9.02	31596	9.43	7831307	31.99
Orissa	6220	3.77	19240	5.74	224687	9.18
Punjab	4511	2.73	8001	2.39	436859	1.78
Rajasthan	6003	3.64	11884	3.55	562784	2.30
Tamil Nadu	11931	7.23	29215	8.72	1406290	5.74
Uttarakhand	1490	0.90	2459	0.73	100298	0.41
Uttar Pradesh	22462	13.60	40639	12.16	1140184	4.66
West Bengal	20917	12.67	33206	9.91	1494518	6.11
India	165125	100.00	335156	100.00	24479170	100.00

*based on area frame

SOME FIELD EXPERIENCES OF THE 63rd ROUND OF SOCIO-ECONOMIC SURVEY ON SERVICE SECTOR ENTERPRISES (EXCLUDING TRADE)

By

D. Sudhakar* and **D. C. Pandey†**

NSSO (FOD)

Introduction

0.1 The National Sample Survey (NSS) 63rd Round of Socio-Economic Survey (July 2006-June 2007) was primarily devoted to the survey on enterprises in service sector (excluding trade) in the country. The other subject of enquiry covered in this round was usual annual survey of household consumer expenditure. Last survey of service sector enterprises was conducted in the 57th round of NSS during July 2001 to June 2002. The 63rd round was basically a repetition of the 57th round in terms of concepts and definitions. However, financial sector which was not included in 57th round was included in the coverage of 63rd Round.

0.2 In this paper, an attempt has been made to present some experiences of the FOD in conducting the survey for the 63rd round. The paper has been divided into four sections. Section 1 describes the objective and coverage of the survey and the changes incorporated in the present round vis-à-vis earlier rounds on the subject. Section 2 is the main chapter dealing with the field experiences and Section 3 includes the quality control measures adopted by the FOD in this round. Brief summary and suggestions have been given in Section 4.

Section 1: Objectives and Coverage

1.1 Service sector is the most important sectors of the economy in terms of income generation and second only to agriculture in employment generation. However, major data gaps existed in all the segments of this sector because of their impressive growth and reach. The survey on service sector enterprises was launched mainly with the objective to bridge the data gaps existing in this diverse sector and that could help the policy makers and planners. Besides, this survey has to enable the policy makers to understand and address the problems of production, income generation and manpower absorption in this growing sector.

1.2 The objective of the household consumer expenditure survey was to provide an unbroken annual series of consumption pattern of rural and urban households. It was also to help in estimating number and percentage of persons below the Poverty Line in different States and UTs from the size distribution of monthly per capita expenditure.

* Assistant Director, NSSO (FOD), Hqrs. New Delhi

† Superintending Officer, NSSO (FOD), New Delhi

1.3 The NSS 63rd round survey covered all service sector (excluding trade) enterprises. However, service sector enterprises covered under the Annual Survey of Industries (ASI), Government and Public Sector Undertakings were excluded. As such enterprises that came under NIC 2004 Divisions 55(Hotel and Restaurants), 61(Water Transport), 63(Supporting and auxiliary transport Activities), 64(Post & Telecommunication), 66, 67, 70-74, 80, 85, 90, 92-93, NIC 2004 Groups 602 & 659 and NIC 2004 Class 9191 & 9199 that are not run by Governments/PSUs/Local Bodies were covered in 63rd round. Information for the survey was collected during July, 2006 to June 2007.

1.4 In this round, a dual frame approach viz. a list frame and an area frame was adopted. This was the second survey in which a dual frame approach was used in a NSS round. The first time was in NSS 62nd round. Accordingly a list of about 1000 service sector enterprises containing names of financial enterprises supplied by RBI and names of other service sector enterprises supplied by M/o Company Affairs was used. All the eligible units in the list frame considering all its branches as one unit were considered for survey without resorting to any sampling. For the coverage of all other service sector enterprises in the universe, an area frame approach was followed for sampling the units. Besides these, in the area frame a separate segment 9 was formed comprising all the non-agricultural enterprises having 50 or more workers in the entire FSU and having operated for at least one day during last 365 days. All the eligible units of Segment 9 under coverage were surveyed without any sampling as was in the case of list frame. As a whole, 13997 FSUs (5608 villages and 8289 urban blocks) in area frame were allocated for central sample at all India level. In 63rd round, the following three types of schedules were canvassed:

Schedule 0.0	-	Listing of Households and Non- Agricultural Enterprises
Schedule 2.345	-	Service Sector Enterprises (excluding trade) and
Schedule 1.0	-	Household consumer expenditure

The information was collected from 24 enterprises from eight second stage strata (SSS) for schedule 2.345. For schedule 1.0, information was collected in 6 households from three second stage strata in rural FSUs and 4 households from two second stage strata in urban FSUs.

1.5 The description of block-wise details on items of data collection have been left for the sake of brevity of time and repetition.

Important Changes in the schedules in comparison to the previous rounds on the subjects

1.6 Prior to 63rd round of NSS, the only recent NSS round on service sector enterprises was 57th round of NSS and similar concepts and definitions were used in both these surveys. However, they differ in coverage to some extent. Financial intermediation (Section J of NIC 2004) and activities of other membership organizations not elsewhere classified (code 9199 of NIC 2004) were covered in 63rd Round but excluded from coverage in 57th round. Similarly, only non-mechanized transport activities related to transport via railways(code 601 of NIC 1998) and activities of business, employers and professional organizations(code 911 of NIC 1998) were covered in 57th round but excluded from coverage in 63rd round.

1.7 In 63rd round of NSS, annual series of employment and unemployment was discontinued. However, annual series of surveys on household consumer expenditure was conducted and this was eighteenth survey in this series. The survey on household consumer expenditure was broadly similar to the survey for the annual 62nd round and the quinquennial 61st round. However, the following additional/modified information was collected in this round:

i) Some pertinent questions regarding participation of household members of age 15 years and above in public works were included in block 4 of schedule 1.0 along with demographic particulars (column 15 to 22). In 62nd round of NSS, these questions were put while canvassing schedule 10 on employment and unemployment.

ii) In block 5 to 11, the value figures for all the items were to be collected in whole rupees after rounding off paisa figures, if any.

iii) Item 300(biscuits) of previous round was bifurcated into two items (i- item 299: chocolate, lozenge etc., and ii-item 300: biscuits)

iv) Item 420(medicine) of previous round was split into five items (420 to 424) i.e. allopathic, homoeopathic, ayurvedic, unani and others.

v) Item 472(insecticides, acid, etc) of previous round was modified as mosquito mat, insecticides, acid etc.

Section 2: Field Experiences

2.1 Conceptual/ Definitional and General Issues

2.1.1 The survey covered all types of enterprises, big and small and the information on operating expenses, receipts, employment particulars, fixed assets, loan outstanding etc. was collected either through the book of accounts as provided by the units or orally through the interview. The field experience of the 63rd round shows that most of the units in service sector either do not maintain proper accounts or even if maintained, were very reluctant to present to the field staff. The records were obtained in a number of cases with great difficulty and after lot of persuasion. In the face of reluctance from owners, it is possible sometimes that the field official might not have insisted in using the records to avoid delays in survey work. As there was no legal obligation on the part of establishment, the field staff faced resistance in getting the information. Thus in large number of cases the information was collected on interview basis and in such cases, the enterprises had the tendencies not to reveal the exact figures.

2.1.2 In a few cases, where the owners/operators of the enterprises lived outside or far from the FSU, their employees were unable to give any information and therefore the field officials had to spend longer time in searching for the right respondent. In a number of cases proprietors were reluctant to spare adequate time with the investigators for detailed enquiry.

2.1.3 Some important concepts used in 63rd Round of NSS viz. Underwriting, Merchant Banking, Bill discounting, Financial Lease and Non-Profit Institutions(NPIs) were difficult to understand as they were not elaborated in 'Instructions to Field Staff Volume-I'.

2.1.4 Another major problem faced by the field officials was regarding use of two kinds of reference periods depending primarily on whether the enterprises under survey could provide information from their books of accounts or from oral enquiry. For enterprises providing oral information there were three kinds of reference periods, viz. a) reference month, b) reference year, and c) the last date of reference period. Again for the perennial and casual enterprises, reference month would refer to the last 30 days (preceding the date of survey) irrespective of the number of days of operation. For seasonal enterprises there were twin concepts of reference month, if the enterprise worked continuously for 30 days or more in the current season, the reference month referred to 'the last 30 days (preceding the date of survey)' and for enterprises which worked for less than 30 days in the current season, reference month referred to an average month in the last working season. Also, if an enterprise was unable to provide information for the last 30 days but was able to provide for the latest completed calendar month, the calendar month was treated as reference month. Likewise, reference year was also changeable in nature and the field officials had to face difficulties with respect of the factors deciding the proper reference year / reference month/reference period under specific conditions. It was hard to keep in mind the wide range of concepts of reference period for different blocks and different items contained in schedule 2.345.

2.1.5 The schedule 1.0 was very exhaustive and meant to collect data for each and every item of consumption. Problems encountered in canvassing the schedule 1.0 were same as faced in previous rounds. People are very busy now-a-days and they do not take much interest when they find that supply of

information would not fetch any direct benefit to them. The field officials felt that for honest collection of data substantial amount of time is required which most of the respondents did 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. Perhaps it is too much to ask for!

2.2 Specific Problems Associated with the Canvassing of the Schedules

2.2.1 Listing of Enterprises/Households and their Selection (Schedule 0.0)

2.2.1.1 In this round, a list of 998 enterprises as a list frame was provided for survey. Such enterprises were big non ASI service sector units. However, during field survey, it was found that:

i) The list provided by Reserve Bank of India and Ministry of Company Affairs were not up to date.

ii) Many of the units changed their place of operations as well as offices and some units were closed or had been sold to several hands.

iii) Majority of the units were already covered under Annual Survey of Industries. It was also found in a few cases that the units were involved in some other activity rather than service sector.

iv) There were lot of causalities as out of 998 list frame enterprises; only 438 enterprises could ultimately be surveyed.

v) In rural sample with very high population/area, formation of Segment 9 in Area Frame samples for listing big enterprises having 50 or more workers was found to be very time consuming and created unnecessary fatigue among fieldworkers.

vi) There were some census 2001 towns and outgrowths (OGs) for which UFS updating works were not completed and such towns/OGs were selected as an FSU. In all such towns/OGs, listing of big enterprises for formation of Segment 9 was huge task for fieldworkers.

2.2.1.2 It was observed that in some cases a particular FSU was repeated 5 times in a sub-round and 11 times in the entire round. Even, repetition also occurred between State and Central samples. The real problem faced during canvassing of schedules in repeated FSUs was that even the cooperative informants turned hostile on subsequent visits.

2.2.1.3 The provision in the listing schedule for recording all NAEs in column 15 (serial number) of block-5a (list of households and non-agricultural enterprises) helped in preparation of the list of the service sector units with minimum omission. However, the transfer of entries from column- 19 and 17 from block-5a to block-5b sometimes resulted in copying errors. There were chances of omission of such enterprises, which were not in existence on the date of survey but operated during the last 365 days preceding the date of survey. There was also the possibility of omission of invisible enterprises like tuition taking, brokerage, etc at listing stage. There were enterprises, which carried out more than one activity simultaneously. Each of such activity was to be treated as separate enterprise if information for these activities was separately available. If accounts were not separable then the enterprise is classified as having mixed activity. In some cases the enterprises that carry out more than one activity simultaneously may not have been recorded correctly. Thus there were chances of omission of such enterprises. Difficulties were experienced to collect information for column 21 & 22 in block-5b on total number of workers including both household workers and hired workers (including apprentices, paid or unpaid) usually working on a working day during reference year for perennial and casual enterprises and during the last working season of the reference year for seasonal enterprises. The general tendency of the informants was to hide information on number of workers hired. The under reporting of the hired workers was mainly due to the application of Labour Act. There were instances the informant changed versions regarding hired worker from listing stage to detailed enquiry stage.

2.2.1.4 As per procedural instructions, industries that fetched maximum earning/employment in case of mixed activities were to be recorded at the listing stage. This resulted in many enterprises doing mixed activities (trade with service or manufacturing with service) becoming ineligible for survey coverage at listing stage as the share of service activities of the enterprises were less than other activities.

2.2.1.5 It was found, in many cases that the informants denied the existence of a particular enterprise run from the house despite display of signboard for a particular enterprise.

2.2.1.6 Self Help Groups were generally not physically visible in sample FSU, so SHGs might have been missed at listing stage in some cases.

2.2.1.7 There were situations where a multiplex with 600 enterprises was found situated on a corner and residential area with 60 households situated in another corner of FSU. In such cases, sub-block formation was difficult since equalizing population and number of enterprises considering contiguity was the criteria for sub-block formation.

2.2.1.8 Preparation of frame for selection (8-second stage strata (SSS) in each segment 1&2) and selection of enterprises had been carried out in a very lengthy way using a fairly complex procedure, which had sometimes led to mistakes.

2.2.1.9 Some of the blocks and item specific problems and experiences of the field are as follows:

i) In Jammu & Kashmir, public works are mostly undertaken through contractors who complete works through employing outside workers viz. from Bihar, Orissa etc. In such situation, no public work could be found in State as per definition provided in Volume-I.

ii) In item 1 of bl.9, there was entry 2(i.e. no public work was undertaken in sample village), but in column 9 of bl. 5a there could be a tick mark as the member of household had worked in the public work of neighbouring village. Instruction was not clear whether person would be considered worked in public works undertaken in his own village or neighbouring village.

iii) In column 18 of block 5a, it was required to ascertain whether a particular enterprise was covered under ASI or not, however, at listing stage it was difficult to identify whether factory was covered under the ASI frame or not due to unavailability of proper informant.

2.2.2 Survey on Service Sector Enterprises (Schedule 2.345)

2.2.2.1 Whenever a branch unit was selected in Area Frame whose head office was situated in another city, it was, in general, difficult to get the information from the branch unit. In many cases, the branch units showed resistance to provide the information. In some cases, the head office of enterprise was also not maintaining branch-wise details to furnish information. As per instruction, data on receipts, expenses, wages, rent, interest, etc. were to be apportioned using the number of workers in the selected branch and number of workers considering all the branches. This process was time consuming and generally information was obtained by persuasions and approximation.

2.2.2.2 For enterprises where data was to be collected for the last 30 days, sometimes a situation was encountered when the enterprise did not work during the last 30 days being lean period for the unit. In such cases, data in most of the blocks was left blank. Likewise in case of enterprises which operated only for two months during the reference year and where data was to be collected for last operating month, the enterprises found it very difficult to recall the information after a long period. The situation was more difficult in case of seasonal and casual type of enterprises.

2.2.2.3 Chartered Accountants and Advocates had a doubt whether the schedule was meant for them as all the possible services found place in sub-heading of the schedule except legal activities and accounting.

2.2.2.4 Some of the block and item specific problems and experiences of the field are as follows:

i) Block 2.1: problem was felt while recording 'number of hours the enterprise normally worked in a day in item 206-207, 'location of enterprise' in item 220 for rentiers as they may not spend even five to ten minutes for the main activity as the tenant deposit the rent at bank.

ii) Block 2.1: In case the ownership type of sample enterprise was proprietary or partnership, some information of this block e.g. items 209-216 were related to the working owner. Wherever the owner was not available, no other person could provide the desired information properly as almost all the information was of personal nature.

iii) Bl.2.1: In a few cases informants/owners did not know under which Act their establishments were registered (item 229-235). Besides, in item 233, information about service tax registration was also difficult to obtain as informant showed reluctance assuming their enterprise was going to be levied service tax.

iv) Bl.2.2: As per Volume-II (Schedule 2.345), information in this block was to be collected for only transport enterprises (NIC 6021, 6022 and 6023), however, in volume-I of instructions, it was mentioned that this block was also applicable to other enterprises that use the enterprise vehicles for its different operations like inward/outward transportation of goods/services etc. It created confusion in the field functionaries.

v) Bl. 2.2: There were difficulties in collecting information on age of transport vehicles in column 4 to 7 and their load capacity in column 7 as this information was not available with the informant in most of the cases.

vi) Bl.2.3: It was very difficult to collect information for items 252 to 257 in case of large cooperative society wherein a large number of members had taken loans from the SHG.

vii) Bl.3: Enterprises engaged with transport activities were unable to provide information on expenses incurred on tyres, tubes and batteries (item 306) particularly in those enterprises where books of accounts were not maintained.

viii) Bl.3: It was very difficult to collect information on item 316 and 317 in case of commercial properties which were rented out and the owner did not stay in the place of survey.

ix) Bl.3 and bl.9: At para 3.3.2.1 at page C-35 of Volume-I, it was instructed to include retreading of tyres in item 306 while at para 3.9.10 at page C-61, it was instructed to consider retreading charges of tyres in block 9 and not in block 3 or 3.1. These contradictory instructions created confusion among field functionaries.

x) Bl. 3.1: Enterprises were either unable or reluctant to give break up of other operating expenses like repair & maintenance. Where information obtained from book of account, several documents were to be checked; and where information was obtained orally, it was just a guesswork and approximation.

xi) Bl. 4& 4.1: Bifurcation of receipts for those units having both Hotel and Restaurant facilities, was difficult as separate accounts for both the activities were not maintained.

xii) Bl.5: This block remained almost blank in case of those enterprises that had not maintained their books of accounts as various entries in this block were to be recorded from the balance sheet of the enterprise. There were difficulties in collecting information for this block particularly for items

511 to 533 as most of the enterprises did not have their books of accounts maintained and certain terminologies used in this block i.e. transfer to reserves(item513), gain on exchange(item538), excess provision written back(item 542) were less explained in the Instructions to Field Staff Volume-I.

xiii) Bl.7.1: There were many cases of list frame enterprises having a large number of branches and to get details of each of them was extremely difficult and time consuming.

xiv) Bl.9 & 10: For those enterprises that provided information orally and whose working proprietor were not available, it was almost impossible to obtain information on market value of fixed/current assets as well as financial liabilities of the enterprise as informants were hesitant/ reluctant to give information. Further, where informant was proprietor himself, he intended to under report the asset figures and over report the liability figures. Hence, information in these blocks could be obtained through approximation only.

xv) Bl.9: This block was meant for recording details of assets of the enterprise. Instruction in para 3.8.0.2 at page C-59 was that the assets which were rented out were to be excluded. But in case where major income of enterprise was from renting out assets for commercial purposes, the Investigator had ambiguity whether to include those assets in this block or not.

2.2.3 Consumer Expenditure Survey (Schedule 1.0)

This schedule besides being lengthy and time consuming posed specific problems as under:

i) In case of consumption of vegetables and fruits (items 190-247 in block 5), generally, the informant failed to recall consumption of different items of fruits and vegetables quantity wise but was able to give an overall expenditure on fruits and vegetables. In fact even the period of 30 days was too long for these items.

ii) Item 352: Imputation of value of gobar gas was almost impossible to the informant as well as Investigator.

iii) It was difficult for the informants to recall exact number and amount of expenditure on clothing, bedding and footwear. They could only tell the overall expenditure. For example, reporting of number of under garments used in last 365 days for a large family was difficult and embarrassing. Likewise in some cases there was problem of recall lapses for minor repairs on durable goods. Even the bifurcated information on medical (institutional) goods and services were rarely available. Also information on sanitary napkins was difficult to be collected. This might have been clubbed with the other toilet items.

Section 3: Quality Control Measures Adopted in the 63rd Round

3.1 The FOD adopts various quality control measures for improving the data quality, reducing the non response and at the same time utilizing the meagre resources to their full advantage. Sustained efforts have also been made to increase the awareness amongst the respondents about the NSS surveys and to better the field conditions.

3.2 The quality of data is ensured through the training of field functionaries at different levels and through the routine concurrent and non concurrent inspections of the field work. The filled in schedules are later scrutinized through a series of checks, inter and intra block and other types. The points noticed at the scrutiny stage are recorded in the clarification note and this is given back to the investigators along with the scrutinized original schedules with the instruction to return the note explaining the points raised therein. The inspection of the fieldwork ensures that the work is carried out in the desired manner following the concepts and procedures laid down and provides

on the spot guidance to staff whenever necessary. The field officials, who are found to be not well versed in the methodology of field work, are given additional training.

3.3 Then there are monthly meetings held regularly in all the field offices wherein it is mandatory that all the field staff and other officers are present. In the meeting, the problems faced by the investigators at any stage are discussed, their queries are answered. In case of ambiguity, provisional answers are provided and matter referred to SDRD for clarification. The monthly progress of the field offices is monitored at zonal and FOD Hqrs. level and suitable guidelines are issued for improvements, if needed.

3.4 In the FOD set up, feedback system is of great importance. Its main objective is to effect improvement based on actual field experience by bringing to the notice of all concerned, the nature of deficiencies in the performance of individuals or limitation of a particular procedure. These are compiled at zonal and headquarters level for wider sharing of the experiences.

Section 4: Summary and Suggestions

4.1 In each of the sample FSUs, eligible enterprises were divided into 8 Second Stage Stratum (SSS). For selection of sample enterprises, a separate block 5b was provided with 24 columns in which first two columns were copied from the previous block 5a. In some cases, there was possibility of errors while transferring entries from block 5a to block 5b. The space provided in different columns for second stage stratification was too less hence there was possibility of error in formation of SSS. Most of the fieldworkers were of the view that SSS may be minimized to ensure correct sample selection if possible.

4.2 On the whole the experiment of list frame and its mixing with the area frame complicated the field work. As far as possible, it should be avoided in future surveys.

4.3 The list frame enterprises did not respond favorably. Similar problem was faced in case of big enterprises (having 50 or more workers). Many of the units were either reluctant or/and provided data in a haphazard manner. Many enterprises, despite maintaining books of accounts neither provided books of accounts nor revealed exact figures where information was collected orally.

4.4 While defining concept of household it has been stated that foreign nationals and their domestic servants will not be listed. However, if a foreign national becomes an Indian citizen for all practical purposes, he/she is to be listed as per definition provided in para 1.9.2(iv) at page A-17. The term 'becomes Indian citizen for all purposes' is not clear and should be elaborated. Similarly, now a days, period of under trial prisoners in jail extends up to years together and as per definition provided in para 1.9.2(ii) at page A-17, these persons are to be listed in their parent households. Keeping in view of long term stay at jail of under trial prisoners, it would be better to exclude under trial prisoners who are in jail for more than six months.

4.5 The schedule 2.345 was most difficult to be canvassed. It took a lot of time in motivating the informants for response and required a lot of probing for getting reliable data. Either the units (both list/area frame and other service sector units) in businesslike manner did not have time to spare or were busy in narrating their problems of facilities and finances and apathy of Govt. machinery. Besides, various terminologies used in the schedule were purely technical in nature for which elaborate instructions must be provided to the field staff. A better understanding of balance sheet is required while canvassing in those enterprises that are providing information from their books of account for which training to field staff by the experts of balance sheet could be helpful.

4.6 There should be some space in the schedule to carry out calculations in the schedule 2.345 so that it could be rechecked at any time for accuracy of data.

4.7 There should be some legal binding on enterprises to provide information pertaining to their operational characteristics which could be helpful in getting proper response from reluctant informant particularly big enterprises.

4.8 In schedule 1.0, it was difficult for the informants to recall exact number and amount of expenditure on clothing, bedding and footwear etc. and for minor repairs on durable goods which had the reference period of last 365 days. They could only tell the overall expenditure. It is suggested that 7 days reference period may be kept for food items like edible oil, eggs, fish and meat, vegetable, fruits, spices, beverages etc.

4.9 The informants were hesitant in giving information on jewelry items and sanitary napkins. The item on sanitary napkins may be clubbed with the other toilet items.

4.10 The feedback indicates a considerable improvement in the awareness among people about NSSO. There is a need for enhancement of funds for the advertisement of NSSO activities particularly through electronic media.

4.11 Over last five decades or so, field conditions have vastly changed, however, the service conditions of the field officials have not changed much. They need motivation in terms of recognition or incentive awards. Besides, proper training on behavioral science and psychology, they should be equipped with NSS survey results, pamphlets etc. to enable them to deal with hard core urban informants.

References

1. Instructions to Field Staff, Volume I, Design, Concepts, Definitions and Procedures, Socio Economic Survey, NSS 63rd Round (July 2006-June 2007), Ministry of Statistics and Programme Implementation, National Sample Survey Organisation, June 2006.

2. Instructions to Field Staff, Volume II, Socio Economic Survey, NSS 63rd Round (July 2006-June 2007), Schedules of Enquiry, Ministry of Statistics and Programme Implementation, National Sample Survey Organisation, June 2006.

3. NSS Report No. 529(63rd Round): Service Sector in India (2006-07), Economic Characteristics of Enterprises, Ministry of Statistics and Programme Implementation, National Sample Survey Organisation, December 2009.

Acknowledgements

The authors acknowledge inputs in the form of valuable and timely feedbacks provided by the Zonal/Regional Heads of Field Operations Division.

The views expressed particularly suggestions, are personal views of the authors.

NSS 63rd Round- A Data Processing perspective

G. Chattopadhyay
Data Processing Division

Introduction: The data of each subject of enquiry has its own distinctive features. Whereas the data of household expenditure is based on recall of consumption details by the respondent of the sample household, the data of enterprise survey is captured mostly from the office records of the sample enterprise. Collected data, of course, is always subject to various types of non-sampling error, due to lack of understanding of concepts and definitions on the part of the data collector, lack of adequate clarity in the instructions to the field staff, unavailability of data at the required level of details, respondent resistance, and so on. But in case of the enterprise survey, collected data suffers from an altogether different type of deficiency from that of household surveys. This is mainly due to problem in transformation of the financial figures available in the enterprise office records to the format of NSS schedule. In the small enterprises problems may be ascribed to non-disclosure of commercial information by the owner. While processing a huge mass of data as handled by Data Processing Division (DPD) of NSSO, various kinds of abnormalities in the collected data have been observed. Documentation of these along with the technical treatment they were subjected to will decide help planning and designing various stages of survey operations, data processing and analysis.

It is needless to emphasize that greater care at the stage of developing a suitable survey methodology and also at the stage of primary data collection will ultimately result in faster data processing, and in turn, quicker dissemination of survey results. An attempt has been made in this paper to list the experiences gained while processing NSS 63nd Round data and also to suggest measures that might prevent recurrence of the major problems encountered, especially in surveys on unorganized sector enterprises, as the NSS goes into its 67th round.

Outline of the survey

Subject coverage: The 63rd round (July 2006 - June2007) of NSS was earmarked for survey on service sector enterprises (excluding Trade). All service sector enterprises, which were not covered under the Annual Survey of Industries (ASI) were surveyed. As a part of the annual round, the household consumer expenditure schedule was also canvassed in the survey. Except for a few inaccessible areas, the entire geographical area of the country was surveyed.

There were two schedules of enquiries besides the listing schedule:

Sch. 0.0	List of Households and Non-agricultural Enterprises
Sch. 2.345	Service Sector Enterprises (excluding trade)
Sch. 1.0	Consumer Expenditure

The following table gives the number of first stage units (FSUs) and second stage units (SSUs) covered and in turn shows the volume of work handled at DPD.

sector	No. of FSUs, households and enterprises covered		
	Sch.0.0	**Sch.1.0**	**Sch.2.345**
rural	5573	33146	83197
urban	7698	30583	107085
rural + urban	13271	63729	190282

The experience of data processors is, for this round, not qualitatively very different from that of the 62nd round. In fact, processing experience is much more distressing than that of the 62nd round. There were certain typical and persistent problems in all the schedules of enquiry which came in the way of timely processing of the data in spite of best efforts of all concerned. The paper takes up such issues in the following sections schedulewise.

Section I
Schedule 2.345: Service Sector Enterprises (excluding Trade)

Coverage: The 63rd round (July 2006 - June 2007) of NSS covered service sector enterprises (excluding Trade). All service sector enterprises, which are not covered under the Annual Survey of Industries (ASI), were under the coverage of the survey. Government and public sector undertakings, and a few other special types of enterprises were excluded. Service sector enterprises coming under the NIC category 55, 602, 61, 63, 64, 659, 66, 67, 70, 71, 72, 73, 74, 80, 85, 90 ,9191, 9199, 92 and 93 were covered. That means data were collected from the following group of enterprises:

Sl. No.	Category of enterprises
1	hotels and restaurants (NIC-04 group 551 and 552)
2	transport (NIC-04 group 602, 611, 612, class 6301 and 6303 to 6309)
3	storage (NIC-04 class 6302)
4	communications (NIC-04 group 641 and 642)
5	real estate, renting and business activities (NIC-04 division 70 - 74 excluding 70103)
6	education (NIC-04 group 801, 802, 803 and 809)
7	health and social work (NIC-04 group 851, 852 and 853)

In 63rd round, DPD processed 51.92 lakh records of sch.2.345, in respect of 191,179 sample enterprises. It has always been the experience in the past that enterprise survey data are more difficult to control i.e. to bring it to a satisfactory level of accuracy through validation. In 63rd round, data validation work was completed by March, 2008, but the subsequent stages of tabulation, edit and post-tabulation checks had taken comparatively more time. However, data and reports relating to Sch.1.0 of 63rd round were finalised much earlier.

A. Experience in Sampling

Non-UFS towns and OG: In 63rd round, it was noticed for the first time that many newly declared small towns and outgrowths (OGs) which were declared as urban in census 2001, are being omitted in the NSSO frame, as UFS work was not yet done there. It was expected that newly emerging industries will mostly be found in these outgrowth urban areas, and hence for an enterprise survey it is very important to cover these areas. By careful manual scrutiny, a separate list of such towns/OGs was prepared and that was used as a frame for such towns and OGs in urban sector. All these non-UFS towns and OGs of Census 2001 were put in a separate urban sub-stratum and the whole town/ OG was considered as FSU for sample selection.

B. Data of List Frame Enterprises

1. List frame Enterprises: A list of about 1000 large enterprises spread across the country, where data were collected without any sub-round restriction. Out of 998 list-frame enterprises surveyed, as many as 574(=58%) were surveyed during last 3 months of the survey and despatched thereafter. As a result, receipt of the schedules of these big enterprises were concentrated towards the end of the data processing cycle. Perhaps, the field staff had to wait for the accounting year to complete, to get the required information from the enterprise.

2. *Information relating to branches:* The list frame enterprises did not have information on the State to which they/ their branches belonged. The enterprise and branches were excluded from the area frame to avoid duplicate estimation. Some special problems were faced while data processing of this category of enterprises:

(a) Out of 998 list frame enterprises, information relating to branches were available only for 148 cases.

(b) significant no. of cases with no. of employees as low as 1-2 and large no branches. In fact, out of 998 enterprises, 564(=57%) did not report any worker at all. 66(=7%) reported ≤ 5 workers. On the other hand, there were 55 enterprises reporting more than 1000 workers (4 of them with more than 28000 workers!).

(c) Non-reporting of workers was mainly due to the fact that the respondents in the Corporate Head Office were not able to provide the number of employees in branches.

(d) Similarly, information on wages was altogether missing in respect of about 558 (=56%) cases.

(e) As major branches of some big enterprises were distributed in several states, state and sector code was not recorded/ data-entered in case of 148 (=15%) enterprises, out of which 25 reported to have branches. This caused problem in tabulating the data and references were made to the sample list at the time of tabulation.

(f) Obviously, rural/urban classification of such enterprises made in the sample list may not be compatible with its actual operational data.

C. Detail Schedule data (Sch. 2.345)

The main data processing issues are as follows:

(a) Block-void cases: Data were to be filled in specified sub-blocks in the schedules for different enterprise categories. For examples, for hotels and restaurants expenditure figures were to be given at sub-block (item.301-304), and the receipt details at sub-block (item.401-404). Accordingly, validation rules were also framed. But in a large number of schedules figures were not furnished in the respective blocks. Rather, they were clubbed into blocks titled 'other expenses' (Blk-3.1) or 'other receipts' (Blk.-4.1). In most of these cases, little corrections could be made. But each of these cases required detailed checking. Block-void cases that remained in the data even after validation and field references are presented below.

Sl. No	Category of enterprises	No. of sample enterprises	No. of Block-void (Expenses Block)	% no. of cases	No. of Block-void (Receipt Block)	% no. of cases
1	hotels and restaurants (NIC-04 group 551 and 552)	30746	564	1.8	341	1.1
2	transport (NIC-04 group 602, 611, 612, class 6301 and 6303 to 6309)	42526	2049	4.8	639	1.5
3	storage (NIC-04 class 6302)	82	16	19.5	5	6.1
4	communications (NIC-04 group 641 and 642)	22898	239	1	171	0.7
5	real estate, renting and business activities (NIC-04 division 70 - 74 excluding 70103)	20731	3096	14.9	1310	6.3
6	education (NIC-04 group 801, 802, 803 and 809)	12285	802	6.5	202	1.6
7	health and social work (NIC-04 group 851, 852 and 853)	11937	652	5.5	228	1.9

As an example, there were many cases of 'Cybercafes' who wrongly reported expenditure/ receipts in items 314 and 411 leaving blank their allotted sub-blocks i.e. items 316-317 and items 412-413.

(b) Mixed activities: Another aspect of reporting at wrong sub-block was in respect of enterprises having mixed activities. Because of incorrect reporting, it was difficult to ascertain which activity was major and which one is minor.

In about 3% of the cases reporting mixed activity (8515 in number), NIC code of the second activity was not specified or invalid.

For small units with multiple activities and not keeping separate accounts it was difficult to assign correct NIC codes by looking at the supportive evidences available in the schedule.

(c) Reference period for data collection: According to the instructions to the field staff, if books of accounts are maintained and information are culled out from there, the enterprise's operational data is to be collected for 1 year. But in case of oral enquiry it should be of one month reference period.

In a large number of cases, (of which about 2250 cases i.e. 1.25% could not be rectified by validation) there were inconsistency between reference period of data collection (which should be 1 year or more in case of Books of accounts maintained) and 'Accounts maintained code'. In most of these cases, the period reported was 1 month instead of 1 year. The starting dates and the ending dates (items 218, 219) were reported wrongly.

(d) Consistency between asset and liability block: In case of enterprises which maintained books of accounts, there should be consistency between figures reported in asset and financial liability blocks (Blk.9 and 10). There were many cases where arithmetic errors of totalling/ subtotalling were found, and these were corrected. But there were many other cases where the component figures were missing or widely divergent, where corrections in the data were not possible. In the finally validated data, there are 3258 such cases (out of 4215 enterprises, i.e. 77%) maintaining books of accounts and data were collected from the books.

(e) Negative GVA: In many enterprises, incorrect way of computing GVA were found, which sometimes resulted into negative or abnormal GVA figure. In case of 15,115 enterprises (about 8%), the GVA field (item 659) were actually computed, out of which 491 (= 4%) came out negative. In all the cases, GVA were finally computed from the component figures at the tabulation stage. Thus, in the tabulation stage, 973 cases were having negative GVA. In 1189 cases, the Field staff had indicated about negative GVA and in almost all cases reasons were given in terms of codes or comments.

(f) Seasonal and perennial enterprises: If the enterprise is seasonal, then 'months operated' should be less than 6 months; if perennial, then 12 months. Even though the inconsistencies between these two could be easily removed, in many cases the detailed operational data of the enterprise appeared to be different. But at the validation stage, no change could be made on the detailed figures reported on expenses, receipt, GVA etc.

(g) Other miscellaneous errors:

- Inconsistency between other economic activity of the working owner and their details as required to be furnished at Items 215,216. About 1000 such cases could not be corrected after validation.
- Even when hired workers are shown the enterprise classified as OAE
- For cooperative credit societies and SHGs the number of members not shown
- Expenses shown both at items 321 and 356 in the same schedule (one meant for 'educational enterprises' and the other is for 'non-educational enterprises'
- Expenses not shown for electricity for enterprise with permanent structure
- Assistance received is blank though outstanding loan has been shown.

E. Experiences at the Tabulation stage

1. Unacceptable GVA per worker: At the tabulation stage, the doubtful cases of large negative GVAs and unacceptable levels of GVA per workers in some of the State x Tabulation Category were again referred to the DP Centres for in-depth scrutiny. In many cases it was found, that data were collected for 1 year but it was reported as for one month (as for oral enquiry, it is to be one month reference). Hence, medium-sized positive/negative GVA got unnecessarily multiplied by 12 resulting into large positive/negative GVA. One Computer-edit rule of making 'blank' number of workers into '1' added

further complications to the problem. Some of these cases had upset the estimates even at State × Tabulation Category level. A fairly large number of such suspected cases were re-checked in detailed, before GVA tables could be finalised. This consumed additional time that was not expected.

2. Enterprises having Branches: In this round in addition to the area frame units, it was proposed to canvass 1000 list frame units. As per the lay out of the schedule design, for the list frame units, in Block 1, items 6 to 16 (i.e. ID particulars where state and sector code is recorded) were not required to be filled in. So there was a problem of obtaining state and sector code for the list frame units. Hence there was necessity to ascertain state and sector code for each of the list frame unit before tabulation. In this connection, an imputation procedure as follows was adopted:

In all the list frame units canvassed, whenever usable branch wise details (bl 7.1) were available, the values are to be apportioned depending on the number of workers at the state and sector level. Wherever such information was not available, the state and sector code of the place where it was surveyed is to be taken. It was found that out of 1000 units, only in 148 units branchwise details were available. For the remaining 852 units state and sector code had to be obtained by looking into the sample list. Any aggregate for any sector x state has to be derived in a proportionate manner - the proportion will be the ratio of number of workers of a branch to the total number of workers recorded in block 7.1.

While examining the validated data it was observed that the following problems could arise.

(i) Enterprises having branches abroad (state code 40) were found in 6 cases. The proportional contribution of these branches will have to be excluded during state x sector aggregation.

(ii) Enterprises were found having branches but state and sector code as blank. 25 such cases were found.

(iii) Enterprises were found having large number of branches (as large as 177) with number of workers as low as 1 or 2. So distributing the workers into different state and sector code with male/female/working owner/ hired/ full time / part time etc. was not possible.

Also total number of vehicles recorded in block 2.2 could not be segregated for each of the branches.

In view of the above difficulties, it was decided that branch wise segregation of list frame data was not feasible and each unit was taken as single unit for estimation purpose. State and sector code of each unit was taken where it was canvassed as per sample list of the list frame. However some special tables were generated from these branch wise details as per the procedure and tabulation plan provided separately. Had the provision for collecting information on state and sector for the list frame units could be made at the stage of designing the schedule, such complications and adjustments could be avoided at the tabulation stage, requiring lot of additional time for table and data finalization.

3. *Imputation of workers and emoluments:* At the time of tabulation, it was detected that in a large no. of cases, no. of workers were '0' or blank whereas emoluments were >0 and vice versa. It was verified from filled-in schedules also. Earlier, it was suggested by SDRD in the auto correction programme that whenever total numbers of workers in an enterprise were found to be '0' or blank, it should be replaced by '1'. Depending on type of ownership and enterprise type, item 702 / item 711 was made '1' and hence total no. of workers resulting in '1'. But subsequently, when tables were generated, it was found that GVA per worker and Annual emolument per worker were so abnormal that tables were not presentable. Thereafter, several alternative procedures for imputation of "workers from emoluments" and "emoluments from workers" were tried out, and each time fresh software had to be developed. As a result, full procedure of generating tables starting from editing, imputation, generation of multiplier, posting of multiplier, generation of work files, generation of tables etc. could be finished only after completion of a few long-drawn iterative cycles.

4. In about 60 % cases list frame units were found to be casualty as proper care was not taken to exclude ASI units from the coverage of the list frame units. But there were some List Frame Units which were undoubtedly under the coverage of the survey and data could not be collected for them due to some reasons. Some suitable multiplying factors were used in some cases to obtain the population figure for the List Frame Units. Otherwise, there were no multiplier (i.e., multiplier = 1.00) for all the List Frame Units.

F. General Remarks and Suggestions

In general, data processing experiences of 62nd round (on Manufacturing Enterprises) and 63rd

round are similar. The main suggestions that may be recorded are:

a) Enterprises having books of accounts were allowed to provide information orally if they chose to. This created an additional category of enterprises as far as provision of information was concerned, which was given a separate code. Again, the code entered was vital for interpretation of the data collected. Just like 62nd Round, this aspect added an additional dimension of complications into the data, which required more resources in data processing.

b) In many cases copy of the balance sheet was attached. DPD scrutinizing staff had no prior knowledge of reading a balance sheet for checking the reported figures in the schedule. Some exposure/brief training on accountancy before the commencement of the data processing activities would have been very useful. In fact, such training may be held for the Field Staff and DPD staff together, whenever enterprise surveys are taken up.

c) Had the issue of treatment of the enterprises having branches been planned and settled earlier, spending additional time at tabulation stage could have been avoided.

d) The absence of the sub-round restriction causes bulk of the schedules from these categories to be received at the very end of the survey period. This leaves little time to detect and, through correspondence with the field, to prevent the occurrence of any more data affected by conceptual errors. In 63rd round, these were List Frame Units, which are relatively big units, having more data processing complications. It is quite important to introduce a work schedule for these types of schedules.

e) Blocks-3.1 & 4.1: In number of cases blocks 3 and 4 were found blank and the entire expenses and receipt were found reported against blocks 3.1 and 4.1 only.

f) Blocks-3-5 & 6: In many cases it has been noticed that for financial enterprises, data are found reported in blocks 3-5 instead of block-6 and the vice versa in few cases.

g) Blocks-2.2 to 12: Instances were noticed with enterprises operated for few months and found not operating for the last 30 days at the time of survey. However considering the period of last 365 days prior to survey, such enterprises were surveyed with the reference period as last 30 days during which it was not operated. In such cases blocks other than 0, 1 and 2.1 are found blank.

h) In many cases it was found that where the total expenses transferred to Balance Sheet as 'Preliminary Expenses' or 'Deferred Revenue Expenditure', such information was not properly transferred to the block specified, the matter was taken up with SDRD and instructions were given to processing staff for correcting the entry.

i) Two items Deferred Revenue expenditure (page C-99) and Preliminary expenditure (page C-100) (item 1016) were shown in the Vol. I to be recorded in the liability side but as per schedule VI of the Companies Act it is to be recorded in the asset side. This too created confusion both at the field and in the processing unit.

j) One of the problems for negative GVA was for those companies which had not started functioning but registered as enterprises therefore it was canvassed. Such companies even enclosed balance sheet showing negative transactions.

k) Checking of all the draft tables together for both the reports of 63rd Rd. enterprise survey, would have helped detection and timely rectification of some of the critical data problems and inter-table inconsistencies, which caused delay in report finalization.

Section II

Schedule 1.0: Consumer Expenditure

The challenges faced by the data processing division in respect of the data of this schedule can be broadly grouped into two categories: one, the new features of the schedule and data collection procedures in this round, and, two, the problems that have persisted in consumer expenditure data over the years. 7064086 records were processed for this schedule alone.

A. New Challenges Faced in the 63rd Round

1. Changes in data collection procedure

The 63rd round ushered in the long-awaited transition from rupees and paise to whole number of rupees in recording consumer expenditure data everywhere in the schedule (except for derived MPCE). Earlier, a partial transition had been made by printing “00” in the paise columns of some blocks (and

against specific items of other blocks). The change was generally welcomed as it simplified computer entry and reduced writing and reading errors enormously. There were, of course, teething troubles in the sense that the old habits of entering values in rupees and paise occasionally reappeared in many cases. An interesting problem (and one apparently unforeseen by the schedule designers) was that positive values often became rounded to zero when expressed in whole number of rupees. On the other hand recording of quantity to the nearest gram usually ensured that quantity remained non-zero. The traditional check "quantity=0 if and only if value=zero" was kept unchanged by SDRD. The consequences for the validation process can be well imagined. Data that failed this check had to be inspected and passed as correct, with the result that they re-surfaced at every re-run of the Computer Scrutiny Programme (CSP). When informed of the problem SDRD was unable to provide a solution.

2. New areas of data collection

The "public works" columns introduced in the demographic block, though not absolutely new to NSS as they had appeared earlier in Schedule 10 of the 62nd round, should be mentioned here as they seem to be still affected by the conceptual problems characteristic of new data items. Failure to make entries in the "no. of days worked" column as well as the "wages" columns when such entries were necessary, was frequent. The wages data were further messed up by a conceptual error: in many cases it was obvious that the investigator had entered the daily wage rate instead of the total amount received as wages in 365 days (note that the wage rate *was* required in Block 9 of Sch.0.0). Although a broad column heading "total wages received (Rs.)" had been provided in the block across the wages columns, it appears on hindsight that "total wages received (Rs.) in 365 days" would have been a better alternative.

> *Example 1:* In this round instructions were given to record value less than Rs. 0.50 as zero. But the check "quantity=0 if and only if value=0" remained unaltered. For some cases where value thus became recorded as 0 though quantity consumed was > 0 (e.g. against matchbox), much time was wasted in validating the data. The anomalies remained and, as one might expect, a number of queries were received on this matter from users of unit level data.

3. Schedule Design

(i) There were very few changes over the earlier rounds in the design of Schedule 1.0. But certain changes continue to be casually introduced in the schedule without thought for the consequences. In this round the item code 229 was allotted to the item "chocolates, lozenges and sugar substitutes". Long experience of data processing has taught NSSO the advantages of reserving item codes ending in '9' for the sub total items and other codes for the elementary items. This helps in programming work as well as in the examination of computer- entered data at various stages. But this wisdom acquired over the years was unaccountably ignored.

(ii) Insufficient attention was given to the widths of individual columns in the schedule. Thus investigators experienced difficulty in entering data in Block 4, cols. 17-19 (wages), whenever the figure exceeded three digits, and data entry personnel in turn have found it difficult to make out what was written. Such difficulties were totally foreseeable and preventable.

> *Example 2:* In Block 4, cols.17-19 (wages), the entries were not fully legible if the figure contained 4 or more digits. Obviously, the columns should have been wider.

B. Recurring Problems of the Consumer Expenditure Schedule

1. Problems removable through redesign of schedules

The most obvious example of this kind of problem is the durable goods block *(see extract on next page)*. It is taken up at the end, when the informant has already become restless and the investigator has to be quick with his questions and writing down. At this point there comes a block that has the most complicated structure among all the blocks of the consumer expenditure. It has columns for purchase and repair, first-hand and second-hand, number and value, and finally, a code for 'whether hire-purchased'. Moreover the positioning of these columns does not follow a simple pattern. For example, the treatment of 'first-hand and second-hand' is not symmetric. The block thus lacks the symmetry and simplicity of most of the preceding blocks. Matters are further complicated by a completely avoidable attempt to shade or blacken out the cells for which information is not deemed to be necessary. The logic behind the choice of cells to be shaded is not always clear. The fall-out is that entry in a row is sometimes planned to start from col. 3, sometimes from col. 4, sometimes from col. 5 and sometimes from col. 6. It is not at all surprising, under the circumstances, that the entries for numbers purchased or codes for 'whether hire-purchased' get entered in the value columns, creating cars worth Re.1 or Rs. 2 to the bewilderment of unit level data users.

2. Problems removable through more comprehensive instructions

The range of items of human consumption is so enormously wide that one cannot have an item in the schedule for every kind of food that is consumed in India. Thus, many items in the schedule have each got to cover a range of foods or non-food articles. This being so, it is the job of the instructions manual to specify, at least for all the commonly consumed food and non-food articles, the exact item in the schedule against which consumption of that article is to be recorded. Otherwise, a great deal of consumption will be missed, giving the estimates a downward bias. Under the circumstances, it is inexplicable that a food as widely consumed in India as '*papad*', which, in fact, has a strong claim to be accorded the status of a separate item, has yet to find a place either in the schedule or in the instructions. On the other hand '*ganja*', in spite of being rarely reported and attracting data of doubtful quality, continues to enjoy separate- item status when it is high time it is clubbed with “other intoxicants”. FOD officials have, during this round as in earlier rounds, expressed their ignorance as to where '*papad*' is to be reported.

It needs also to be emphasized that the item break-up of the group “beverages, refreshments and processed food” needs to be examined afresh in the light of the growing importance of this group with economic development and the aggressive marketing strategies of multinational corporations. For one thing, it preferable to have a separate sub-group for ready-to-eat snacks consumed away from home such as *samosas*, chowmein, *paw bhaji*, etc., as opposed to packets of semi-processed food such as “chow”, *papad*, Maggi noodles, etc. There are two reasons for this. One is that separating the two types of processed food helps and increases recall. The other is that prices of the 'ready-to-eat' variety are typically higher, and the calorie content per rupee commensurately lower.

[11] expenditure for purchase and construction (including repair and maintenance) of durable goods for domestic use during the last 365 days ended on									
item		no. in use on the date of survey	first-hand purchase			cost of raw materials and services for construction and repair (Rs.)	second-hand purchase		total expenditure (Rs.) [(6)+(7)+(9)]
description	code		no. purchased	whether hire purchased *(yes-1, no-2)*	value (Rs.)		no. purchased	value (Rs.)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
motor car, jeep	612								
tyres & tubes	613								
other transport equipment	614								
glass eyes, hearing aids & orthopaedic equipment	620								
other medical equipment	621								
therapeutic appliances: sub-total (620-621)	**629**								

3. Problems avoidable through better field work

A great variety of data problems fall into this category. One example is the NIC and NCO codes of the household characteristics block (Block 3). These are often inconsistent with the household industry and occupation descriptions. They are also often inconsistent with household type, reported in the same block. These are persistent problems, suggesting that some training needs to be specially conducted, or some training time specially set aside, for these items alone.

Other examples of recurrent data deficiencies that can be overcome through better field efforts include data on quantity. Cases of missing quantity, or quantity inconsistent with value, can be easily detected and corrected through field scrutiny and unnecessary editing at later stages avoided.

4. Problems due to non-cooperativeness of informants

It is well-known that of all schedules, the consumer expenditure schedule remains the one which arouses the greatest amount of suspicion and hostility among informants, especially of the affluent variety. This is mainly because it appears to unnecessarily intrude upon the privacy of the household. It is quite possible that cases of missing quantity or value, for instance, arise from the informant's refusal to answer not one but two questions, one on quantity and another on value, on even the most unimportant food articles such as chillies and capsicum. An attempt should be made in every round to reduce schedule bulk by weeding out the items with least contribution to the average MPCE in the preceding round.

Ultimately, the solution to such problems depends on the collective will of the NSS and its stakeholders to collect realistic data.

Section III
Schedule 0.0: List of Households and Non-agricultural Enterprises

The following are the main observations on this schedule.

(a) High casualty in SSS: In this round of enterprise survey, 8 SSS's were to be formed in each area-frame FSU, and 24 enterprises were to be surveyed from each FSU. But in reality, only 190,181 enterprises were surveyed in 12,898 such FSUs, giving a per-FSU count of enterprises of 15. Thus many of the SSS's had only a few enterprises, which might have affected the multiplier and reliability. Average number of enterprises surveyed in each SSS is given below:

SSS no.	Avg. no. of enterprises surveyed	
	Without HG* formation	With HG formation
1	2.00	1.53
2	1.59	1.45
3	1.19	1.27
4	2.75	2.43
5	3.89	3.27
6	4.25	2.59
7	2.44	2.19
8	11.70	8.41

*Hamlet Group (HG)

It may be seen that SSS-8 had been grossly over-sampled, at the cost of inadequate netting of other classified types of enterprises. In SSS-8, i.e. group of unclassified OAEs, as many as 1,23,667 enterprises were listed, which is 65% of the total number of area-frame enterprises.

(b) Mis-classification of enterprises into SSS at listing stage: Extent of differences in classification into SSS at listing stage and after canvassing the detailed schedule was found to be negligible. The table below gives the figures:

SSS numbe r	As per NIC code in the Detailed Schedule	At listing stage
1	1892	1943
2	665	657
3	254	221
4	8922	9848
5	30295	29638
6	11662	14114
7	10624	10293
8	148041	123667

(c) Segment 9 enterprises: There were 202 FSUs under Segment 9, having 378 eligible enterprises in them. Hence average number of sampled enterprises was only about *2 per FSU.*

(d) NIC codes recorded under col. 17 (NIC) did not match with the description of col.16 (description of activities).

(e) Discrepancies were found in case of compensation rule in the event of shortfall of enterprises. The prescribed priority order was not followed there.

(*f)* Entries in Block 9 under (wages), which could have been used as a consistency check for the

wage figures reported in Block 4, were more often than not blank. In fact, information in this block was so few and far between that no useful information could be elicited from it. Our report says that the no. of days worked varied during the reference period from 8 days in WB to 56 days in Haryana. And the wage figures varied 50-70 for males & 45-70 for females. Interestingly Kerala reported the highest average rate for male (Rs. 125) and for female (Rs. 127) both the rates are almost double the national average of Rs. 61. In fact very few schedules were found where the prescribed wage rates were filled in.

(d) In Col.1, Block 2, the figures were reported against house no. with alphabet, hyphen, slash, etc. As the data entry package did not allow entry of alpha characters, the data transcription has been made by ignoring hyphens, slashes and other non numerical characters. Had the field personnel been sensitized in time to the implications of recording such characters, much time spent on an unnecessary data cleaning job would have been saved. **Annexure-I**

Some specific observations on the type of schedules received at DPD

a) In Sch. 2.345, LIC agents or other insurance agents are treated as financial enterprise and block 6 filled-in.
b) In many cases, NIC is reported as 6021/6022/6023, but block 2.2 was left blank.
c) In a no. of cases there is entry in item 443 but no entry given in any of the items 801 to 804.
d) In some cases, for non-financial enterprises, there is no entry in the respective sub-block of block 3 or 4, but all receipts and expenses are instead reported in block 3.1 and block 4.1 respectively. But the instruction in this regard is quite otherwise.
e) In a few cases Bl. 7, which was an essential block for any enterprise, was found blank.
f) NIC codes recorded in col. 17 did not match with the description of col.16 (description of activity).
g) Discrepancies were also found in case of compensation rule in the event of shortfall of enterprises. The prescribed priority order was not followed there.
h) Entries in Block 9 under wages, which could have been used as a consistency check for the wage figures reported in Block 4, were more often than not blank. In fact, information in this block was so few and far between that no useful information could be elicited from it. Our report says that the no. of days worked varied during the reference period from 8 days (in WB) to 56 days in Haryana. And the wage figures varied 50-70 for males & 45-70 for females. Interestingly Kerala reported the highest average rate for male (Rs. 125) and for female (Rs. 127) both the rates are almost double the national avg. of Rs. 61. In fact very few schedules were found where the prescribed wage rates were filled in.
i) In Col.1, Block 2, the figures were reported against house no. with alphabet, hyphen, slash, etc. As the data entry package did not allow entry of alpha characters, the data transcription has been made by ignoring hyphens, slashes and other non numerical characters. Had the field personnel been sensitized in time to the implications of recording such characters, much time spent on an unnecessary data cleaning job would have been saved.
j) An illustration on the number of enquiries made to field office based on 474 FSUs
k) (work-load of one sub-round for a particular DP Centre).

No. of queries per FSU	No. of FSUs
0-10	91
11-20	140
21-40	187
Above 40	56

As the cost of making a reference to the field is considerable, the prevailing situation is not a desirable one.

a) Price range check-list should be modified as per the prevailing prices in the market.

Annexure-II

A few more suggestions for recording information in the field

- The field for item no. 14 of Sch. 0.0 (i.e. frame population) is auto-generated. But the field staff puts some figure either from their own understanding or from the sample list. And the PDES check point for this item states that '**check the entries from the sample list & correct it**'. At least the PDES check point for item 14 should be dropped when it is auto generated from sample list file. And **it would be better if the item is dropped from the schedule itself**.
- For column 1, block 2 of Sch. 0.0 (i.e. house no.), the field people often puts some number with alphabet, slash, hyphen etc. As the field is a numeric only, **keeping the provision for writing running srl. No. in 1st column of Block 2 of the schedule may be thought of** and the same may also be entered.
- For PDES & CSP of each schedule, the '**action to be taken if check fails**' should be clearly mentioned to enable the scrutinizers to take uniform 7 correct measure in respect of the abnormalities/mistakes found in the schedules.
- The particulars of the substituted samples should be supplied to D. P. Centres as the necessity of the same is felt at DCS during Id-checking.
- Blocks 5, 6, 7: Generally the error codes appear due to reporting of wrong total figures or missing of constituent items. To detect mistakes easily, the derived totals as per data entered may also be printed in the error list.
- An attempt should be made to reduce schedule bulk by weeding out the items with least contribution to the average MPCE. In schedule 1.0 we have set of 400 odd items of information so is for the enterprise schedule(Sch. 2.345)

ANNEXURE-III

No. of least reported items

Item Description	Round Number 62nd		63rd	
	item no.	sample no. of hhs	item no.	sample no. of hhs
Barley & its products	120	70	120	145
Walnut	254	199		
cheroot(no.)	325	141	325	288
Ganja	330	41	330	68
Gobar gas	352	142	352	193
Medical Insurance Premium	414	89	414	137
Medicine (Unani)			423	160
club fees	433	123	433	194
goods for recreation & hobbies	434	156	434	371
Attendant	481	71	481	126
Legal Expenses	487	148	487	194
Air fare	500	15	500	44
hotel lodging charges	521	60	521	92
foam, rubber cushion	554	52	554	153
painting, drawings, engravings etc.	556	64	556	126
Other furniture & fixtures(couch, sofa etc.)			557	728
camera & photographic equipments	563	22	563	90
musical instruments	566	27	566	70
other goods for recreation	567	144	567	384
jewels,pearls	572	76	572	207
Washing Machine	594	148		
Water Purifie r	598	185		
other transport equipment	614	114	614	289
Other medical equipment	621	19	621	50
other machines for household work	631	18	631	98
Personal Computer	632	141		
Telephone Instrument(landline)	634	127		
any other personal goods	635	156	635	322

Annexure -IV

Statewise status of participation in Public works

State code	State Name	Sample no. of households
01	Jammu & Kashmir	74
02	Himachal Pradesh	216
03	Punjab	39
04	Chandigarh	1
05	Uttaranchal	80
06	Haryana	83
08	Rajasthan	508
09	Uttar Pradesh	530
10	Bihar	238
11	Sikkim	37
12	Arunachal Pradesh	55
13	Nagaland	60
14	Manipur	43
15	Mizoram	72
16	Tripura	245
17	Meghalaya	55
18	Assam	271
19	West Bengal	914
20	Jharkhand	90
21	Orissa	437
22	Chhattisgarh	186
23	Madhya Pradesh	277
24	Gujarat	157
27	Maharashtra	277
28	Andhra Pradesh	612
29	Karnataka	137
31	Lakshadweep	8
32	Kerala	95
33	Tamil Nadu	285
34	Pondicherry	4
35	A & N islands	13

****

Status of Public works in Indian Villages

Ajay Baksi*

Abstract

Rural Public Works Programme (RPW) is one of the major tools for Government to uplift the social and economic conditions of the lowest strata of the rural people. But how far these objectives are achieved. In this paper an attempt is made from NSS 63rd round data to evaluate various aspects like extent of coverage of RPW in various states, Type of works undertaken in RPW, Decision taking Authority for choice of RPW programme, Demand of Rural Public Works programme and Effect of Rural Public Works programme on the lowest strata of rural poor.

Introduction

In India, both central and State Governments have taken many initiatives to improve the quality of life of the Poor people with special attention to the Rural population. For that there are several Govt sponsored Rural Public works have been undertaken specially in Indian Villages. The objectives of these Rural Public works are generation of wage employment and poverty alleviation. These programmes also focussed on Local community level assets creation. The following types of works are undertaken under Rural Public works programme. These are Watershed Development, drought proofing, flood control, land levelling flood control, laying of pipes or cables, sanitation, water harvesting, constructing irrigation canals, development of orchards, road construction, building construction or repair, running of crèches, etc. But how far these objectives are achieved? Though there may be mechanism by the sponsored agency to evaluate those programmes but these questions can be looked through the NSS Data on Socio-economic Surveys. To answer these questions comprehensive evaluation is necessary. Due to lack of proper Data we are constrained to do such type of analysis. In this context NSS 63rd round Data has shown certain lights on this issue. In this survey one block in the listing schedule is canvassed in the selected Villages about the Rural Public works under taken during the last 12 months. Information like type of programmes (e.g. EGS, SGRY, NFFWP etc.), type of Rural Public works, wage rate, choice of works and availability of enough work were asked from the most recent Rural Public works programme undertaken in the selected villages. The required information has been obtained by contacting the panchayat/village officials and / or other knowledgeable person(s). Apart from that each selected household in the villages were asked about the member of age 15 years and above for getting Rural Public works, no. of days worked and wages received etc.

Objective

Here in this paper an attempt is being made to see that what extent the Rural Villages are covered under Rural Public Works Programme. The objective of this paper is also to analyse the creation of assets in community level in different states. There are different types Rural Public works have been undertaken through which some benefits have been created in the local level. These works are namely:

- irrigation canal/ water conservation/ water harvesting/ drought proofing/ flood control/ embankment etc. …..……
- land levelling, development of orchard etc……..
- road construction, laying pipes and cables……...
- building construction/ repair…….
- sanitation, running crèche, etc……..

  any other work……..

*Ajay Baksi is working as Director in NSSO, DPD. The views expressed in this paper are of the author and not necessarily of the organization he belongs to.

Here this paper will try to examine the State wise distribution of the type of work undertaken in the RPW programme. At the same time it is very important to know that the decision making process of these various type of RPW undertaken in the Villages. Also it is quite worthy to note how far these decision-taking processes are varying State to State. At the same time it is necessary that to know the involvement of Local Panchayat in taking decision in Rural Public works (RPW) programme.

In this paper it is also examined the effect of RPW on the rural population in the context of seeking RPW and wages received. The NSS Report on Household Consumer Expenditure in India, 2006-07 (Report no. 527) examined participation of rural population aged 15 years or above. But it has not made any distinction of having RPW undertaken in the Villages during last twelve month. As the Villages can be classified in the two types namely

1. Villages where Rural Public works (RPW) have been undertaken during last twelve months from the date of survey.
2. Villages where no Rural Public works (RPW) have been undertaken during last twelve months from the date of survey.

Hence the paper try to examine whether any significant improvements in getting RPW for those persons of aged 15 years or above and living in the Villages where Rural Public works (RPW) have been undertaken during last twelve months from the date of survey.

Methodology

The NSS 63rd round Survey House listing schedules (Sch. 0.0) Block 9 provides the Village wise information relating to whether RPW taken up during last twelve months, no. of RPW taken up, type of RPW taken up, Wage rates for RPW, who made choice of RPW and whether enough RPW are there to satisfy the demand. After making necessary calculation on the Village level weights the State wise estimates are obtained for each of those parameters under study. Next in each surveyed rural household, it was ascertained for each person aged 15 or more:

(a) Whether he or she had sought work in public works during the last 365 days, and, if so, whether he or she had got such work or not
(b) if so, for how many days, and the wages received in cash and kind
(c) if not, whether he or she had made any complaint to any authority, and if so, whether he or she had received any compensation.

After making necessary linking with the household level Data with the properties of the Surveyed Villages the conditional estimates were obtained.

Summary discussion of Results:

The all Village level estimates are given in the table 1 to 4 and the conditional estimates are presented in the table 5 and 6. The discussions are presented in the following paragraphs.

Extent of Villages covered under Rural Public Works programme: First from the survey Data let us try to examine what percentages of villages are having public works. Table 1 shows that 62% of villages have public works during July 2006 to June 2007 in all India level. In Goa only 6% villages have undertaken any public works during that period. Whereas states like Nagaland, Tripura, Lakshadweep, Mizoram, Sikkim, Uttaranchal, Madhya Pradesh, Haryana, West Bengal more than 80% of villages have undertaken RPW. Also it is seen from the above table that states like Punjab, Meghalaya, Jharkhand, Kerala, Assam, Pondichery, Daman & Diu only 25% to 35% Villages have RPW in that period.

Type of works undertaken in Rural Public Works programme: Under Rural Public works Programme various types of works have taken in the Villages. The Table 2 provides the State-wise picture of various types of programmes undertaken in the Rural Public Works Programme. In all India level about 49% works are in road construction, laying pipes and cables. Also 29% works are in irrigation canal/ water

conservation/ water harvesting/ drought proofing/ flood control/ embankment etc. So majority of works are in these two categories of programme. In the majority of states the above two types of programmes constitutes major portion of the work. However there are some states like Rajasthan, Jharkhand and Andhra Pradesh where about 60% to 65% works are under in irrigation canal/ water conservation/ water harvesting/ drought proofing/ flood control/ embankment etc.

Decision taking Authority for choice of Rural Public Works programme: There is a common question about the suitability of the Public works programme in a Village. This leads to a question about the decision taking authority of the Public work Programme. It can be safely assumed if the people who will directly benefit from this Public works programme decide the choice of the programme then definitely the programme is suitable for that particular Village. In the listing Schedule information was collected on the choice of the authority about the recent Rural Public Works (RPW) undertaken in the Village. There are three authorities mainly "Gram Panchayat", "Zila Parishad" and "State Government". Now Gram Panchayat is an authority where directly the RPW programmes are executed and it is a body consists of local Village people. Hence if the Gram Panchayat makes the choice of the RPW programme then definitely the programme is mostly suitable for that Village. In Table 3 distribution of Choice for the most recent RPW is given for each States and All-India. It is observed from the Table that overall in All India 82% Villages the Decision taking authority about the RPW is Gram Panchayat and 8% by Zila Parishad and 7% by State Government. A most striking feature is only 8% of the Villages in Jammu & Kashmir and 12% villages of Jharkhand Decision on RPW is taken by Gram Panchayat whereas 93% villages of Tamil Nadu, 92% villages of Uttar Pradesh and 90% villages of Uttaranchal and Kerala decision about RPW is taken by Gram Panchayat.

Demand of Rural Public Works programme: There is another pertinent question regarding adequate man-days were created in order to satisfy the local demands. Having enough works under the Rural Public Works programme can do this. A question was asked to the Villages Whether Recent RPW programme has enough works to satisfy demand. In **Table 4** State wise distribution of demand for public works of most recent RPW undertaken in the villages are provided. At all India level it is found from Table 4 that 77% of Villages the works undertaken in the RPW programme do not satisfy the Demand at the local level. However the States like Andhra Pradesh (51%), Tamil Nadu (45%), Gujrat (37%) and Karnataka (32%) villages have enough works under the Rural Public Works programme to satisfy the local demand for the creation of man-days. Again from the NSS Report on "Household Consumer expenditure in India, 2006 2007" (Report no: 527) it is found only 13.8% of persons aged 15 years and above who has sought works under RPW. But we need to know what proportions of them are from villages where Rural Public works Programme have taken place. For this purpose the villages are classified into two groups namely Villages where at least one Rural Public works programme has undertaken in the last 12 months and another where no works have undertaken. The **Table 5** gives us the information regarding state-wise proportion of persons among those aged 15 years and above that has sought works under Rural Public Works Programme in the above two types of Villages. Also it is observed from the Table 5 that at the all-India level majority of persons (84%) among those sought RPW are from Villages where at least one RPW have undertaken in the recent past. But in States like Jharkhand (59%) and Kerala (51%) the proportion are more or less even. So demand of Public works among the rural persons is directly proportional to the availability of RPW programmes in their area.

Hence in order to increase the satisfaction level of rural poor people more such works should be undertaken in RPW.

***Effect of Rural Public Works programme on the lowest strata of rural poor*:** There is lot of expenditure made by Government in Rural Public works Programme in order to lift the Standard of living of the poorer of the poor section of rural population. So the question of any significant effect of RPW on the concern targeted people. In this context the Table 6 shows the percentage of non-food expenditure in the lowest quintile expenditure class of population for those villages having Rural Public work programme and those having no Rural Public work programme. It can be safely assume that increase in share of Non-food expenditure of total expenditure leads to increase in quality of life. Hence from the Table 6 it is observed that at all India Level only 1% percentage increase in non-food share expenditure for those

villages where Rural Public works Programme have taken Place. However there are States where there is no increase in non-food share of expenditure even though rural Public works programme have undertaken.

Conclusion: The various Govt department both Central and State have evaluated the various Schemes of Rural Public works Programme by method of Fund utilisation and related accounting procedure. But from the users' perspective Government has taken no such significant efforts to evaluate those schemes. In this context the above analysis from National Sample Survey Data of 63rd round has shown some important observations about those Schemes of Rural Public works Programme from the user's /beneficiaries perspective. One major observation is demand of employment generation works among the targeted rural persons is directly proportional to the availability of RPW programmes in their area. Also on the other hand Satisfaction level among the rural population of having enough man-days is not very high. It is also noted that Road Construction & Irrigation work are the two major works are taken under the RPW programme.

However there are certain limitations about the above analysis. The Sample size may not be adequate for some States. Also all those majorities of information are based only from a single person of the Village and this may not be representative view of all the villagers. Hence a comprehensive survey involving a true representative population of Villages may be undertaken by NSSO to get a more informed opinions about the Status of Rural Public works Programme.

Table 1: Percentage of Villages having Public works in Rural India for each States.

State	Percentage of Villages having Public works	Percentage of Villages not having Public works	Sample no of Villages
(1)	(2)	(3)	(4)
Jammu & Kashmir	45.94	54.06	77
Himachal Pradesh.	61.49	38.51	142
Punjab	36.03	63.97	106
Chandigarh	46.76	53.24	4
Uttaranchal	84.99	15.01	46
Haryana	82.66	17.34	99
Delhi	42.4	57.6	16
Rajasthan	59.44	40.56	300
Uttar Pradesh	77.74	13.72	388
Bihar	65.9	33.8	238
Sikkim	85.7	14.3	24
Arunachal Pradesh	55.27	40.29	63
Nagaland	99.51	0.49	32
Manipur	20.75	78.57	96
Mizoram	93.86	0	36
Tripura	99.42	0	120
Meghalaya	34.54	65.46	68
Assam	27.25	72.37	255
West Bengal	81.16	18.59	532
Jharkhand	32.28	67.72	96
Orissa	50.85	49.15	314
Chattisgarh	71.7	27.91	116
Madhya Pradesh	82.62	17.38	183
Gujarat	45.32	54.57	188
Daman & Diu	26.32	73.68	12
D & N Haveli	49.35	50.65	16
Maharashtra	72.14	27.49	284
Andhra Pradesh	80.49	19.5	554
Karnataka	41.53	58.47	240
Goa	5.99	94.01	16
Lakshadweep	95.66	4.34	4
Kerala	33.75	65.56	391
Tamil Nadu	56.84	43.16	449
Pondichery	26.97	73.03	8
A & N Islands	19.63	80.37	18
ALL INDIA	62.63	35.66	5531

Table 2: Percentage Distribution of different type of Rural Public Works (RPW) among the most recent RPW undertaken in the Villages for each States.

State	Type-1	Type-2	Type-3	Type-4	Type-5	Type-6	Type-9
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Jammu & Kashmir	10.63	3.81	57.85	8.87	0	18.85	0
Himachal Pradesh.	10.05	0.54	41.17	23.21	9.36	14.6	1.07
Punjab	14.29	1.56	40.72	27.17	15.69	0.57	0
Chandigarh	0	0	100	0	0	0	0
Uttaranchal	22.62	2.77	59.04	12.63	0.94	2	0
Haryana	31.58	13.46	27.19	10.13	6.74	10.91	0
Delhi	95.61	0	0	0	4.39	0	0
Rajasthan	65.01	1.97	23.32	6.65	1.39	1.65	0
Uttar Pradesh	37.62	13.25	38.79	6.22	2.94	1.19	0
Bihar	16.67	7.14	61.27	6.34	1.92	5.22	1.44
Sikkim	2.35	2.14	92.96	0	2.55	0	0
Arunachal Pradesh	22.59	0	27.8	6.34	0	43.27	0
Nagaland	1.79	53.26	23.78	3.27	10.67	7.23	0
Manipur	13.6	11.49	66.24	0	0.83	7.85	0
Mizoram	0	12.22	77.12	0	0.88	9.78	0
Tripura	10.48	13.44	59.25	6.75	0	8.69	1.39
Meghalaya	20.12	20.53	35.73	0	0	23.62	0
Assam	7.84	6.58	73.8	10.44	0	1.34	0
West Bengal	34.96	8.39	51.34	1.39	0.68	2.72	0.53
Jharkhand	63.75	0	32.36	0.79	0	3.1	0
Orissa	9.01	0.47	85.09	4.01	0.74	0.49	0.2
Chattisgarh	6.97	1.17	69.97	10.6	0	11.29	0
Madhya Pradesh	17.3	5.38	58.85	16.23	0.11	2.13	0
Gujarat	27.45	6.57	50.03	7.7	2.7	4.63	0.9
Daman & Diu	0	0	100	0	0	0	0
D & N Haveli	0	0	83.16	0	16.84	0	0
Maharashtra	21.8	2.19	49.7	9.49	13.72	3.09	0
Andhra Pradesh	60.83	6.87	23.21	3.04	3.58	2.47	0
Karnataka	7.71	4.14	51.71	14.93	19.65	1.86	0
Goa	100	0	0	0	0	0	0
Lakshadweep	88.03	0	0	0	4.31	7.66	0
Kerala	21.59	4.76	65.25	1.71	4.51	2.18	0
Tamil Nadu	35.63	1.71	52.52	6.7	2.57	0.87	0
Pondichery	100	0	0	0	0	0	0
A & N Islands	21.26	41.03	37.71	0	0	0	0
ALL INDIA	29.35	6.51	49.31	7.89	3.51	3.23	0.2

Type 1: irrigation canal/ water conservation/ water harvesting/ drought proofing / flood control/ embankment etc Type 2: land levelling, development of orchard etc Type 3: road construction, laying pipes and cables Type 4: building construction/ repair building construction/ repair Type 5: sanitation, running crèche, etc Type 6: any other work Type 9: Not reported

Table 3: Percentage Distribution of Choice made by different authority for selecting the type of Rural Public Works (RPW) among the most recent RPW undertaken in the Villages for each States

State	Authority made the Choice of RPW				Sample RPW villages
	Gram Panchayat	Zila Parishad	State Government	Don't know	
(1)	(2)	(3)	(4)	(5)	(6)
Jammu & Kashmir	8.33	0	79.45	12.22	38
Himachal Pradesh.	78.04	6.58	4.41	10.98	113
Punjab	73.58	16.92	9.5	0	44
Chandigarh	63.15	0	36.85	0	2
Uttaranchal	90.18	2.7	7.12	0	37
Haryana	75.36	9.47	9.22	5.96	81
Delhi	0	0	100	0	2
Rajasthan	81.7	2.25	15.38	0.44	208
Uttar Pradesh	92.35	1.62	4.58	1.44	319
Bihar	69.48	13.51	9.02	6.55	178
Sikkim	34.86	0	65.14	0	21
Arunachal Pradesh	50.38	1.42	4.87	43.32	29
Nagaland	56.3	1.49	37.78	4.43	30
Manipur	21.73	0	48.56	29.71	20
Mizoram	42.62	0	32.96	22.1	32
Tripura	89.21	0	10.79	0	119
Meghalaya	19.78	0	39.35	40.87	23
Assam	86.4	4.47	2.87	6.26	146
West Bengal	88.22	11.25	0.2	0.26	449
Jharkhand	12.37	32.32	55.31	0	40
Orissa	84.97	3.93	4.13	6.97	225
Chattisgarh	67.89	29.22	2.82	0.07	89
Madhya Pradesh	89.56	5.41	4.87	0.17	144
Gujarat	79.31	16.68	2.22	1.53	121
Daman & Diu	30.61	69.39	0	0	2
D & N Haveli	61.08	38.92	0	0	8
Maharashtra	73.22	21.35	5.22	0.21	219
Andhra Pradesh	84.55	6.86	7.48	1.11	480
Karnataka	81.52	11.68	3.8	3	140
Goa	100	0	0	0	1
Lakshadweep	100	0	0	0	3
Kerala	90.09	5.15	1.44	3.32	133
Tamil Nadu	93.2	0.96	4.66	1.19	307
Pondichery	50	0	50	0	2
A & N Islands	100	0	0	0	7
ALL INDIA	81.9	8.21	7.18	2.6	3812

Table 4: Percentage Distribution of demand for public works of most recent RPW undertaken in the villages for each states.

State	Whether Recent RPW programme has enough works to satisfy demand.			Sample RPW villages
	Yes	No	Don't know	
(1)	(2)	(3)	(4)	(5)
Jammu & Kashmir	15.45	84.55	0	38
Himachal Pradesh.	9.75	77.92	12.33	113
Punjab	20.35	72.64	7.01	44
Chandigarh	0	100	0	2
Uttaranchal	14.76	82.28	2.96	37
Haryana	27.12	72.88	0	81
Delhi	0	4.39	95.61	2
Rajasthan	23.04	76.59	0.37	208
Uttar Pradesh	11.8	83.81	4.38	319
Bihar	13.1	81.31	4.15	178
Sikkim	3.78	96.22	0	21
Arunachal Pradesh	1.69	63.73	34.59	29
Nagaland	10.03	88.9	1.07	30
Manipur	4.33	85.73	9.65	20
Mizoram	7.89	90.31	1.8	32
Tripura	33.57	66.43	0	119
Meghalaya	16.4	49.15	34.45	23
Assam	12.57	83.36	4.08	146
West Bengal	11.84	86.42	1.74	449
Jharkhand	4.8	94.06	1.14	40
Orissa	14.43	77.11	8.46	225
Chattisgarh	22.96	73.99	3.05	89
Madhya Pradesh	18.45	81.41	0.13	144
Gujarat	37.08	56.05	6.61	121
Daman & Diu	69.39	30.61	0	2
D & N Haveli	33.93	66.07	0	8
Maharashtra	23.62	74.38	2	219
Andhra Pradesh	51.02	47.43	1.55	480
Karnataka	32.44	60.18	7.39	140
Goa	0	100	0	1
Lakshadweep	7.66	92.34	0	3
Kerala	15.81	65.63	18.55	133
Tamil Nadu	44.69	53.51	1.8	307
Pondichery	0	100	0	2
A & N Islands	12.79	62.98	10.13	7
ALL INDIA	19.01	76.9	4.01	3812

Table 5: Percentage Distribution of People of aged 15 years & above who seek RPW by Type of Village* for each State.

State	Percentage Distribution of Seeking RPW of persons aged 15 years & above.			Total no of persons of aged 15 Years & above seeking RPW.	
	Villages with RPW	Villages without RPW	Total	Estimated	Sample
(1)	(2)	(3)	(4)	(5)	(6)
Jammu & Kashmir	73.06	26.94	100	1798.66	122
Himachal Pradesh.	95.37	4.63	100	2708.54	325
Punjab	93.22	6.78	100	2935.89	68
Chandigarh	100	0	100	0.53	1
Uttaranchal	92.6	7.4	100	7150.68	180
Haryana	84.52	15.48	100	11072.94	181
Delhi	0	0	0	0	0
Rajasthan	81.89	18.11	100	63493.93	1321
Uttar Pradesh	87.41	12.59	100	74219.41	997
Bihar	73.17	26.83	100	97948.11	698
Sikkim	100	0	100	364.53	53
Arunachal Pradesh	54.27	45.73	100	904.13	239
Nagaland	100	0	100	727.43	147
Manipur	43.86	56.14	100	856.56	206
Mizoram	96.83	3.17	100	986.36	132
Tripura	99.12	0.88	100	6062.72	530
Meghalaya	76.43	23.57	100	1050.57	134
Assam	73.62	26.38	100	13777.73	549
West Bengal	90.8	9.2	100	90020.23	1859
Jharkhand	59.19	40.81	100	28813.5	383
Orissa	80.73	19.27	100	35263.86	993
Chattisgarh	90.61	9.39	100	29751.72	527
Madhya Pradesh	93.86	6.14	100	73718.22	836
Gujarat	79.08	20.92	100	12009.18	386
Daman & Diu	0	0	0	0	0
D & N Haveli	100	0	100	23.01	2
Maharashtra	87.59	12.41	100	36942.4	668
Andhra Pradesh	87.28	12.72	100	64498.8	1473
Karnataka	75.97	24.03	100	7484.56	226
Goa	0	0	0	0	0
Lakshadweep	100	0	100	12.12	10
Kerala	51.11	48.89	100	3027.04	237
Tamil Nadu	87.09	12.91	100	14232.03	520
Pondichery	100	0	100	60.56	8
A & N Islands	54.79	45.21	100	221.54	38
ALL INDIA	83.92	16.08	100	682137.48	14049

* Type of Villages = Villages with RPW and Villages without RPW

Table 6: State wise Percentage of non-food share of MPCE for lowest Quintile Class

State	Percentage of non food share of MPCE of those villages where RPW occurred	Percentage of non food share of MPCE of those villages where RPW not occurred	Percentage of non food share of MPCE of all villages
(1)	(2)	(3)	(4)
Jammu & Kashmir	38.12	37.96	38.04
Himachal Pradesh.	42.86	39.72	42.54
Punjab	42.92	42.22	42.41
Chandigarh	41.7	0	41.7
Uttaranchal	43.29	38.99	42.43
Haryana	47.32	53.97	48.18
Delhi	39.79	45.02	44.31
Rajasthan	40.19	38.85	39.83
Uttar Pradesh	38.99	40.84	39.31
Bihar	34.07	32.95	33.92
Sikkim	41.83	36.3	41.02
Arunachal Pradesh	58.04	41.09	52.96
Nagaland	35.01	48.89	35.04
Manipur	36.47	35.94	36.32
Mizoram	35.61	0	35.89
Tripura	32.33	0	32.33
Meghalaya	41.95	44.94	44.13
Assam	35.4	29.34	32.33
West Bengal	32.9	32.2	32.82
Jharkhand	35.51	39.82	38.36
Orissa	34.87	34.87	34.87
Chattisgarh	39.83	42.6	40.24
Madhya Pradesh	46.16	41.36	45.59
Gujarat	37.04	40.13	38.05
Daman & Diu	44.77	51.9	49.55
D & N Haveli	45.8	37.47	41.98
Maharashtra	42.69	43.31	42.82
Andhra Pradesh	38.62	38.5	38.61
Karnataka	39.83	39.32	39.59
Goa	30.73	43.52	40.84
Lakshadweep	46.46	0	46.46
Kerala	44.53	46.7	46.06
Tamil Nadu	41.91	39.02	40.87
Pondichery	0	40.4	40.4
A & N Islands	44.99	41.14	43.19
ALL INDIA	39.09	38.31	38.91

“Rural and Urban Housing conditions in India”

By

Altaf Hussain Haji ,ISS
Deputy Director NSSO(FOD)R.O Srinagar 190001
E-mail altafhh@rediffmail.com

1 **Introduction** :- A house is generally a home, shelter, building or structure that is a dwelling or place for habitation by human beings. The term includes many kinds of dwellings ranging from rudimentary huts of nomadic tribes to free standing individual structures. In some contexts, "house" may mean the same as dwelling, residence, home, abode, lodging, accommodation etc.

2. **Definitions**

2.1) **House** :- According definition of house of National Sample Survey Office , Every Structure, tent, shelter, etc. is a house irrespective of its use. It may be used for residential or non-residential purpose or both or even may be vacant is called House.

2.2) **PUCCA STRUCTURE**: - A pucca structure is one whose walls and roof are made of pucca materials as cement, concrete, oven burnt bricks, hollow cement / ash bricks, stone, stone blocks, jack boards (cement plastered reeds), iron, zinc or other metal sheets, timber, tiles, slate, corrugated iron, asbestos cement sheet, veneer, plywood, artificial wood of synthetic material and poly vinyl chloride (PVC) material.

2.3) **KATCHA STRUCTURE**: - A structure, which has walls and roof made of non-pucca materials, is regarded as a katcha structure. Non-pucca materials include unburnt bricks, bamboo, mud, grass, leaves, reeds, thatch, etc. Katcha structures can be of the following two types:

2.4) **UNSERVICEABLE KATCHA STRUCTURE**: - It includes all structures with thatch walls and thatch roof i.e. walls made of grass, leaves, reeds, etc. and roof of a similar material and

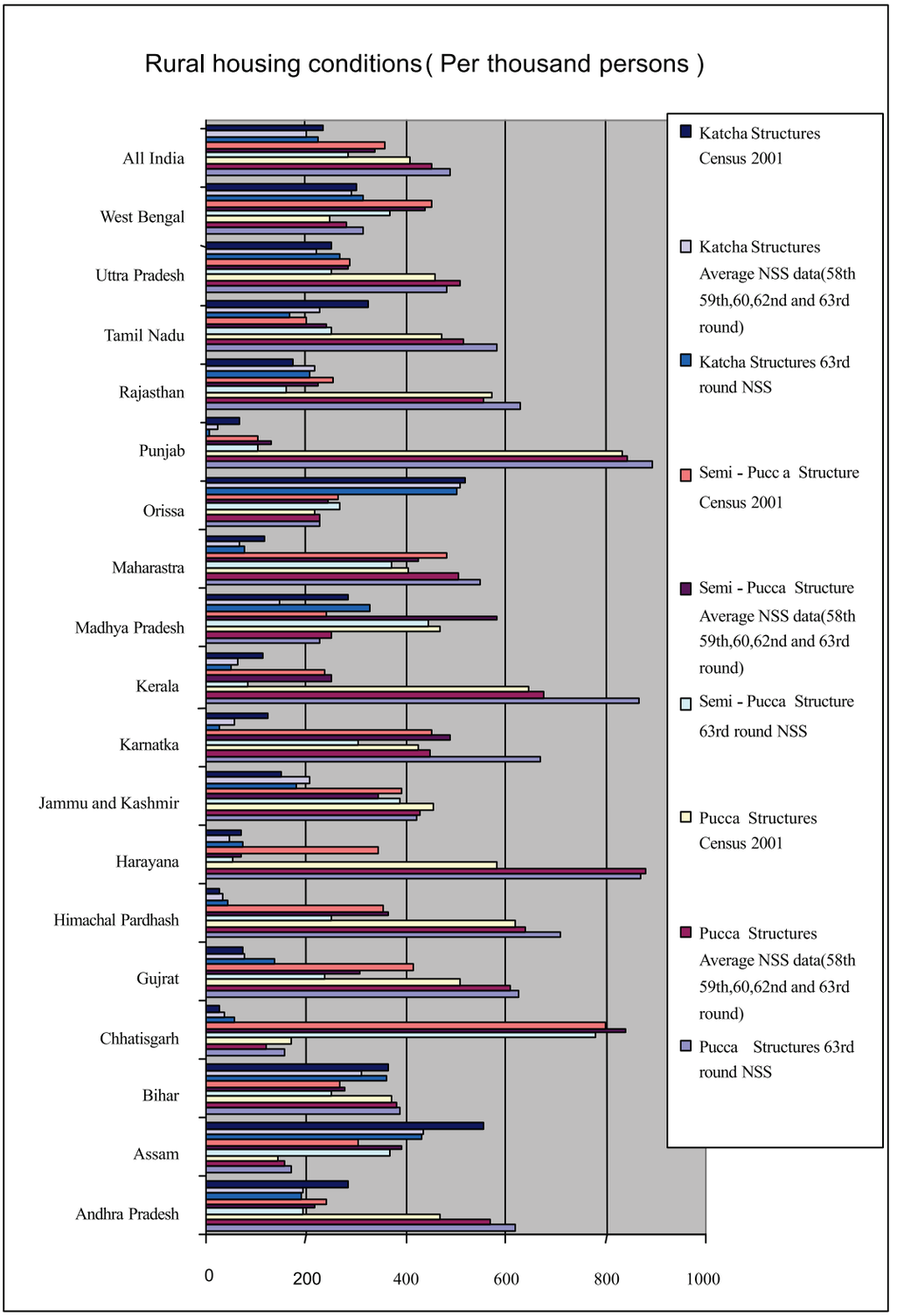
2.5) **SERVICEABLE KATCHA STRUCTURE**: - It includes all katcha structure other than Unserviceable katcha structure.

2.6) **SEMI-PUCCA STRUCTURE**: - A structure, which cannot be classified as a pucca, or a katcha structure as per definition is a semi-pucca structure. Such a structure will have either the walls or the roof but not both, made of pucca materials.

3) **Sources of data used**: - The two sources of data is used here for studying the housing conditions of various states of India. One of the sources of data is Census of India 2001 and other one is National Sample Survey Office (NSSO) data. The National sample Survey Office (NSSO) has been in service to the nation since 1950. It has been instrumental in developing a strong database on various Socio-Economic parameters through its countrywide sample surveys, which have helped the Central as well as State Governments in development planning and policy formulations. The data for Rural and Urban distribution of Housing conditions by type of structure are tabled as mention in the table 1 and table 2 given below

Table1 Rural distribution of Housing Conditions (per thousand persons)

S.No	Name of the state	Pucca Structures			Semi- Pucca Structure			Katcha Structures		
		63rd round NSS	Average NSS data(58th 59th,60,62nd and 63rd round)	Census 2001	63rd round NSS	Average NSS data(58th 59th,60,62nd and 63rd round)	Census 2001	63rd round NSS	Average NSS data(58th 59th,60,62nd and 63rd round)	Census 2001
1	Andhra Pradesh	619	569	470	191	218	243	189	197	287
2	Assam	171	158	142	371	392	303	432	435	555
3	Bihar	389	383	372	250	276	266	359	312	362
4	Chhatisgarh	159	121	170	779	837	801	57	38	29
5	Gujrat	623	609	510	240	308	417	136	79	73
6	Himachal Pardhash	709	640	618	250	362	353	42	34	29
7	Harayana	869	880	582	54	72	346	76	46	72
8	Jammu and Kashmir	421	428	456	389	344	391	180	209	151
9	Karnatka	669	448	426	304	488	451	27	55	123
10	Kerala	865	678	646	84	251	240	49	62	114
11	Madhya Pradesh	228	252	470	443	582	243	329	146	287
12	Maharastra	549	506	403	374	427	480	77	65	117
13	Orissa	228	228	218	267	246	263	504	509	519
14	Punjab	893	844	833	102	130	102	5	25	65
15	Rajasthan	629	556	571	161	225	254	209	218	174
16	Tamil Nadu	582	515	473	251	242	202	167	227	325
17	Uttra Pradesh	481	509	461	252	287	288	267	222	250
18	West Bengal	314	282	249	371	437	450	315	293	301
	All India	488	453	410	285	340	358	225	203	232


Rural housing conditions (Per thousand persons)
All India
West Bengal
Uttra Pradesh
Tamil Nadu
Rajasthan
Punjab
Orissa
Maharastra
Madhya Pradesh
Kerala
Karnatka
Jammu and Kashmir
Harayana
Himachal Pardhash
Gujrat
Chhatisgarh
Bihar
Assam
Andhra Pradesh
0
200
400
600
800
1000
Katcha Structures Census 2001
Katcha Structures Average NSS data(58th 59th,60,62nd and 63rd round)
Katcha Structures 63rd round NSS
Semi - Pucc a Structure Census 2001
Semi - Pucca Structure Average NSS data(58th 59th,60,62nd and 63rd round)
Semi - Pucca Structure 63rd round NSS
Pucca Structures Census 2001
Pucca Structures Average NSS data(58th 59th,60,62nd and 63rd round)
Pucca Structures 63rd round NSS

4 Rural distribution of Housing conditions

4.1 Pucca Structures of Rural India

Rural sector of the housing conditions of National Sample Survey 63rd round for pucca structures of the following states namely West Bengal, Chhatisgarh, Orissa, Madhya Pradesh, Jammu and Kashmir , Bihar and Assam lying below the all India level wile other state mentioned above lying above the all India level data. This clear shows that poor state of the country lying below the all India level while rich states lying above the all India level. The states namely Assam, Bihar, Orissa, have improved their housing condition as compared to the census data 2001 while on other side of the housing conditions of the following states namely Jammu and Kashmir, Madhya Pradesh are once again poorest states as compared to Census data of 2001.

Rural sector of the housing conditions of average National Sample Survey data of 58th ,59th 60th, 62nd and 63rd round for Pucca structures of the following states namely West Bengal, Chhatisgarh, Orissa, Madhya Pradesh, Jammu and Kashmir ,Karnatka Bihar and Assam lying below the all India level while other states lying above the all India average level data of 58th ,59th 60th, 62nd and 63rd round . The states namely Chhatisgarh and Madhya Pradesh is poorest of their improvement of housing conditions as compared to census data 2001 for rural sector while other states mentioned above have improved their housing conditions. Further state like Gujrat, Haryana, Kerala, and Maharasta have highly improved their housing condition as compared to Census data, 2001.

4.2 Semi-Pucca Structures of Rural India

The NSS 63rd round data shows that the following states namely Assam, Chhatisgarh, Jammu and Kashmir, Karanataka. Madhya Pradesh, Maharastria and West Bengal increases the semi-pucca structures for rural sectors as compared to all India level data for rural sector. Further the states like Assam, Karnataka, Madhya Pradesh and Orissa are worst states of their semi-pucca structures while increases as compared to census data 2001.

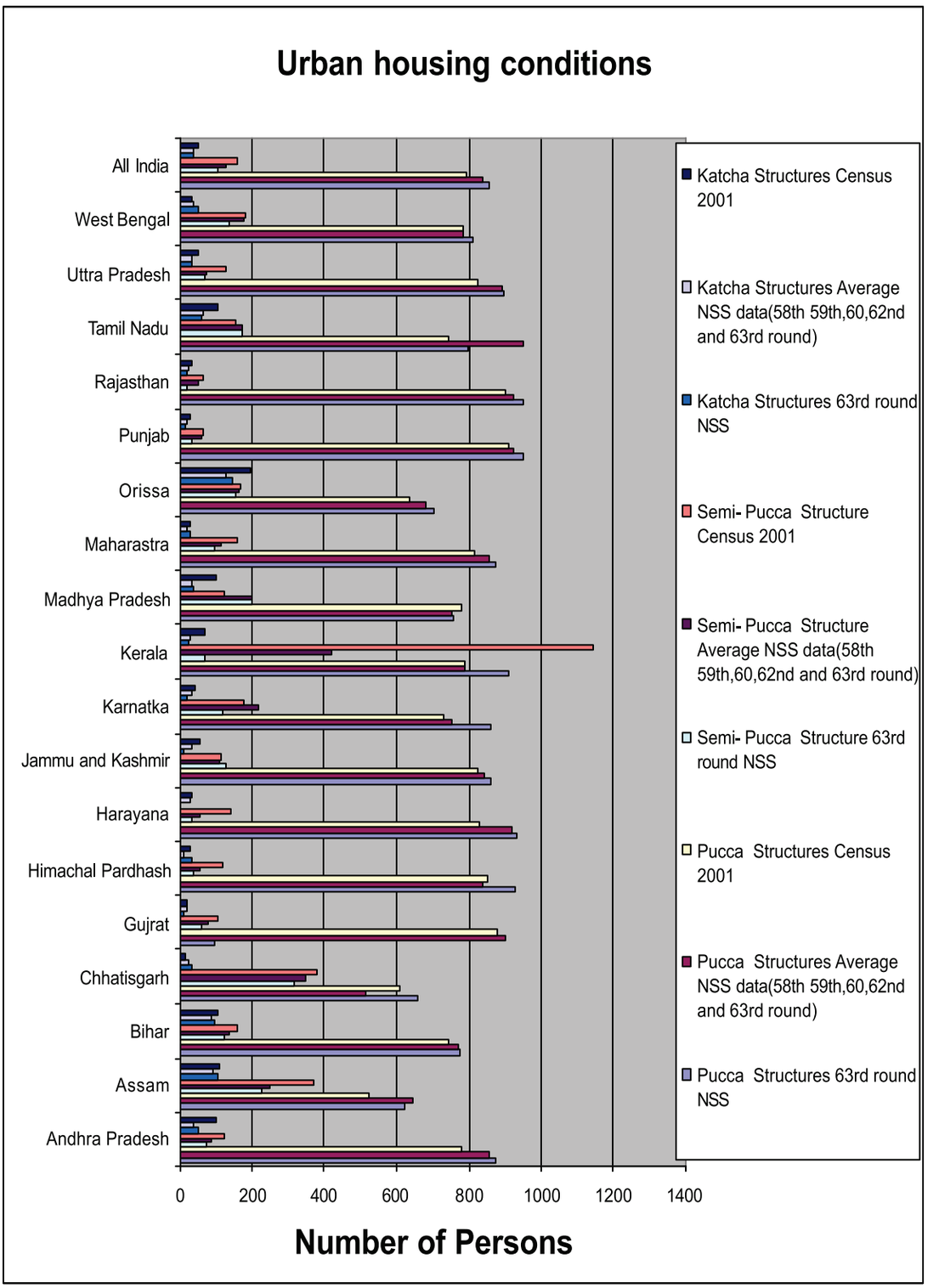
Rural sector of the housing conditions of average National Sample Survey data of 58th ,59th 60th, 62nd and 63rd round for semi- Pucca structures shows that the following states namely West Bengal, Maharastra, Chhatisgarh, Madhya Pradesh, Jammu and Kashmir ,Karnataka and Assam having more semi-pucca structures as compared to other states and lying above the all India average level while other states lying below the all India average level data of 58th ,59th 60th, 62nd and 63rd round .

4.3 Katcha Structures of Rural India

The NSS 63rd round data shows that the following states namely Assam, Bihar, Madhya Pradesh, Orissa , Uttra Pradesh and West Bengal have more katcha for rural sectors as compared to all India level data for rural sector and other states lying below the all India level data. . Further the states like Assam, Karnataka, Madhya Pradesh and Orissa are worst states as their Katcha structures as compared to census data 2001.

Table 2 Urban distribution of Housing Conditions (per thousand persons)

S.No	Name of the state	Pucca Structures			Semi- Pucca Structure			Katcha Structures		
		63rd round NSS	Average NSS data(58th 59th,60,62nd and 63rd round)	Census 2001	63rd round NSS	Average NSS data(58th 59th,60,62nd and 63rd round)	Census 2001	63rd round NSS	Average NSS data(58th 59th,60,62nd and 63rd round)	Census 2001
1	Andhra Pradesh	876	859	781	73	84	123	50	37	96
2	Assam	624	645	520	225	252	370	101	90	110
3	Bihar	778	774	743	123	134	157	92	85	100
4	Chhatisgarh	659	512	610	314	348	378	28	20	12
5	Gujrat	933	904	878	59	76	105	9	19	16
6	Himachal Pardhash	931	838	854	39	55	120	29	7	26
7	Harayana	932	920	830	36	55	138	3	24	31
8	Jammu and Kashmir	863	846	828	128	112	116	9	33	56
9	Karnatka	863	751	729	120	217	179	17	28	42
10	Kerala	913	791	788	66	418	1145	20	26	66
11	Madhya Pradesh	760	755	781	200	200	123	40	33	96
12	Maharastra	876	857	816	95	116	159	27	17	24
13	Orissa	704	683	638	153	162	167	143	126	195
14	Punjab	949	926	913	36	58	63	13	16	24
15	Rajasthan	951	925	905	17	49	63	15	22	32
16	Tamil Nadu	796	952	743	171	169	153	60	62	104
17	Uttra Pradesh	901	892	822	66	74	128	33	29	50
18	West Bengal	812	786	786	136	173	183	52	38	31
	All India	855	839	792	106	128	155	37	37	53


Urban housing conditions
All India
West Bengal
Uttra Pradesh
Tamil Nadu
Rajasthan
Punjab
Orissa
Maharastra
Madhya Pradesh
Kerala
Karnatka
Jammu and Kashmir
Harayana
Himachal Pardhash
Gujrat
Chhatisgarh
Bihar
Assam
Andhra Pradesh
0
200
400
600
800
1000
1200
1400
Number of Persons
Katcha Structures Census 2001
Katcha Structures Average NSS data(58th 59th,60,62nd and 63rd round)
Katcha Structures 63rd round NSS
Semi- Pucca Structure Census 2001
Semi- Pucca Structure Average NSS data(58th 59th,60,62nd and 63rd round)
Semi- Pucca Structure 63rd round NSS
Pucca Structures Census 2001
Pucca Structures Average NSS data(58th 59th,60,62nd and 63rd round)
Pucca Structures 63rd round NSS

5. Urban distribution of Housing conditions

5.1 Pucca Structures of Urban India:- Urban sector of the housing conditions of National Sample Survey 63rd round for pucca structures of the following states namely Assam Bihar Chhatisgarh Orissa, Tamil Nadu and West Bengal lying below the all India level while other states mentioned above lying above the all India level data. This clear shows that poor state of the country lying below the all India level except Tamil Nadu while rich states lying above the all India level. The urban area of all major states have improved their housing condition as compared to the census data 2001 except urban sector of state Madhya Pradesh The poor state namely Jammu and Kashmir, Madhya Pradesh, Chattisgarh Assam Bihar Orissa have not improved too much of their housing condition of pucca structures as compared to Census data of 2001.

Average urban sector of the pucca structures of housing conditions of National Sample Survey data of 58th ,59th 60th, 62nd and 63rd round of the following states namely Assam Bihar Chhatisgarh Orissa, Karnataka Kerila , Madhya Pradesh, and West Bengal lying below the all India NSS average level data of 58th ,59th 60th, 62nd and 63rd while other states lying above the all India NSS average level data of 58th ,59th 60th, 62nd and 63rd round . The states namely Chhatisgarh and Madhya Pradesh once again is poorest of their improvement of housing conditions of pucca structures as compared to census data 2001 for urban sector while other states mentioned above have improved their housing conditions. Further state like Andhra Pradesh Gujrat, Haryana, Tamil Nadu and Maharasta have highly improved their housing condition as compared to Census data, 2001.

5.2 Semi-Pucca Structures of Rural India

The semi pucca structures of the NSS of 58th ,59th 60th, 62nd and 63rd round data of the following states namely A.P , Gujarat, H.P, Jammu and Kashmir, Maharastria , Punjab , Rajasthan and U.P lying below in semi pucca structures for urban sectors as compared to all India level data for urban sector of 58th ,59th 60th, 62nd and 63rd round data.. The state Assam Bihar Chhastigarh , Gujarat H.P, Harayana Karnataka Kera Maharastra Orissia Punjab, Rajasthan U.P and West Bengal shows decrease in their semi-pucca structures as compared to census data 2001. This is a good signed for improvement. The state increase their semi-pucca structures of urban area of Jammu and Kashmir, Madhya Pradesh and Tamil Nadu which is not a good signed of infrastructure development.

Urban sector of the housing conditions of average National Sample Survey data of 58th ,59th 60th, 62nd and 63rd round for semi- Pucca structures shows that the following states namely West Bengal, Tamil Nadu , Karanatka and Madhya Pradesh, having more semi-pucca structures as compared to other states and lying above the all India average level while other states lying below the all India NSS average level data of 58th ,59th 60th, 62nd and 63rd round .

5.3 Katcha Structures of Urban India

The NSS 63rd round data shows that over all situation of katcha structures of urban sector have improved their housing condition as compared to the census data and average level data of 58th ,59th 60th, 62nd and 63rd round NSS for urban sectors. . Further all the states have improved their housing conditions. This is once again good sign for infrastructure develoment.

6. Changes of housing condition by using Chi square statistics.

6.1.1 The Chi-square (X^2) test is undoubtedly the most important and most used member of the nonparametric family of statistical tests**. T**he chi-square test is used to determine whether the sampling data is a significant difference between the expected frequencies and the observed frequencies in one or more categories.

6.1.2 Chi-square test is required following steps

1. Quantitative data 2. One or more categories 3. Independent observations
4. Adequate sample size (at least 10) 5. Simple random samples 6. Data in frequency form and
7. All observations must be used.

6.1.3 The Chi-square formula used for chi-square test is as under

Basic Computational Equation

$$X^2 = \Sigma \frac{(\text{Observed frequency} - \text{Expected frequency})^2}{\text{Expected frequency}}$$

6.2 Calculations of Chi-square statistics for rural sector:-

First the data of NSS 63rd round of rural and urban distribution of Housing conditions can be tabled in a simpler form (frequency distribution) which are tabled below by sector wise and by type of structure wise as under.

Table 4
The Rural sector of Housing condition (Pucca structures)

Number of persons living in pucca houses (per thousand persons)	Numbers of states as per NSS 63rd Round (E)	Number of states as per Census 2001(O)
0-100	0	0
100-200	2	2
200-300	2	2
300-400	2	1
400-500	2	7
500-600	2	3
600-700	4	2
700-800	1	0
800-900	3	1
900-1000	0	0
Total	18	18

In table 4 the Rural sector of Housing condition of Pucca structures shows by using Chi-square test of the data 63rd as the census data as observed frequencies(O) and NSS 63rd round as expected frequencies(E) than calculated value of chi-square of above data is 5.667 and chi-square tabled value is 16.919 at 5 percent level of significance with degree of freedom(df) 9. This shows that calculated value of chi-square of table 4 is less than the tabled value at 5 percent level of significance with df 9 and the condition is not significant. This means that there is no significant change from Census data 2010 to the data 63rd round.

Table 5
Rural sector of Housing condition(semi-Pucca Structure)

Number of persons living in Semi-pucca houses (per thousand persons)	Numbers of states as per NSS 63rd Round (E)	Number of states as per Census 2001(O)
0-100	2	0
100-200	3	1
200-300	6	8
300-400	5	4
400-500	1	4
500-600	0	0
600-700	0	0
700-800	0	0
800-900	1	0
900-1000	0	0
Total	18	18

In table 5 the Rural sector of Housing condition of semi- Pucca structures shows by using Chi-square test of the data 63rd as the census data as observed frequencies(O) and NSS 63rd round as expected frequencies(E) than calculated value of chi-square of above data is 15.199 and chi-square tabled value is 16.919 at 5 percent level of significance with degree of freedom(df) 9. This shows that calculated value of chi square of table 5 is less than the tabled value at 5 percent level of significance with degree of freedom (df) 9 and the condition is significant. This means that there is not significant change from census data 2001 to the NSS 63rd round data for rural sector of Housing condition of semi- Pucca structures

Table 6
Rural sector of Housing condition(Katcha Structure)

Number of persons living in Katcha houses (per thousand persons)	Numbers of states as per NSS 63rd Round (E)	Number of states as per Census 2001(O)
0-100	7	5
100-200	4	5
200-300	2	3
300-400	3	3
400-500	1	0
500-600	1	2
600-700	0	0
700-800	0	0
800-900	0	0
900-1000	0	0
Total	18	18

In table 6 the Rural sector of Housing condition (Semi- pucca structures) shows by using Chi-square test of the data 63rd as the census data as observed frequencies(O) and NSS 63rd round as expected frequencies(E) than calculated value of chi-square of above data is 3.321 and chi-square tabled value is 16.919 at 5 percent level of significance with degree of freedom(df) 9. This shows that calculated value of chi-square of table 6 is less than the tabled value at 5 percent level of significance with degree of freedom (df) 9 and the condition is not significant. This means that there is not significant change from census data 2001 to the NSS 63rd round data for rural sector of Housing condition of Katcha structures.

Table 7
Urban sector of Housing condition(Pucca Structure)

Number of persons living in pucca houses (per thousand persons)	Numbers of states as per NSS 63rd Round (E)	Number of states as per Census 2001(O)
0-100	0	0
100-200	0	0
200-300	0	0
300-400	0	0
400-500	0	0
500-600	0	1
600-700	2	2
700-800	4	7
800-900	5	6
900-1000	7	2
Total	18	18

In table 7 the Urban sector of Housing condition of Pucca structures shows by using Chi-square test of the data 63rd as the census data as observed frequencies(O) and NSS 63rd round as expected frequencies(E) than calculated value of chi-square of above data is 3.164 and chi-square tabled value is 16.919 at 5 percent level of significance with degree of freedom(df) 9 and the condition is also not significant. This means that there is no significant change from census data 2001 to the NSS 63rd round data for urban sector of Housing condition of Pucca structures.

Table 8
Urban sector of Housing condition(semi-Pucca Structure)

Number of persons living in semi- pucca houses (per thousand persons)	Numbers of states as per NSS 63rd Round (E)	Number of states as per Census 2001(O)
0-100	9	2
100-200	6	14
200-300	2	2
300-400	1	0
400-500	0	0
500-600	0	0
600-700	0	0
700-800	0	0
800-900	0	0
900-1000	0	0
Total	18	18

In table 8 above the Urban sector of Housing condition (Semi- pucca structures) shows by using Chi-square test of the data 63rd as the census data as observed frequencies(O) and NSS 63rd round as expected frequencies(E) than calculated value of chi-square of above data is 17.110 and chi-square tabled value is 16.919 at 5 percent level of significance with degree of freedom (df) 9 and the condition is significant. This means that there is highly or better change from census data 2001 to the NSS 63rd round data for urban sector of Housing condition of Semi-pucca structures

Table 9
Urban sector of Housing condition(Katcha Structure)

Number of persons living in Katcha houses (per thousand persons)	Numbers of states as per NSS 63rd Round (E)	Number of states as per Census 2001(O)
0-100	16	14
100-200	2	4
200-300	0	0
300-400	0	0
400-500	0	0
500-600	0	0
600-700	0	0
700-800	0	0
800-900	0	0
900-1000	0	0
Total	18	18

In table 9 the Urban sector of Housing condition of katcha structures shows by using Chi-square test of the data 63rd as the census data as observed frequencies(O) and NSS 63rd round as expected frequencies(E) than calculated value of chi-square of above data is 2.250 and chi-square tabled value is 16.919 at 5 percent level of significance with degree of freedom (df) 9 and the condition is not significant. This means that there is no change from census data 2001 to the NSS 63rd round data for urban sector of Housing condition of katcha structures as compared to census data 2001.
The above results can also be tabled as under in table 10

Table 10

Housing condition	**Chi-square Value(Cal)**	**Chi-square Value(Tab)**	**Results.**
Rural sector for Pucca structures	5.667	16.919 at 9 df	Not Significant and no change
Ruralsector for Semi-pucca structures	15.199	16.919 at 9 df	Not Significant and no change
Rural sector for Katcha structures	3.321	16.919 at 9 df	Not Significant and no change
Urban sector for Pucca structures	3.164	16.919 at 9 df	Not Significant and no change
Urban sector for Semi-pucca structures	17.110	16.919 at 9 df	Significant and some change
Urban sector for Katcha structures	2.250	16.919 at 9 df	Not Significant and no change

6.3 Calculations of Chi-square statistics for rural and urban sectors for the average data of NSS of 58th , 59th 60th, 62nd and 63rd

Similar findings is observed for the average data of NSS of 58th , 59th 60th, 62nd and 63rd round for Pucca, Semi-Pucca and Kactcha for both rural and urban sector. The chi square value of average data of 58th, 59th, 60th, 62nd and 63rd round for Pucca, Semi-Pucca and Kactcha for both rural and urban sector is tabled as under:

Table 11

Housing condition	**Chi-square Value(Cal)**	**Chi-square Value(Tab)**	**Results.**
Rural sector for Pucca structures	16.833	16.919 at 9 df	Not Significant and no change
Rural sector for Semi-pucca structures	2.476	16.919 at 9 df	Not Significant and no change
Rural sector for Katcha structures	11.550	16.919 at 9 df	Not Significant and no change
Urban sector for Pucca structures	2.800	16.919 at 9 df	Not Significant and no change
Urban sector for Semi-pucca structures	16.571	16.919 at 9 df	Not Significant and no change
Urban sector for Katcha structures	9.530	16.919 at 9 df	Not Significant and no change

7. Suggestions and Conclusions

It was observed from the rural and urban data the housing conditions of various states that there is no change in general while the urban sector for Semi-pucca structures of NSS 63rd round data shows change. The unchanges of housing conditions are due the following

1 Structures are not made by Pucca and Semi pucca materials in rural areas
2 Due to Poverty of rural areas are not interest to build Pucca and Semi pucca structures.
3 Awareness of the material used for constructions for Pucca structures at low cast is found very low
4 Due to the Katcha roads in rural area for pucca material are not used construction of Pucca structures.
5 Schemes of housing condition are not implemented properly in particular rural areas.

8. References

8.1 Census of India 2001 Ministry of Home Affairs government of india
8.2 Housing condition in India 2002 Report no 488/489 (58th Round NSS)
8.3 Household consumers expenditure and employment-unemployment situation in India , report no. 490 (59th Round NSS)
8.4 Household consumers expenditure in India report 505 (60th round NSS)
8.5 Household consumers expenditure in India report 523 (62nd round NSS)
8.6 Household consumers expenditure in India report 527 (63rd round NSS)

Household Consumer Expenditure

NSSO Sample Design: Allocation of FSUs and USUs with special reference to Consumer Expenditure Surveys of 63rd and 61st Rounds

By T. K. Saha & A. K. Verma

Introduction

The National Sample Survey Office (NSSO) has been conducting nationwide large scale sample surveys since its inception to fill gaps in socio-economic dataset of the country. The nature and dimension of the data gap, being a function of time, has been changing over the years. The Indian Statistical System is yet to evolve to satisfy the emerging regional aspirations. Not only has the demand for reliable estimates for smaller states assumed paramount importance, but the need for reliable estimates for sub-formations within different major states has gained substantial voice too. While everyone concerned has been looking to NSSO for a solution, the NSSO has been helplessly watching the situation presumably held back by manpower constraints from necessary sample coverage to the extent needed for regional level estimates. Against this background, one would like to re-examine the sample design presently followed by NSSO to explore the optimum utilization of resources available at the disposal of NSSO for field work.

The sample designs followed in of NSSO can be re-examined from various angles. In this paper, an attempt is made to determine the optimum number of FSUs and USUs. Secondly, an attempt is made to compare estimates obtained from different designs.

Methodology

In any household survey, NSSO adopts a multi-stage sampling method. In the first stage, sample villages/UFS blocks are selected as FSUs according to the sample design and, ultimately, households are selected from the selected FSUs with some stratification, if necessary, for obtaining detailed information. The time consumed for the field-work (resource utilization), therefore, has three components.

a) Journey and camp setting (if any)

b) Listing of households and selection of households

c) Canvassing of detail schedules

The time consumed in journey and camp setting (if any) and listing of households and selection of households in an FSU is independent of the time taken for detailed canvassing. Therefore, average time taken for canvassing a schedule in a household as a proportion of total time spent for the field-work in the FSU will decrease with increase in the number of sample households. Hence, the number of sample households in an FSU can be increased at diminishing cost. Therefore, a sampler may be tempted to increase the number of sample households in an FSU. However, this augmentation can be worthwhile only if the additional information emanating from the household is appreciable in the sense that uniform increase of one sample household for each FSU will result in appreciable decrease in the RSE of the estimate under consideration. If the increase gets justified on this count, RSEs can be reduced by increasing the number of households at diminishing additional cost. This way one can find the optimum number of sample households to be canvassed in an FSU. To make the exercise simpler, one may start with the minimum number of sample households and determine the optimum number of sample households by testing the worth of every additional sample household. After optimizing the number of sample households per FSU, augmentation of the sample in terms of additional FSUs can also be examined.

Study

For our present study, we choose Monthly Per Capita Expenditure (MPCE) based on the "mixed reference period"[1] as the parameter of concern. To examine the optimum USUs for the selected parameter, we may, for the present, revisit the sample designs followed by NSSO in its 61st and 63rd rounds for the

Consumer Expenditure Survey. In the 61st round, total (Central) sample size (FSUs) allocated at all-India level was 12788. Of this number, 12601 FSUs were actually surveyed. In every selected FSU, households listed in the FSU (or selected FSU segments) were stratified into three second-stage strata (SSS) on some criterion (see Annexure I for details). These strata were called SSS-1, SSS-2, and SSS-3. From FSUs where no hamlet groups / sub-blocks were formed, the numbers of households selected from SSS-1, SSS-2 and SSS-3 were 2, 4 and 4 respectively. In case of FSUs where hamlet groups / sub-blocks were formed, the numbers of households selected from SSS-1, SSS-2 and SSS-3 were 1, 2 and 2 respectively for each selected hamlet group / sub-block, making the total number of selected households 10. Against this background, we have to first examine if this allocation of USUs has been optimum. Without much loss of generality, we may examine this issue on the basis of the following datasets:

(A) 2- 4- 4 model dataset: Full dataset for 61st round Consumer Expenditure Survey,

(B) 2-2-2 model dataset: Truncated dataset for 61st round Consumer Expenditure Survey, truncated by dropping 50% sample households from SSS-2 and SSS-3 on some objective criterion such as dropping alternate sample households.

(C) 1-2-2 model dataset: Truncated dataset for 61st round Consumer Expenditure Survey, truncated on the basis of dropping of 50% sample households from SSS-1, SSS-2 and SSS-3 on some objective criterion such as dropping alternate sample households.

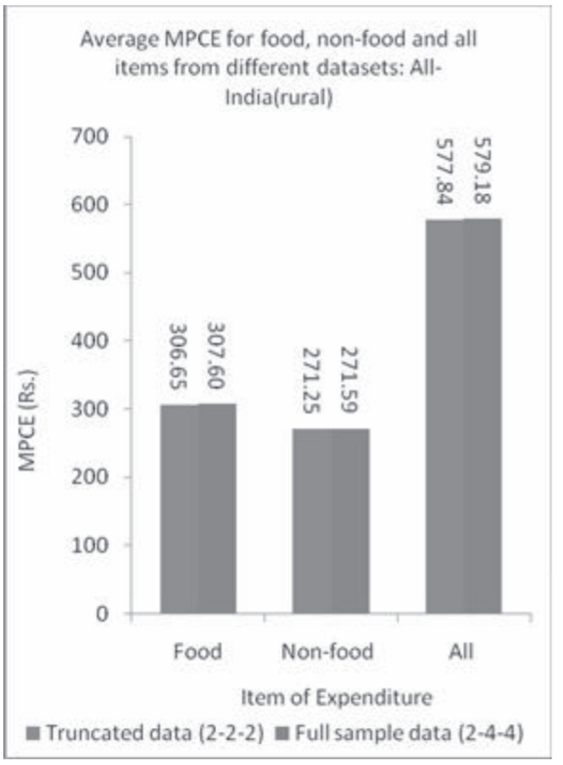
(D) 1-1-1 model dataset: Truncated dataset for 61st round Consumer Expenditure Survey, truncated by selecting one household from each of SSS-1, SSS-2 & SSS-3 on some objective criterion such as retaining first sample households and dropping of the remaining 7 sample households.

In view of time constraints, we shall restrict ourselves, in this paper, to comparing estimates obtained from the first two datasets, viz., 2-4-4 model dataset and 2-2-2 model dataset only. We propose to complete the study later.

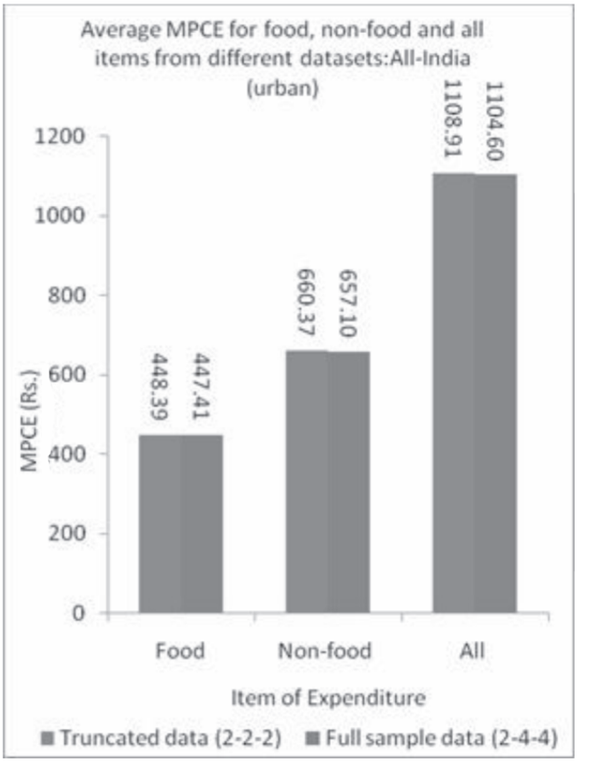
[1] That is, using 365 days data for those item categories for which such data are collected and 30 days data for other items.

All-India Estimates

For the 61st round we recomputed average MPCE (MRP) for food, non-food and all items from different datasets for all-India (rural) and all-India (urban) and the result is presented below in graphical form.



Graph 1



Graph 2

It can be seen from the above that there is hardly any difference in the average estimates of MPCE based on full sample data and truncated datasets of NSS 61st round, in both rural and urban areas. This is true for both food items and non-food items. The RSEs for these estimates based on the full and truncated datasets are also very close, as can be seen from the Table 1 below.

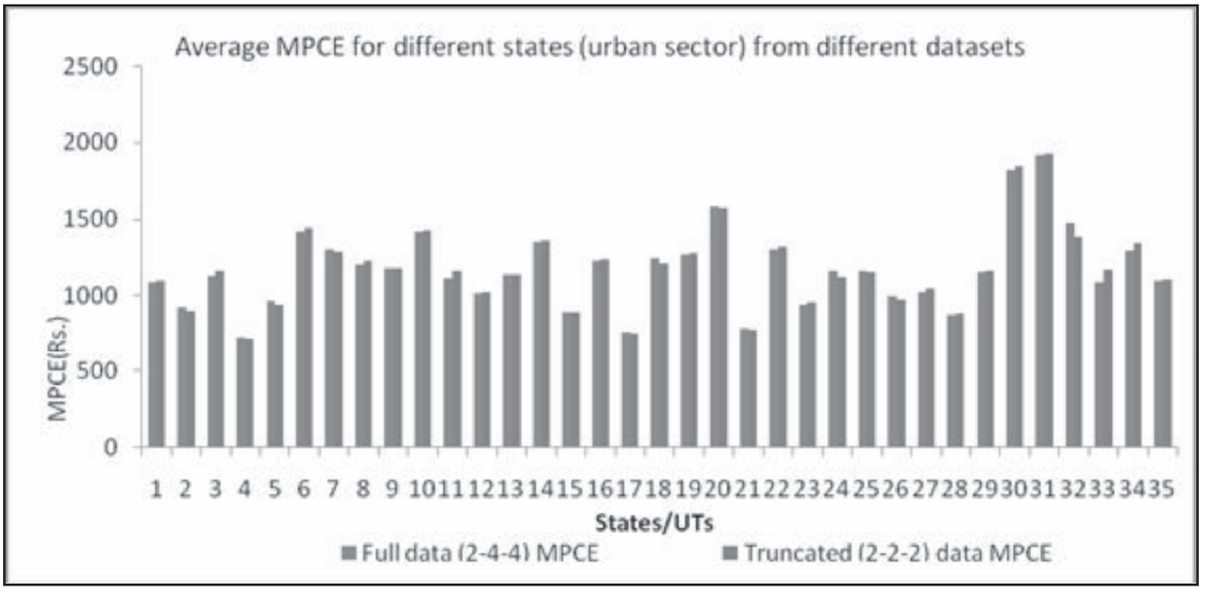
Table 1: Comparison of RSEs from different datasets

items	Based on NSS 61st round data			
	RSE (rural India)		RSE (urban India)	
	2-2-2 model	2-4-4 model	2-2-2 model	2-4-4 model
Food items	0.35	0.30	0.61	0.56
Non-food items	0.79	0.72	1.30	1.21
All items	0.51	0.48	1.01	0.95
Number of sample households	48025	79298	28107	45346

Therefore, as far as all-India estimates of MPCE (Food), MPCE (Non-food) and MPCE (All) are concerned, the 2-2-2 truncated model is as good as the 2-4-4 model. When we further analyze the MPCE estimates, MPCE classwise, we get the following results.

Table 2: MPCE(URP) classwise comparison of estimated MPCEs(MRP) based on 61st round full dataset and truncated datasets						
MPCE Class (based on URP)	Food		Non-food		all	
	2-2-2 model	2-4-4 model	2-2-2 model	2-4-4 model	2-2-2 model	2-4-4 model
RURAL INDIA						
0-235	135.96	136.58	88.84	88.52	224.83	225.11
235-270	169.05	170.45	114.35	113.89	283.40	284.36
270-320	196.61	196.81	131.85	131.15	328.53	328.00
320-365	222.04	221.81	154.95	155.13	376.97	376.93
365-410	248.41	248.10	177.20	177.12	425.62	425.24
410-455	270.48	271.93	200.45	197.70	470.94	469.66
455-510	295.74	296.67	221.31	224.08	517.14	520.78
510-580	324.39	326.57	258.30	259.34	582.72	585.92
580-690	364.29	365.74	307.38	306.71	671.56	672.44
690-890	419.86	417.97	397.64	396.63	817.20	814.51
890-1155	499.33	498.01	550.74	548.22	1049.69	1046.00
1155 & above	656.71	659.16	989.79	992.55	1646.25	1651.68
All	306.65	307.60	271.25	271.59	577.84	579.18
URBAN INDIA						
0-335	181.57	181.39	128.14	131.93	309.71	313.32
335-395	234.05	232.31	173.16	176.11	407.23	408.53
395-485	263.86	264.97	219.23	218.11	483.15	483.06
485-580	306.85	305.54	277.33	278.70	584.18	584.24
580-675	346.12	346.37	341.92	338.20	688.07	684.58
675-790	378.59	382.44	407.11	408.27	785.97	790.88
790-930	425.48	426.37	507.48	506.91	932.53	933.39
930-1100	472.04	472.72	632.81	626.72	1105.62	1100.17
1100-1380	547.27	544.96	784.38	795.85	1331.50	1340.76
1380-1880	641.14	640.52	1085.32	1091.70	1727.44	1732.86
1880-2540	765.85	768.49	1591.96	1595.98	2357.57	2364.24
2540 & above	1004.40	1003.99	2738.78	2732.15	3742.28	3734.96
All	448.39	447.41	660.37	657.10	1108.91	1104.60

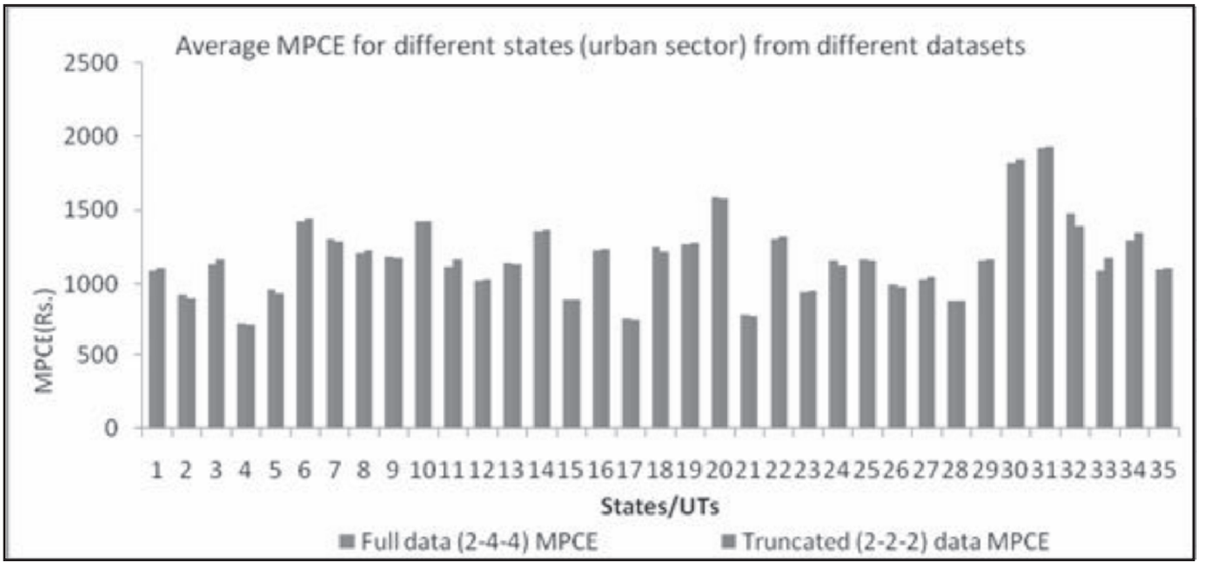
Clearly, in both the cases, there is hardly any difference in the two sets of estimates for each MPCE class. Now, let us examine the situation for state-level estimates of MPCE. The following chart shows the difference in rural areas of different states/UTs.



(Graph 3)

1 Andhra Pradesh; 2 Arunachal Pradesh; 3 Assam; 4 Bihar; 5 Chhattisgarh; 6 Delhi; 7 Goa; 8 Gujarat; 9 Haryana; 10 Himachal Pradesh; 11 Jammu & Kashmir; 12 Jharkhand; 13 Karnataka; 14 Kerala; 15 Madhya Pradesh; 16 Maharashtra; 17 Manipur; 18 Meghalaya; 19 Mizoram; 20 Nagaland; 21 Orissa; 22 Punjab; 23 Rajasthan; 24 Sikkim; 25 Tamil Nadu; 26 Tripura; 27 Uttaranchal; 28 Uttar Pradesh; 29 West Bengal; 30 Andaman & Nicobar Island; 31 Chandigarh; 32 Dadra & N. Haveli; 33 Daman & Diu; 34 Lakshadweep; 35 Pondicherry;

The difference in MPCE in case of 17 states/UTs (code: 1, 3, 4, 7, 8, 11, 12, 14, 15, 16, 17, 20, 21, 22, 25, 26, 28) is less than 1% and in case of 11 states/UTs (code: 2, 5, 9, 10, 18, 19, 23, 24, 27, 29, 33) it is between 1% and 2%. In case of two states/UTs, namely, Pondicherry and Delhi, it is more than 5%. In case of the urban sector, we have the following picture.



(Graph 4)

Here, the difference in MPCE in case of 17 states/UTs (code: 1, 9, 10, 12, 13, 14, 15, 16, 17, 19, 20, 22, 25, 28, 29, 31, 35) is less than 1% and in case of 8 states/UTs (code: 4, 6, 7, 8, 21, 23, 26, 30) it is between 1% and 2%. In case of two UTs, namely, Daman & Diu and Dadra & N. Haveli, it is more than 5%. In terms of RSE, the position can be seen from Tables 3R and 3U below.

Table 3 R: Comparison of RSEs of MPCE estimates for different States from different datasets for rural India

State	RSE		States	RSE		State	RSE	
	2-2-2 model	2-4-4 model		2-2-2 model	2-4-4 model		2-2-2 model	2-4-4 model
Andhra Pradesh	2.08	1.15	Karnataka	3.17	2.29	Tamil Nadu	3.28	1.73
Arunachal Pradesh	4.99	2.72	Kerala	3.70	1.94	Tripura	3.02	1.82
Assam	2.15	1.27	Madhya Pradesh	2.46	1.41	Uttaranchal	3.98	2.56
Bihar	1.67	0.87	Maharashtra	3.06	1.47	Uttar Pradesh	1.64	0.87
Chhattisgarh	3.77	2.05	Manipur	3.07	1.37	West Bengal	3.00	1.42
Delhi	19.31	15.32	Meghalaya	2.84	1.59	A & N Islands	14.38	6.84
Goa	10.32	6.60	Mizoram	3.52	2.29	Chandigarh	3.00	11.58
Gujarat	3.60	1.87	Nagaland	4.38	2.59	Dadra & N. Haveli	26.76	10.82
Haryana	12.50	10.10	Orissa	3.01	1.52	Daman & Diu	13.46	11.69
Himachal Pradesh	3.93	2.22	Punjab	3.99	1.73	Lakshadweep	18.80	15.46
Jammu & Kashmir	2.81	1.54	Rajasthan	2.12	1.18	Pondicherry	14.14	7.49
Jharkhand	2.35	1.40	Sikkim	5.57	3.29	All	0.51	0.48

Table 3 U: Comparison of RSEs of MPCE estimates for different States from different datasets for urban India

State	RSE		States	RSE		State	RSE	
	2-2-2 model	2-4-4 model		2-2-2 model	2-4-4 model		2-2-2 model	2-4-4 model
Andhra Pradesh	5.77	3.60	Karnataka	6.15	3.43	Tamil Nadu	4.00	2.38
Arunachal Pradesh	5.47	2.79	Kerala	6.16	3.90	Tripura	8.17	4.92
Assam	11.67	5.60	Madhya Pradesh	7.65	5.27	Uttaranchal	8.79	4.39
Bihar	10.35	6.04	Maharashtra	3.50	2.12	Uttar Pradesh	6.98	4.67
Chhattisgarh	10.47	7.26	Manipur	2.25	1.73	West Bengal	6.09	3.51
Delhi	8.36	4.47	Meghalaya	6.85	2.75	A & N Islands	14.01	7.54
Goa	18.42	10.85	Mizoram	3.61	1.97	Chandigarh	12.76	7.38
Gujarat	5.69	3.39	Nagaland	6.49	3.68	Dadra & N. Haveli	11.50	9.19
Haryana	7.14	4.72	Orissa	9.83	5.23	Daman & Diu	7.18	7.69
Himachal Pradesh	14.85	7.34	Punjab	5.81	3.95	Lakshadweep	14.10	5.75
Jammu & Kashmir	3.89	1.88	Rajasthan	7.64	4.93	Pondicherry	8.05	5.10
Jharkhand	11.12	5.12	Sikkim	8.22	5.17	All	1.01	0.95

Although there are slight changes in the RSEs, the change in case of rural India is in almost all cases within manageable limits in the sense that the number of states falling where RSE crosses 5% remains almost unchanged. The situation in urban India is also not bad. The change in RSEs in 29 cases (States/UTs) is within 5% point. In case of other states/UTs, it is within 5% - 9%. Here, it may be noted that the additional resources being freed due to truncation can be partly used for improving the situation in each state/UTs by increasing the number of FSUs in different states/UTs, according to the need.

Does the result hold good even when the reference period is changed from MRP to URP?
In the 61st round household consumer expenditure survey, information for some items was collected for both 30 days and 365 days reference periods and for some other items for 30 days reference period only, as detailed below:

Table 4: Reference period used for different items in 61st round		
Group	Item	Reference Period
1	All Food, Pan, Tobacco & Intoxicant; Fuel & Light; Misc. Goods & Services incl. Non-Institutional Medical; Rents & Taxes	Last 30 days
2.	Clothing, Bedding, Footwear, Education, Medical: Institutional, Durable Goods.	Both Last 30 days And Last 365 days

When the reference period used for calculation of MPCE is 'Last 30 days' for both Group 1 & Group 2 items, the MPCE is termed Uniform Reference Period (URP)/MPCE. On the other hand, when the reference period used is 'Last 30 days' for Group 1 & 'Last 365 days' for Group 2 items, the MPCE obtained is termed Mixed Reference Period (MRP)/MPCE. So far we have discussed MPCEs based on MRP only.

RSEs of average MPCE, for different MPCE classes, separately for food items, non-food items and all items, based on the truncated datasets for two types of measurement (URP and MRP) are given in the Tables 5R & 5U. It can be seen that RSEs(URP) and RSEs(MRP) of per capita expenditure on food, non-food and all items for different MPCE classes do not differ significantly. As a result there is not much difference in the RSEs for the overall average estimates of MPCE.

Table 5R: RSEs of estimated average MPCE based on truncated (2-2-2) dataset using URP and MRP at all-India level (Rural India)						
MPCE Class(Rs.)	Food		Non-food		All	
	URP	MRP	URP	MRP	URP	MRP
0-235	0.92	0.92	1.30	1.25	0.66	0.74
235-270	0.58	0.58	1.16	1.07	0.15	0.34
270-320	0.37	0.37	0.74	0.68	0.13	0.32
320-365	0.40	0.40	0.68	0.73	0.10	0.29
365-410	0.38	0.38	0.66	0.75	0.09	0.36
410-455	0.39	0.39	0.65	0.77	0.08	0.33
455-510	0.40	0.40	0.64	0.67	0.08	0.33
510-580	0.42	0.42	0.62	0.81	0.08	0.38
580-690	0.45	0.45	0.63	0.74	0.11	0.42
690-890	0.51	0.51	0.62	1.21	0.14	0.62
890-1155	0.72	0.72	0.75	0.89	0.20	0.67
1155 & above	1.42	1.42	3.44	3.19	2.46	2.08
All	0.35	0.35	1.22	0.79	0.67	0.51
No. of sample households	47993	47993	48009	48014	48013	48015

Table 5U: RSEs of estimated average MPCE based on truncated (2-2-2) dataset using URP and MRP at all-India level (Urban India)						
MPCE Class(Rs.)	Food		Non-food		All	
	URP	MRP	URP	MRP	URP	MRP
0-335	0.91	0.91	1.45	1.47	0.77	0.83
335-395	1.04	1.04	1.64	1.58	0.24	0.50
395-485	0.60	0.60	0.84	0.98	0.20	0.47
485-580	0.75	0.75	0.98	1.17	0.27	0.60
580-675	0.66	0.66	0.84	1.06	0.17	0.77
675-790	0.72	0.72	0.82	1.28	0.16	0.72
790-930	0.64	0.64	0.65	1.17	0.17	0.68
930-1100	0.88	0.88	0.83	1.19	0.20	0.67
1100-1380	0.86	0.86	0.80	1.03	0.24	0.72
1380-1880	0.78	0.78	0.60	1.10	0.32	0.93
1880-2540	1.39	1.39	0.68	2.06	0.52	1.98
2540 & above	1.96	1.96	4.04	2.71	3.00	2.17
All	0.61	0.61	2.07	1.30	1.36	1.01
No. of sample households	28083	28083	28102	28105	28107	28107

As the difference between the two sets of RSEs is negligible, the results derived for MRP are applicable for URP too. It will not be out of order to recall that NSSO has been asked by experts to use a modification of MRP instead of URP.

The addition in number of households from 2-2-2 model to 2-4-4 model, i.e., from 6 households to 10 households, for collection of consumer expenditure survey data in quinquennial rounds does not produce an appreciable reduction in RSEs of average MPCE for the country as a whole or for the States. It may be noted that the difference between the two modules is a matter of about 50,000 sample households for sch. 1.0. These additional resources can be more usefully diverted to covering more FSUs in the smaller States, especially the North-Eastern States, which will help in controlling first-stage variance. In other words, increase in number of FSUs will help in reducing the RSEs even under the 2-2-2 model.

What happens when there is change in design?

The NSS design for the 63rd round was different from the one adopted for the 61st round. While the 61st round was focused on the consumer expenditure and employment-unemployment surveys, the 63rd round was focused on the enterprise survey. Therefore, the criterion for selection of FSUs in the two rounds was different. In the 61st round both the allocation and the selection of FSUs were based on population size. In the 63rd round both allocation and selection of FSUs were based on number of workers in the service sector enterprises as per EC '98. In urban areas, a mixed approach was adopted. Moreover, in this case only four households were selected for detailed canvassing. But in rural area, six households were selected for detailed canvassing. On comparing the two designs, one can observe that RSEs of the 61st round truncated rural dataset (2-2-2 module) and the full 63rd round rural data can be compared (please see Annexure-I for details). The following table provides the estimates along with their RSEs at all India level.

Table 6: Comparison of MPCE (MRP) estimates and RSEs from two sets of data for rural areas				
Item	Based on NSS 61st round data (2004-05)		Based on NSS 63rd round data (2006-07)	
	truncated data (2-2-2)		full sample data (2-2-2)	
	Average MPCE (Rs.)	RSE	Average MPCE (Rs.)	RSE
Food items	306.65	0.35	363.42	1.75
Non-food items	271.25	0.79	331.75	1.92
All items	577.84	0.51	695.16	1.76
Number of sample households	48025		42473	

Here, the 61st round truncated dataset gives lower RSEs in each case. The difference gets more pronounced when we compare RSEs of MPCE estimates obtained from the two datasets (Table 7) for different MPCE classes (classes determined on the basis of the full 61st round dataset). Similarly, for different major states, the RSEs obtained from 63rd round data set(Table 8) being more frequently outside 5% point, are less preferable than the one obtained from other data sets. The higher RSEs attached with 63rd round estimates show that there is no point in conducting a survey on a subject which is given little importance by the survey design.

Table 7: MPCE (MRP) class wise comparison of **RSE** of **MPCEs** based on 61st round truncated dataset and 63rd round data for **RURAL INDIA**						
MPCE Class (Rs.)	61st round(2004-05)			63rd round(2006-07)		
	Truncated (2-2-2) data			Full (2-2-2) data		
	Food	N-food	Total	Food	N-food	Total
0-235	0.92	1.25	0.74	4.42	13.09	6.39
235-270	0.58	1.07	0.34	2.67	6.93	3.14
270-320	0.37	0.68	0.32	3.27	2.93	2.70
320-365	0.40	0.73	0.29	2.23	2.96	2.18
365-410	0.38	0.75	0.36	8.51	2.69	6.09
410-455	0.39	0.77	0.33	2.70	2.29	1.89
455-510	0.40	0.67	0.33	2.25	2.25	2.08
510-580	0.42	0.81	0.38	4.10	4.05	4.02
580-690	0.45	0.74	0.42	1.55	1.59	1.45
690-890	0.51	1.21	0.62	1.33	1.33	1.13
890-1155	0.72	0.89	0.67	2.42	2.28	2.19
1155 & above	1.42	3.19	2.08	1.53	2.38	1.59
All	0.35	0.79	0.51	1.75	1.92	1.76

Table 8: Comparison of estimated average MPCE (MRP) and RSE of MPCE based on three sets of data in Rural areas of different major States						
State	61st round(2004-05)				63rd round(2006-07)	
	Full data (2-4-4)		Truncated (2-2-2) data		Full data	
	MPCE (Rs.)	RSE	MPCE (Rs.)	RSE	MPCE (Rs.)	RSE
Andhra Pradesh	603.94	1.15	608.33	2.08	727.14	10.35
Assam	576.71	1.27	578.16	2.15	721.37	9.00
Bihar	444.98	0.87	444.11	1.67	541.33	2.56
Chhattisgarh	444.88	2.05	440.14	3.77	528.31	5.43
Gujarat	644.87	1.87	645.86	3.60	796.58	2.95
Haryana	905.19	10.10	890. 05	12.50	1012.73	6.25
Jharkhand	439.28	1.40	435.64	2.35	553.02	6.33
Karnataka	542.91	2.29	530.09	3.17	624.27	2.99
Kerala	1030.96	1.94	1034.11	3.70	1250.35	2.09
Madhya Pradesh	461.07	1.41	461.76	2.46	514.93	11.02
Maharashtra	596.66	1.47	595.72	3.06	776 .09	3.58
Orissa	422.06	1.52	418.89	3.01	458.56	3.61
Punjab	905.26	1.73	905.12	3.99	1198.13	5.19
Rajasthan	598.20	1.18	591.94	2.12	767.39	3.27
Tamil Nadu	601.63	1.73	604.86	3.28	728.00	2.16
Uttar Pradesh	539.29	0.87	536.55	1.64	653.18	2.50
West Bengal	575.65	1.42	583.45	3.00	629.86	1.97
All India	579.18	0.48	577.84	0.51	695.16	1.76
Number of sample households	79298		48015		42473	

Conclusion

Even from the limited datasets used, it can be safely concluded that the design for multi-subject surveys needs reconsideration at least at the stage of allocation of FSUs and selection of FSUs. Using FSUs selected with focus on the principal subject, say, enterprises, for estimates relating to the secondary subject, say, consumer expenditure, may be detrimental to the secondary subject. Once we have a suitable design for surveys like consumer expenditure, we may optimize resource utilization by optimizing the USU sample size as discussed above. There exists ample scope for redistributing the resources from USUs to FSUs. In Part II of our study, we propose to use four datasets, viz., 1-1-1 module, 1-2-2 module, 2-2-2 module and 2-4-4 module described above. We also propose to examine the above issues using simulation techniques on datasets of the 61st as well as the 66th round.

Sample Designs of 61st and 63rd Rounds for Consumer Expenditure Survey

61st round

FSUs were selected with PPSWR, size being the population as per Population Census 2001 from each sub-stratum of a district of rural sector. In urban sector FSUs were selected by using SRSWOR. Large FSUs (population more than 1200) were divided into a suitable number of hamlet-groups /sub-blocks and two hamlet-groups /sub-blocks were selected by SRSWOR. Listing and selection of households was done independently in the two selected hamlet-groups (hgs) /sub-blocks (sbs).

Households listed in the selected village /block/hg/sb were further stratified into three second stage strata (SSS) as noted below:

The three SSSs formed in the selected village/hamlet-group were :

SSS-1: relatively affluent households

SSS-2: from the remaining households, households having principal earning from non agricultural activity

SSS-3: other households.

In the case of urban blocks or sub-blocks the SSSs were formed based on two monthly per capita expenditure (MPCE) values 'A' (such that top 10 percent of households were estimated to have MPCE more than A in the …….. round survey) and 'B' (such that bottom 30 percent households were estimated to have MPCE less than B in the ……. Round survey) :

SSS- 1 : households with MPCE more than A

SSS- 2 : households with MPCE ≤ A but ≥ B

SSS- 3 : households with MPCE less than B.

The numbers of households surveyed from different SSSs in each FSU were as follows:

SSS	number of households surveyed	
	without hg/sb formationin each hg/sb, when hg/sb formed	
SSS-1	2	1
SSS-2	4	2
SSS-3	4	2

63rd round

In the rural sector FSUs were selected by PPSWR procedure with 'other workers' (i.e., total workers-household industry workers-agriculture labourers-cultivators) as per Census 2001 as size. In the urban sector, for the 27 million-plus cities, FSUs were selected by PPSWR with number of workers available in Economic Census 1998 data as size, and for other cities/towns FSUs were selected by SRSWOR.

As usual, large FSUs were divided into a number of hg's/sb's depending on number of non-agricultural enterprises (more than 1200 population or more than 120 non-agricultural enterprises). The concept of segment 9 dual criteria of population and with all big enterprises (having more than 50 workers) was also introduced in this round.

In each selected village /segment, three second stage strata (SSS) namely SSS-1, SSS-2 & SSS-3 were formed. Households with any member who had worked for at least one day in any public works scheme of the Government during last 365 days constituted SSS-1. Out of the remaining households SSS-2 and SSS-3 were formed on the basis of land possessed by the household. The household consumption expenditure schedule was canvassed in 6 rural households. Composition of the SSSs, and allocation of sample households to them were as follows :

SSS	Composition of SSS	Number of households surveyed from	
		Small village	Large village (in each hg/sb)
SSS-1	Households with at least one member who worked for at least one day in any public works scheme during last 365 days	2	1
SSS-2	Of the remaining households, households with land possessed <X	2	1
SSS-3	Other households	2	1

A cut-off point "X" (in hectares) was determined at State/UT level from NSS 59th round data in such a way that top 20% households were estimated in that round to possess land equal to or more than X. Of the households not belonging to SSS-1, all the listed households possessing land less than X were placed in SSS-2 and the rest of the households in SSS-3.

In each selected urban block only two second stage strata called SSS-2 & SSS-3, were formed on the basis of household MPCE. A cut-off point 'A' (in Rs.) was determined at NSS state-region level from 61st round data in such a way that top 20% households in that round were estimated to have MPCE equal to or more than A. All the listed households with MPCE less than A were placed in SSS-2 while rest of the households in SSS-3. Only 4 households, 2 from each of SSS-2 and SSS-3, were surveyed in the urban sector.

On the Nature of Expenditure on Durable Goods

Gopa Chattopadhyay and Prabir Chaudhury[1]

ABSTRACT

Durable goods are typically more expensive than other reusable goods, and value of durable goods acquired during a period has its uses as an indicator of the economic well-being of a population. A problem with the NSS estimates of expenditure on durable goods or of any sub-category of such goods is that they include expenditure on repairs and maintenance of the goods in question. While repairs and maintenance are no doubt a necessary component of expenditure for a wide range of goods, a preponderance of such expenses in the per capita expenditure on durables, especially among poorer households, would indicate that the estimate of expenditure on durables is not as good a yardstick to judge affluence as it would otherwise be. This paper shows, using 63rd round consumer expenditure data, that the share of repairs and maintenance (and materials for construction) in estimated expenditure on durables is quite sizeable and increases as MPCE level falls. The paper also examines the break-up of expenditure on durable goods for different economic strata of the population, providing interesting insights into the nature of durables expenditure of the poor and the rich.

[1] Deputy Director-General, NSSO (DPD), and Deputy Director-General, NSSO (SDRD) respectively. The views expressed in this paper are those of the authors and not of the organizations to which they belong.

The problem

By their very definition, the "durable goods" of the NSS consumer expenditure schedule are outside the category of what may be called the basic necessities. The durable goods are, moreover, typically more expensive than other reusable goods. Use of durable goods and, hence, share of expenditure on durable goods in total consumer expenditure by any population may therefore be (and usually are) thought of as providing some indication of its material progress.

Usually, NSS reports provide all-India and State-level estimates of per capita rural and urban expenditure on durable goods as a whole, with no item break-up except for the quinquennial rounds.

A problem with the estimates of expenditure on durable goods is that they include expenditure on repair and maintenance[2] of these goods. Separate estimates of this component of expenditure are not generated by NSS, except for "residential land and building (cost of repairs only)", which is traditionally a separate item, and unlike other items of durables expenditure, has no purchase component. Separating out the repair and maintenance (R&M) component would, arguably, sharpen the estimate of durable goods expenditure as an indicator of material progress.

In this paper, we investigate, using 63rd round data, how much of expenditure on durable goods as estimated by NSS is, in fact, expenditure on repair and maintenance (R&M) of durable goods, and find that this is quite substantial and, perhaps, not in tune with what one might commonly expect. We work out the R&M component separately for different categories of durable goods, along with per capita expenditure on each category. We see that expenditure on R&M is not spread diffusely over the entire spectrum of durable goods but is largely concentrated among a handful of items. We show, further, that the share of R&M in durables expenditure as a whole rises steadily as MPCE falls, exceeds 70% for the bottom 65% of the rural population of India, and is around 60% for the bottom 35% of the urban population.

Data

The durable goods block of Sch.1.0 in the 63rd round had 52 elementary items and 10 sub-total items. For each elementary item, expenditure on first-hand purchase, second-hand purchase, and R&M during the last 365 days were recorded in separate columns. Apart from this, MPCE (MRP) of the household and household size were recorded in the household characteristics block. The findings presented here are based on these data.

Data on durables expenditure from NSS reports

From Table 1 we can see that (i) expenditure on durable goods forms a little under 4% of consumer expenditure in rural India and a little over 4% in urban India, and (ii) the percentage of households incurring any expenditure on durables in a 1-year period is usually around 80%, shows a slight increasing trend, and is a little higher in the rural sector than in the urban. The last fact may seem a little surprising, but will become clearer as we proceed.

[2] And raw materials used for construction of durable goods by households for their own use. Since such construction is relatively rare, however, we refer in this paper to "repair and maintenance" rather than "repair, maintenance and construction".

Table 1: Profile of expenditure on durable goods, all-India, 60th to 63rd round of NSS

round	monthly per capita expenditure on durable goods (Rs.)		% share of expenditure on durable goods in MPCE		% of households reporting expenditure on durable goods in last 365 days	
	R	U	R	U	R	U
60	19.99	47.01	3.4	4.3	80.7	77.4
61	21.74	47.17	3.8	4.3	79.3	76.6
62	21.95	46.83	3.5	4.0	81.7	78.6
63	26.18	59.21	3.8	4.5	84.4	81.8

Source: NSS Report Nos. 505, 508, 523, 527 (Reference period of 365 days used for estimates of durables expenditure, and Mixed Reference Period (MRP) estimates used for MPCE for the 61st round). Mean of estimates from Sch.Type 1 and Sch.Type 2 used for 60th round.

Break-up of expenditure on durable goods by item was last tabulated for the 61st round (365 days data). The all-India break-up by broad category of durables is shown below.

Table 2: Expenditure on durable goods by category of durables, all-India, 2004-05

category of durable goods	monthly per capita exp. (Rs.)		% of total exp. on durable goods	
	R	U	R	U
1. residential building, land & other durables	7.65	10.45	35.2	22.1
2. personal transport equipment	5.70	16.93	26.2	35.8
3. jewellery & ornaments	3.75	6.30	17.3	13.3
4. crockery & utensils	1.20	1.51	5.5	3.2
5. other personal goods	0.29	2.60	1.3	5.5
6. goods for recreation	1.20	4.08	5.5	8.6
7. furniture & fixtures	1.27	2.42	5.8	5.1
8. cooking & other hh appliances	0.66	2.94	3.0	6.2
9. therapeutic equipment	0.01	0.03	0.0	0.1
10. all durable goods	**21.73**	**47.17**	**100.0**	**100.0**

Source: NSS Report No. 509 (Reference period of 365 days used for estimates of durables expenditure, and Mixed Reference Period (MRP) estimates used for MPCE for the 61st round).

Size of the R&M component

Now, from 63rd round data, all-India per capita expenditure on the 9 broad categories of durable goods and the share of R&M are found to be as shown in Table 3 below.

Table 3: Expenditure on durable goods by category of durables, and share of R&M, all-India, 2006-07 (NSS 63rd round)

category of durable goods	monthly per capita exp. (Rs.)		% of total exp. on durable goods		share of R&M (%)	
	R	U	R	U	R	U
1. residential building, land & other durables	8.25	10.32	31.5	17.4	98.1	96.9
2. personal transport equipment	7.50	19.57	28.6	33.1	32.6	35.2
3. jewellery & ornaments	5.07	9.28	19.4	15.7	2.3	1.4
4. crockery & utensils	1.40	1.73	5.3	2.9	1.3	0.8
5. other personal goods	1.31	6.71	5.0	11.3	5.7	5.2
6. goods for recreation	1.06	4.44	4.0	7.5	12.4	6.3
7. furniture & fixtures	0.90	4.28	3.4	7.2	16.9	4.4
8. cooking & other hh appliances	0.66	2.83	2.5	4.8	25.3	28.7
9. therapeutic equipment	0.03	0.06	0.1	0.1	10.6	8.1
10. all durable goods	**26.18**	**59.21**	**100.0**	**100.0**	**42.8**	**31.5**

While the pattern of spending on durable goods is similar to that in the 61st round, the share of R&M is quite startlingly high. This is no doubt to a great extent due to the large share of repair of land and building in total expenditure on durables: unlike other items, there is no purchase component of expenditure for this item. But the fact remains that the NSS estimate of expenditure on durable goods, as usually published, contains a very large R&M component which, if separated out, could give a different idea of the level and pattern of durables expenditure than what the current estimates from, say, the 61st round, gives us.

Separating out the R&M component from the estimates

In Table 4, the percentage break-up of estimated all-India durables goods expenditure from 63rd round data excluding the R&M component in other words, expenditure on purchase of durable goods only is shown alongside the percentage break-up for total durables goods expenditure including R&M.

- The share of "jewellery and ornaments" shows a pronounced increase due to the exclusion of R&M, especially in the rural sector, where the increase is of the order of 70% (from 19.4% to 33.0%), but also in the urban, where it increases by about 44% (from 15.7% to 22.6%).
- While the shares of all other categories of durable goods increase at the expense of "residential building, land & other durables" due to exclusion of R&M, there in one exception in the urban sector, namely, "personal transport equipment". For this category, the R&M component was seen in Table 3 to be 35.2% for the urban sector, the highest share of R&M shown by any of the categories 2-10 for any sector. Table 4 shows that the share of personal transport equipment in expenditure on durables goes down (from 33.1% to 31.3%), not up, when R&M is excluded.

Table 4: Percentage break-up of (a) total expenditure on durable goods, and (b) total expenditure on purchase of durable goods, by category of durables, all-India, 2006-07

category of durable goods	Rural		Urban	
	% share in total exp. on durables	% share in exp. on durables *purchase*	% share in total exp. on durables	% share in exp. on durables *purchase*
1. residential building, land & other durables	31.5	1.1	17.4	0.8
2. personal transport equipment	28.6	33.7	33.1	31.3
3. jewellery & ornaments	19.4	33.0	15.7	22.6
4. crockery & utensils	5.3	9.2	2.9	4.2
5. other personal goods	5.0	8.2	11.3	15.7
6. goods for recreation	4.0	6.2	7.5	10.3
7. furniture & fixtures	3.4	5.0	7.2	10.1
8. cooking & other hh appliances	2.5	3.3	4.8	5.0
9. therapeutic equipment	0.1	0.2	0.1	0.1
10. all durable goods	**100.0**	**100.0**	**100.0**	**100.0**

Important segments of R&M expenditure

Table 3 showed that durable goods expenditure as a whole is largely concentrated in a few of the categories used for data collection in the schedule of enquiry, especially for the rural sector. Table 5 reveals that expenditure on R&M of durable goods is concentrated among a very small number of elementary items of Sch.1.0. Thus, of the 42.8% share of R&M in durables expenditure in rural India, 38.3 percentage points (that is, more than 89%) are accounted by just three items: "residential land and building", "bicycle", and "motorcycle, scooter". In urban India, of the 31.5% share of R&M in durables expenditure, 27.4 percentage points (that is, about 87%) are accounted by the above three items and the item "motor car, jeep". Repair and maintenance of residential land and building forms 30% of total durables expenditure in the rural sector and 16% in the urban sector.

Table 5: Per capita expenditure on durables goods as estimated by the 63rd round survey (2006-07) and its percentage break-up into purchase and R&M, and break-up of the R&M component over important elementary items of durables, all-India

Sector	monthly per capita exp. on durable goods (Rs.)	% to total expenditure on durable goods							
		cost of repair & maintenance of						purchase of durable goods	all
		residential land and building (642)	bicycle (610)	motor-cycle, scooter (611)	motor car, jeep (612)	other durables	all durables		
R	**26.18**	30.2	4.1	4.0	0.9	3.6	**42.8**	**57.2**	100.0
U	**59.21**	16.0	1.7	6.0	3.7	4.1	**31.5**	**68.5**	100.0

Figures in parentheses indicate the item code used in Sch.1.0, 63rd round, for the relevant item.

R&M expenditure across MPCE classes

An aspect not touched upon so far is the variation in the R&M component across expenditure classes of the population. If we tabulate the share of R&M separately for each of the 12 MPCE classes used by the NSS 63rd round report (Report No.527), we get the following picture.

Table 6: Share of R&M across MPCE classes, all-India, 2006-07

Rural		Urban	
MPCE class (Rs.)	% of R&M in durable goods expenditure	MPCE class (Rs.)	% of R&M in durable goods expenditure
0 – 235	87.6	0 – 335	80.8
235 – 270	81.7	335 – 395	79.8
270 – 320	80.6	395 – 485	67.9
320 – 365	79.8	485 – 580	66.9
365 – 410	76.4	580 – 675	57.4
410 – 455	75.3	675 – 790	55.1
455 – 510	70.0	790 – 930	52.7
510 – 580	67.8	930 – 1100	53.0
580 – 690	70.7	1100 – 1380	44.9
690 – 890	57.7	1380 – 1880	36.5
890 – 1155	36.6	1880 – 2540	37.9
1155 & more	27.5	2540 & more	22.5
all classes	**42.8**	**all classes**	**31.5**

The share of R&M is seen to decline more or less steadily with rise in MPCE level. This indicates that engel elasticity of durables as a whole would work out to be higher if the R&M component were netted out.

However, the table is a little deceptive as it does not mention that the shares of population in the lower MPCE classes are much lower than those in the upper MPCE classes. A better division of the population into lower, middle and upper layers is obtained by clubbing the bottom 6 MPCE classes in each sector into a single layer, the next three into a middle layer, and the top three into a third.

Table 7, which works out the estimates of Table 5 separately for the three layers of the population formed as explained above, gives interesting insights into the composition of durables expenditure across MPCE levels.

- Only 22% of durables expenditure (that is, less than Rs.1.40 per month) of the bottom 29% of the rural population ranked by household MPCE is on purchases of durables. The share of repairs and maintenance of residential land and building in total durables expenditure for this stratum is as high as 62%. The remaining R&M expenditure of this stratum consists largely of bicycle R&M.
- For the next 36% of the rural population, the share of purchases is about 8% more, and the share of repair and maintenance of residential land and building about 8% less, than the bottom 29%. For the top 35% of the rural population, the share of purchases of durables is about 66%, the share of residential land and building (R&M) only 22%, and the share of motorcycle and scooter R&M close to 5%.
- The lowest 35% of the urban population spends about the same amount (38-39% of total durables expenditure) on purchases of durables as on repairs and maintenance of residential land and building. The share of bicycle R&M for this population group is close to that spent by the bottom 29% of the rural population. However, the share of motorcycle/scooter R&M is much higher (4-5%). The share of the latter item (611) more than doubles (from 4.5% to 11.1%) as one moves from the lowest urban stratum to the middle stratum, but falls again in the upper stratum, where the share of motor car R&M rises to 4.5%.

Table 7: Per capita expenditure on durables goods and its percentage break-up into purchase and R&M, and break-up of the R&M component over important elementary items of durables, separately for three divisions of the population by MPCE in each sector, all-India, 2006-07

sector	MPCE level	% of popn.	monthly per capita exp. on durable goods (Rs.)	% to total expenditure on durable goods							
				cost of repair & maintenance of						purchase of durable goods	all
				residential land and building (642)	bicycle (610)	motorcycle, scooter (611)	motor car, jeep (612)	other durables	all durables		
R	lower	29.1	**6.22**	62.1	10.9	0.4	0.0	4.3	**77.7**	**22.3**	100
	middle	35.8	**12.44**	54.4	9.2	2.1	0.1	4.0	**69.7**	**30.3**	100
	upper	35.1	**56.76**	21.9	2.4	4.8	1.1	3.4	**33.6**	**66.4**	100
U	lower	34.9	**8.51**	37.9	10.4	4.5	0.2	7.5	**60.5**	**39.5**	100
	middle	35.2	**22.06**	25.2	5.3	11.1	0.3	7.1	**49.0**	**51.0**	100
	upper	29.9	**162.06**	13.2	0.6	5.2	4.5	3.4	**26.9**	**73.1**	100

Figures in parentheses indicate the item code used in Sch.1.0, 63rd round, for the relevant item.

Summary

1. One normally looks at estimates of expenditure on durables across regions and population groups as providing some indication of the material progress of the relevant populations. But the large share of repair and maintenance (R&M) in expenditure on durables 42.8% in rural India and 31.5% in urban India suggests that this component should be separated out from estimates of durables expenditure in the break-up of MPCE published in NSS reports to make the estimates easier to interpret.

2. In studying NSS estimates of per capita expenditure on durables, it is important to remember that repair and maintenance of residential land and building forms 30% of total durables expenditure in the rural sector and 16% in the urban sector. For the bottom 65% of the rural population, over half of expenditure on durables consists of repair and maintenance of residential land and building.

3. When durables expenditure is considered net of its R&M component, the share of jewellery and ornaments jumps from 19% to 33% in rural India and from 16% to 23% in urban India. On the other hand, the share of personal transport equipment (which commands the largest share in respect of durables purchase among the different categories of durables over 30% in both sectors) does not change dramatically.

4. Expenditure on R&M of durables is concentrated among a very small number of items of the consumer expenditure schedule. In rural India, 89% of such expenditure is accounted by just three items: "residential land and building", "bicycle", and "motorcycle, scooter". In urban India, 87% of the expenditure is accounted by these three items plus "motor car, jeep".

5. The share of R&M in durables expenditure falls steadily with rise in MPCE, indicating that engel elasticity of durables as a whole would work out to be higher if the R&M component were netted out.

Well being in India: Disparity and Surprises across Districts

By Raju Bhinge, Chief Executive; Harsha Kapoor, Practice Head- Analytics Solutions; Sachin Somaiya and Rituparna Dasgupta, Tata Strategic Management Group

[Abstract: The issue of income versus well being has been highlighted by Prof Stiglitz and others. Well being, in the Indian context needs to consider a range of indicators representing material and social factors. Computing a well being index for India by district reveals wide disparities even in the same state. Even more surprising diversity amongst districts is revealed by a female security index. All organizations Government bodies, NGOs and businesses need to look at relevant indicators at the district level for effective action planning and results.]

Well being index (WBI) for India

There is an ongoing debate on whether per capita income adequately reflects the quality of life and well being of a person or society. Eminent economists like Joseph Stiglitz and Amartya Sen have suggested the use of a broader indicator covering monetary, social and well ness dimensions.

In applying this approach in the Indian context, it is clear that such an indicator will have to include ownership of basic amenities as well as access to quality of life factors like hygiene, education and healthcare. Moreover, given the disparities across the country, it is essential to look at a smaller geographical unit say, a district, instead of a typical state.

A well being index has been created for India using eight key categories (*defined in Table 1*) that broadly cover all aspects of well being. The categories are:

(1) Home amenities, (2) Kitchen facilities, (3) Education, (4) Hygiene, (5) Entertainment, (6) Communication, (7) Transportation and (8) Healthcare

Table 1: Definitions of Categories comprising the well being index for India

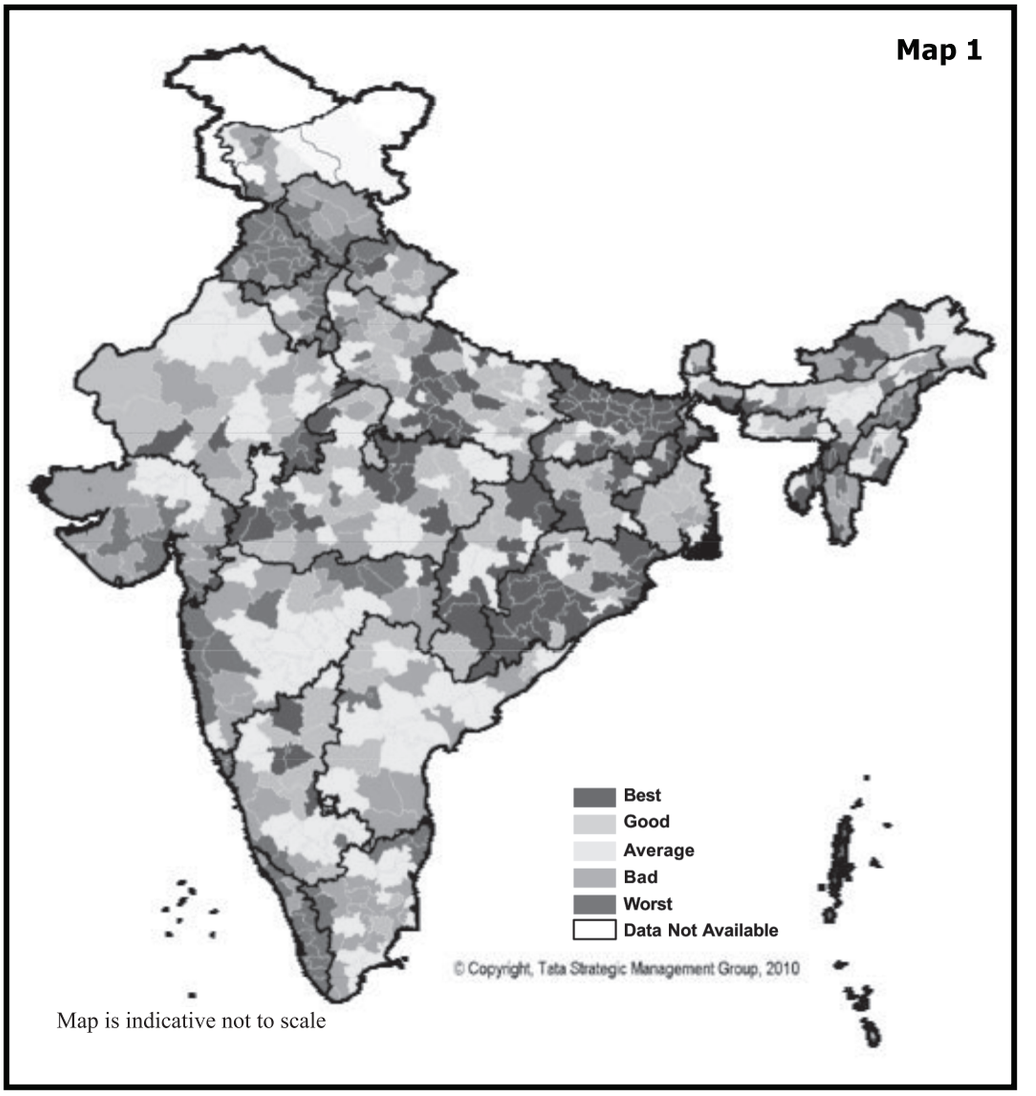
Element	Description
Home	Type of home (pucca / katcha), primary source of energy for lighting, electricity
amenities	units consumed, expense on domestic servant /cook and LPG, ownership of air conditioner / cooler
Kitchen	Primary source of energy for cooking & ownership of appliances/white goods like
facilities	stove, pressure cooker & refrigerator
Education	Expense on education & literacy rate
Hygiene	Expense on washing soap/soda, other washing requisites ,women and men toiletries & ownership of white goods like washing machine & water purifier
Entertainment	Expense on entertainment & ownership of radio, television, VCR/VCP/DVD player, tape recorder, CD player and personal computer
Communication	Expense on landline telephone and mobile & ownership of telephone instrument and mobile handset
Transportation	Expense on conveyance & ownership of personal transport vehicles like bicycle, motor cycle, scooter, motor car and jeep
Healthcare	Institutional and Non-institutional medical expense

Using NSSO household surveys data (63rd round on consumer expenditure), a scoring methodology (*See exhibit 1 in appendix*) was used to compute the well being index for each district in India. Map 1 represents the district wise WBI color coded for each of the five quintiles (from best to worst).

Eastern and Central India are markedly worse than the rest of India. The Northern states of Punjab, Haryana and Delhi are amongst the best. Evidently, some districts are better off than others. Even within the same state there is significant disparity amongst districts. For instance, huge variation across districts in Karnataka is noticeable: while Bangalore is amongst the 'Best', Bellary and Gulbarga are 'Bad' and Bijapur, Koppal and Gadag are amongst the 'Worst'.

District - wise Well Being Index

(WBI)

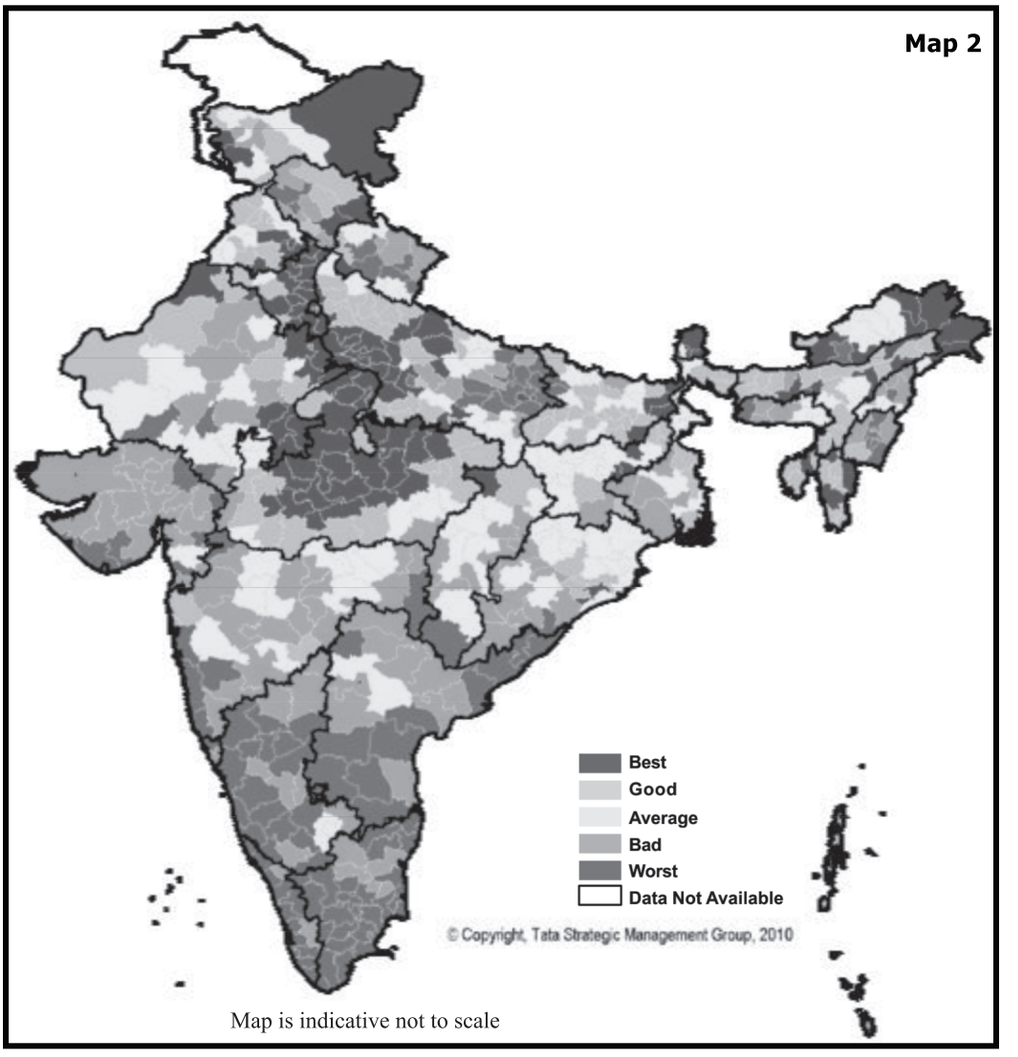


Female security index (FSI)

While the WBI captures all major material and social parameters, it does not include a very important reality of Indian society the well being, status and treatment of women. A number of parameters can be considered for this purpose. But there is a paucity of reliable, consistent data, especially at the district level. With these constraints, a female security index (FSI) has been created using gender ratio (Census 2001) and crime against women (National Crime Records Bureau 2006, 2007).

Map 2 reflects the FSI colour coded in terms of quintiles (best to worst). As more reliable data becomes available, the FSI can be redefined to make it more comprehensive.

District - wise Female Security Index



In terms of female security, there is a clear divide between North India on one side and South & Eastern India on the other. The 'Worst' rating is found in Punjab, MP, West UP, Haryana and Delhi. However, Uttaranchal and Eastern UP fare comparatively better. Peninsular India is generally well placed. Some large states exhibit huge disparities among districts. For instance, in Rajasthan, Dungarpur is classified as 'Best', Bhilwara is 'Good' while Alwar and Kota are among the 'Worst'

A comparison of well being index (Map1) and female security index (Map 2) reveals some interesting and contra intuitive findings. There seems to be no correlation between these two indices. Some of the most well off parts of India (Punjab, Haryana, Delhi, & Western UP) as reflected in the well being index have the worst rating in terms of the female security index (FSI). Likewise, some of the states having districts ranking 'Bad' or 'Worst' on WBI (eg. Orissa, Eastern UP, WB, Jharkhand, Chhatisgarh and Bihar) are better placed on Female Security. (*See appendix table A, table B, table C, and table D*)

Surprisingly, MP scores badly on both indices. In contrast, districts in Uttaranchal, Gujarat and Kerala are consistently in the 'Good' to 'Best' range. The districts in the large states of Maharashtra, AP and TN are 'Average' or better on both counts.

This analysis of well being vividly illustrates the diversity and disparity across districts, often within the same state. Clearly, the typical state is too large a unit for any meaningful conclusions to be drawn. The breadth of consumption patterns captured at the household level in NSSO surveys enables a wide range of analyses at and within a district.

Clearly, insights on district wise parameters and trends should be the foundation for action planning and effective performance. This applies to all types of players whether a policy maker wishing to improve 'well being' in rural India, or an NGO aiming to improve gender equality or a business house planning to increase the penetration of its goods or services in the domestic market.

© Copyright, Tata Strategic Management Group, 2010

References

1. Report No. 527 on Household Consumer Expenditure in India, 2006-07, NSS 63rd Round
2. Unit level survey data for NSS 63rd round of Household Consumer Expenditure in India, Schedule 1.0
3. Report by the Commission on the Measurement of Economic Performance and Social Progress by
   - Professor Joseph E. Stiglitz, Chair, Columbia University
   - Professor Amartya Sen, Chair Advisor, Harvard University
   - Professor Jean-Paul Fitoussi, Coordinator of the Commission, IEP
4. 593 census districts and number of literates district wise, Population Census, 2001
5. District-wise incidence of cognizable crimes (IPC) during 2006, 2007, National Crime Record Bureau

Appendix

Table A: Top 20 districts in terms of WBI

WBI		
Sr No.	District	Corresponding State
1	Central Delhi	Delhi
2	North Delhi	Delhi
3	New Delhi	Delhi
4	Mumbai	Maharastra
5	Mumbai Suburban	Maharastra
6	Dimapur	Nagaland
7	Pune	Maharastra
8	Chandigarh	Chandigarh
9	Bangalore Urban	Karnataka
10	Chennai	Tamil Nadu
11	Kolkata	West Bengal
12	Pattanamtitta	Kerala
13	Aizwal	Mizoram
14	South Goa	Goa
15	Fatehgarh Sahib	Punjab
16	Patiala	Punjab
17	Ahmedabad	Gujarat
18	North Goa	Goa
19	Jalandhar	Punjab
20	South Delhi	Delhi

Table B: Bottom 20 districts in terms of WBI

WBI		
Sr No.	District	Corresponding State
1	Rayagada	Orissa
2	Kandhamal	Orissa
3	Banka	Bihar
4	Nuapada	Orissa
5	Sheohar	Bihar
6	Kawardha	Chhattisgarh
7	Baudh	Orissa
8	East Kameng	Arunachal Pradesh
9	Balangir	Orissa
10	Koraput	Orissa
11	Cachar	Assam
12	Nalanda	Bihar
13	Kaimur (Bhabua)	Bihar
14	Khagaria	Bihar
15	Koppal	Karnataka
16	Lohardaga	Jharkhand
17	Dumka	Jharkhand
18	The Dangs	Gujarat
19	Bargarh	Orissa
20	Araria	Bihar

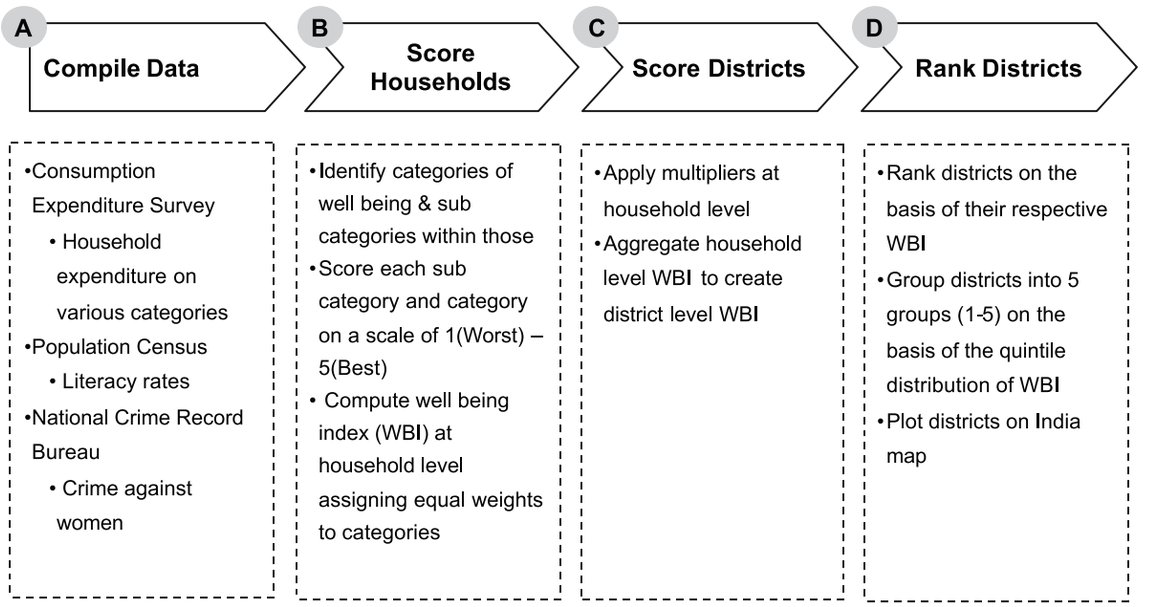
Table C: Top 20 districts in terms of FSI

FSI		
Sr No.	District	Corresponding State
1	Sivaganga	Tamil Nadu
2	Hamirpur	Himachal Pradesh
3	Thanjavur	Tamil Nadu
4	Karur	Tamil Nadu
5	Virudhunagar	Tamil Nadu
6	Alleppey	Kerala
7	Dakshin Kannad	Karnataka
8	Kanniyakumari	Tamil Nadu
9	Udupi	Karnataka
10	Nilgiri	Tamil Nadu
11	Vizianagaram	Andhra Pradesh
12	Toothukudi	Tamil Nadu
13	Ratnagiri	Maharashtra
14	Malappuram	Kerala
15	Azamgarh	Uttar Pradesh
16	Dahod	Gujarat
17	Champawat	Uttaranchal
18	Imphal East	Manipur
19	Tiruvanamala	Tamil Nadu
20	Nagapattinam	Tamil Nadu

Table D: Bottom 20 districts in terms of FSI

FSI		
Sr No.	District	Corresponding State
1	Central Delhi	Delhi
2	Upper Siang	Arunachal Pradesh
3	Panipat	Haryana
4	Gwalior	Madhya Pradesh
5	South West Delhi	Delhi
6	Shivpuri	Madhya Pradesh
7	North East	Delhi
8	Kinnaur	Himachal Pradesh
9	East Delhi	Delhi
10	Rohtak	Haryana
11	Chandigarh	Chandigarh
12	South Delhi	Delhi
13	Gurgaon	Haryana
14	Vidisha	Madhya Pradesh
15	North West Delhi	Delhi
16	Bhind	Madhya Pradesh
17	Datia	Madhya Pradesh
18	North Delhi	Delhi
19	Raisen	Madhya Pradesh
20	Dhaulpur	Rajasthan

Exhibit 1: Scoring methodology to compute district level WBI



An Estimation of Economies of Scale in Consumption - Using 63rd round of Indian NSS data

Siddhartha Kundu[1]

Abstract

For welfare comparison of households, the monthly per capita Consumer Expenditure (MPCE) is used as one of the indicators of living standards used in official statistics. But clearly, of two households with the same MPCE, the larger household typically enjoys a higher standard of living. Many items of consumption are of the type whose consumption need does not increase in proportion to number of members either because they can be shared, or because economies of scale arising in some other way. This happens for both food and non-food items. Moreover, these economies of scale differ from one item group to another. This paper attempts, following Engel Curve methodology, to determine whether item-specific economies of scale exist in India and, if so, their degree. The study is conducted for three specific groups of commodities, viz., food, fuel and durable goods separately for rural and urban India. It is observed that the extent of economies of scale for food is about 7% in rural and 36% in urban India.

Key words: Economies of scale, Household Consumer Expenditure Survey.

[1]Siddhartha Kundu is Director in Survey Design and Research Division of NSSO. The author is benefitted from discussing with Prof. Dipankor Coondoo. Author is also encouraged from discussing with Ajay K. Verma, Prabir Chaudhury and O.P. Ghosh. However, the author is solely responsible for any mistake if remains and/or controversy. The views expressed in this paper are of the author and not necessarily of the organisation he belongs to.

Introduction

Do two people need twice as much as one? The answer is 'no', it will be less than twice, due to the existence of economies of scale. The measurement of economies of scale in household consumption is an important prerequisite for welfare comparison of households based on household survey data. There are two types of items whose consumption or expenditure is collected through Household Consumer Expenditure Survey. The durable goods are one type of public goods within the household where expenditure does not increase with increase in household size. For example, consider the item Television, The need for TV, normally, do not increase with the increase in household members as the consumption is shared between the members of the household. Many items of durable goods have this property of sharing and 'exclusion principle' cannot be applied for these goods and thus these items can be considered as 'public goods'. There is another type of items, for example food items, where consumption is likely to be increased with the increase in household members. But this increased consumption or expenditure is not in proportion to increase in household members, rather little less. The *economies of scale* may arise due to under utilisation of resources. In short, as household size increases the need or consumption demand for each good within the household do not increase proportionately with the number of people, but less rapidly. In order to compare the standard of living of one single-member household with a two-member household, we look at the MPCE of these households, and if the MPCE is same for both these households, we conclude that these two households are at same standard of living. This means that if the single-member household makes a total consumer expenditure of Rs. X, then in order to be on the same welfare level, the two-member household has to spend an amount of Rs. 2X. However, due to existence of economies of scale, the latter household need not require Rs. 2X, but little less than this to maintain the same welfare level. The literature on economies of scale is, however, not scanty. As early as 1953, S.J. Prais tried to estimate both economies of scale and equivalent scale[2] using British working-class enquiry into household expenditure of 1937-38. In recent past Pollak and Wales (1981), Nelson(1988), Deaton and Paxson (1998) and many others tried to estimate the economies of scale and found that the economies of scale exists.

There is another similar but different concept of '*equivalent scale*'. The effect of household composition is taken into consideration in *equivalent scale*. All members of the household are split into n number of demographically separate groups of various age-sex compositions. For example, assume the demographically separable groups are adult male, adult female, child male and child female. Now consider all other groups except 'adult males' are expressed in the equivalence of adult male. Thus, suppose, adult female is equivalent 0.9 times adult male, and child male and child females are separately equivalent to 0.5 times of adult male. Now if we say adult male is equal to 1, then adult female, child male and child female will take values 0.9, 0.5 and 0.5 respectively. These numbers (i.e., 0.9, 0.5 etc.) are known as adult male equivalent scales or 'equivalent scale' in short. However, no attempt is made in this paper to find out the extent of adult equivalent scale.

In this paper we will try (i) to estimate the economies of scale for selected commodity groups viz., food, fuel and durable goods and (ii) test whether these are significantly different from zero, separately for rural and urban areas, using 63rd round NSS data on household consumer expenditure. In the next section we will explain the methodology and then show the results. Finally the conclusion and limitations will be mentioned.

[2]Equivalent scale is a kind of cost of living index number where household composition is used instead of price.

Methodology:

This will be an empirical study using data of the Indian NSS Household Consumer Expenditure Survey, 2006-07. Let us start with household's conventional utility function. The utility function of h^{th} household is:

$$u_h = \nu(q_1, q_2, ..., q_m) \quad \ldots\ldots\ldots\ldots \quad (1)$$

where q_i is the quantity of consumption of the i^{th} commodity (i=1,2,…,m). Assuming there is no *economies of scale*, household size is 'n' and every member's need[3] is identical, then the individual member's utility function will be $\nu\left(\frac{q_1}{n}, \frac{q_2}{n}, ..., \frac{q_m}{n}\right)$. Supposing this utility function is additive and separable (i.e., mutually exclusive), then the h^{th} household's utility function can be written as

$$u_h = n \times \nu\left(\frac{q_1}{n}, \frac{q_2}{n}, ..., \frac{q_m}{n}\right) \quad \ldots\ldots\ldots \quad (2)$$

where n is the household size. Now, let us introduce the *economies of scale* in the utility function. The existence of economies of scale implies that the need for each good within the household do not expand proportionately with the number of people, but less rapidly, for example in proportion to n^{θ} where $0 < \theta \leq 1$. The value of $\theta = 1$ implies existence of no economies of scale, while $\theta < 1$ implies existence of economies of scale and hence $1 - \theta$ may provide the idea of economies of scale.

With the existence of economies of scale, the household utility function can be modified as follows:

$$u_h = n \times \nu\left(\frac{q_1}{n^{\theta}}, \frac{q_2}{n^{\theta}}, ..., \frac{q_m}{n^{\theta}}\right) \quad \ldots\ldots \quad (3)$$

The budget constraint can be written in budget-share format as:

$$w_i = \frac{p_i q_i}{x} = \frac{p_i q_i / n}{x / n} = \varphi_i\left(\frac{x}{n^{\theta}}, p_1, p_2, ..., p_m\right) \quad \ldots\ldots. \quad (4)$$ where w_i is the budget share of i^{th} item, x is total expenditure of the household, p_i is the price of the i^{th} item, q_i is the quantity consumed of the i^{th} item.

From above, one can derive the indirect utility function[4] and that can be written as

$$u_h = \psi_i\left(\frac{x}{n^{\theta}}, p_1, p_2, ..., p_m\right) \quad \ldots\ldots\ldots\ldots\ldots \quad (5)$$

[3] The 'equivalent scales' takes care of the differential needs of different members.

.

Thus from equation (4), the Engel curve for i[th] item-group, after considering the effect of household economies of scale given $p_1, p_2, ..., p_m$, is

$$w_{ih} = \alpha_i + \beta_i \ln\left(\frac{x_h}{n_h^{\theta_i}}\right) \ldots\ldots\ldots\ldots\ldots\ldots \quad (6)$$

where w_{ih} is the budget share of the i[th] item for the h[th] household, x_h is the total expenditure of the h[th] household and n_h is the household size of the h[th] household and θ_i is the *specific economies of scale*[5] for the i[th] item or item-group. In this study, i will be food, fuel and durable goods. The reason for considering this semi-logarithmic form (i.e., the Working-Leser form) of Engel curve is that it fits nicely in the empirical studies carried out using the budget share equation for the less developed and developing countries, particularly with Indian NSS data. Deaton (1997), Chakrabarty (1995), Subramanium (1996) and many other researchers used semi-logarithmic form of Engel curve formulation in their studies.

In equation (6), instead of θ, θ_i is written since for i[th] item or item-group, the item-specific economies of scale will be derived. On the other hand, θ represents overall economies of scale. Equation (6) can also be written as,

$$w_{ih} = \alpha_i + \beta_i \ln\left(x_h / n_h\right) + \gamma_i \ln n_h \ldots\ldots\ldots (7), \text{ where } \gamma_i = \beta_i(1-\theta_i).$$

The estimate of θ_i, say $\hat{\theta}_i$, is $1 - \frac{\hat{\gamma}_i}{\hat{\beta}_i}$.

After calculating $\hat{\theta}$, the following hypothesis will be tested:

$H_0 : \theta = 1$ against $H_1 : \theta \neq 1$. In other words, $H_0 : 1-\theta = 0$ against $H_1 : 1-\theta \neq 0$ will be tested. The test statistic used is $\frac{1-\hat{\theta}}{s.e.(1-\hat{\theta})}$, which follows asymptotic standard normal distribution. Now since estimates of $1-\theta$ is non-linear function of parameters of least squares estimates, the variance of $1-\hat{\theta}$ cannot be calculated directly. This is done using 'delta method' (see Davidson and MacKinnon (2004)). In this method, the $1-\theta$'s are expanded by Taylor's approximation and variance can be calculated ignoring higher order derivatives of $1-\theta$ with respect to its parameters. After having the estimates of $1-\theta$, the variance of $1-\hat{\theta}$ can be estimated.

---

[4] In indirect utility function, the utility depends on total income and prices of the commodities, whereas in conventional utility function, utility depends on quantities of commodities. The concept of indirect utility function including economic theory of consumer behaviour can be found in any book on micro-economics including Deaton and Muellbauer (1980), 'Economics and Consumer Behaviour

[5] Specific economies of scale, in contrast to overall economies of scale, are the economies of scale computed at the item level. The overall economies of scale are the economies of scale computed after combining all items.

Data and Results:

The data set considered for this analysis is National Sample Survey data on data of household consumer expenditure conducted in 63rd round covering period July 2006 to June 2008. A stratified multi-stage design[6] was followed in 63rd round survey. A total of 33146 rural households and 30583 urban households were surveyed. For the purpose of this paper, the selected three item groups are considered viz., food, fuel and durable goods; and these items are chosen on the basis of perception that the economies of scale might be in existence for these items. The results are presented separately for rural and urban areas at all-India level.

Table 1: The estimated coefficients of the regression model

Sector	Dependent Variable	$\hat{\beta}$	$\hat{\gamma}$
Rural	w_food	- 0.121	- 0.008
	w_fuel	- 0.031	- 0.025
	w_dur	+0.036	+0.012
Urban	w_food	- 0.137	- 0.049
	w_fuel	- 0.033	- 0.006
	w_dur	+0.033	+0.021

Note: All coefficients are found to be significantly different from zero at 1% level of significance.

The estimates β and γ from the from the Working-Leser form of Engel Curve of The estimate of $\hat{\beta}$ will give idea about the nature of good, i.e., whether the good is necessary, luxury or inferior. If $\hat{\beta} > 0$, (i.e., $\frac{\partial w}{\partial \ln(x/n)} > 0$) implying increase in MPCE (in logarithm) lead to increase in budget share of the particular item. This happens in case of luxury goods. On the other hand, $\hat{\beta} < 0$ implies that increase in MPCE (in logarithm) lead to decrease in budget share and this is the case for necessary goods. Similarly, $\hat{\gamma} < 0$ (i.e., $\frac{\partial w}{\partial \ln n} < 0$) implies that increase in household size (in logarithm) lead to decrease in budget share and this happens when there exists economies of scale. Nevertheless, complete idea about economies of scale can only be obtained from estimates of both β and γ .

[6]For details of Sampling Design and Estimation Procedure, See Appendix B of NSS Report 527 titled "Household Consumer Expenditure in India, 2006-07".

Table 2: Estimated value of theta and economies of scale

Sector	Dependent Variable	$\hat{\theta}$	Economies of scale (i.e., $1-\hat{\theta}$)
Rural	w_food	0.9307	0.0693
	w_fuel	0.1776	0.8224
	w_dur	0.6582	0.3418
Urban	w_food	0.6408	0.3592
	w_fuel	0.8117	0.1883
	w_dur	0.3776	0.6224

The estimates of economies of scale parameter, θ ($=1-\frac{\gamma}{\beta}$), is presented in Table 2. In rural India, fuel has the maximum economies of scale and its value is 0.82. This means that if one member is added in rural household, the fuel expenditure increases by only 18% [100×(1-0.82)%]. The extent of economies of scale for food in rural India is very small (about 7%). The economies of scale for durable goods is 34% in rural areas. In urban areas the picture is different, particularly for fuel. The economies of scale for fuel is very less (about 19%), in sharp contrast with fuel consumption in rural India where it is 82%. The economies of scales for food and durable goods are 36% and 62% respectively.

It is also tested that whether these estimates of economies of scales (i.e., '1-θ') are significantly different from zero. It is observed that these estimates of economies of scales are significantly different from zero for all of the above items viz., food, fuel and durable goods in both rural and urban and thus it can be concluded that the economies of scales exist, though in varying degrees. Thus, one can have 'economies of scale adjusted MPCE as $\sum_i \frac{x_{ih}}{n_h^{\hat{\theta}_i}}$ for hth household and hence can estimate overall MPCE for the domain.

Conclusion

The objective of the paper is two fold. Firstly, to show the existence of economies of scale and secondly to make the decision makers aware that even in the official statistics the concept of economies of scale can be applied and a better welfare comparison can be made, besides, having other advantages in policy making. However, in estimation of 'economies of scale', only the effect of number of household members is taken into consideration; the differences in need among members of the household are not taken into account in this paper. The second assumption is about the constancy of economies of scale parameter, θ which may not be constant and likely to be dependent on level of living. Therefore, instead of constantθ, one may think of θ as function of level of living ($\theta(x/n)$). Nevertheless, for the sake of simplicity, θ is assumed constant. Another assumption is that all the households are facing same price-level, which is not correct. A kind of spatial index number of prices may be used to adjust the possible differences in demand due to price variation over space. However, all these adjustments are

likely to modify the estimates marginally. The main point derived from this paper is the existence of economies of scale in household consumption of food, fuel and durable goods. For any policy making where welfare comparison and measurement of households' level of living are required, such as poverty estimation and making policies related to poverty reduction, the idea of degree of economies of scale is very helpful. The official statistics should be simple to understand and technically rigorous. Moreover, the computation of economies of scale is not very difficult particularly with the abundance of present-day hi-speed computing facility as well as availability of statistical software. Thus, 'economies-of-scale-adjusted' MPCE may be attempted and presented so that comparison of level of living would be more meaningful and acceptable.

Reference:

1. Chakrabarty, M (1995), Identification of Adult Goods and demographic Separability : the case of Rural Maharashtra, *Sarvekshana*, Issue No. 65, Vol. XIX , No. 2, 31-41.

2. Davidson, R. and J. G. MacKinnon (2004), "*Econometric Theory and Methods,* Oxford University Press, New York.

3. Deaton, A (1997), *The Analysis of Household Surveys: A Microeconometric Approach to Development Policy*, John Hopkins University Press, USA.

4. Deaton, A and J. Muellbauer (1980), *Economics and Consumer Behaviour*. New York. Cambridge University Press.

5. Deaton, A and C. Paxson (1998), "Economies of Scale, Household Size, and the Demand for Food", *Journal of Political Economy*, vol. 106, no. 5, pp-897-930.

6. Nelson, J (1988), "Household Economies of Scale in Consumption: Theory and Evidence", *Econometrica*, Vol. 56. , pp-1301- 1314.

7. Pollack, R. A. and T.J. Wales (1981), "Demographic Variables in Demand Analysis", *Econometrica*, Vol. 49, No. 6, pp. 1533-1551

8. Prais, S.J. and H.S. Houthekkar (1955), *The Analysis of Family Budgets*, Cambridge University Press, USA.

9. Subramanium, R (1996)," Gender-Bias in India: The Importance of Household Fixed-Effects" *Oxford Economic Papers*, New Series, Vol.48, No.2. (Apr.,1996), pp.280-299.

Small Area Level Estimates for Proportion of Poor Households in the State of Uttar Pradesh in India

Hukum Chandra[#], V. K. Bhatia and U. C. Sud
Indian Agricultural Statistics Research Institute, Library Avenue
PUSA Campus, New Delhi-110012

Abstract

India is in fortunate position to have a regular data inflow through the National Sample Survey Organisation (NSSO) surveys. The NSSO surveys are the main source of official statistics in India and generate a range of invaluable data at the macro level (e.g. state and national level). However, the NSSO data cannot be used directly to produce reliable estimates at the micro level (e.g. district or further disaggregate level) due to small sample sizes. There is a rapidly growing demand of such micro level statistics in India as the country is moving from centralized to more decentralized planning system. In this article we employ small area estimation (SAE) techniques to derive model-based estimates of proportion of poor households at district levels in the State of Uttar Pradesh in India by linking data from the Household Consumer Expenditure Survey 2006-07 of NSSO 63rd round and the Population Census. The poverty line used in this study is same as those of year 2004-05, given by planning commission, Govt of India. The poverty line is used to identify whether given household is poor or not. A household having monthly per capita consumer expenditure below the state's poverty line is categorised as poor household. The results show that the model-based estimates are reliable. In contrast, the direct estimates are very unstable. These estimates are expected to provide invaluable information to policy-analysts and decision-makers.

Key words: NSSO survey, census, small area estimation, poor households, proportion.

1. Introduction

There is great emphasis on district level planning in India. The efforts to develop databases required for planning and decision-making at lower than the State level, were initiated quite some time back with the Planning Commission of Government of India setting up a "*Working Group on Districts planning*" in September, 1982. The Working Group in its report clearly highlighted the data requirement for planning and decision-making at the district level. However, it was found that though a lot of data are collected, processed and published for the country as a whole or for individual states, not much disaggregation of the data for sub-state level is done. The National Sample Survey Organisation (NSSO) surveys are main source of official statistics in India. However, these surveys are planned to generate statistics at state and national level. There is no regular flow of estimates at further below level, e.g., at the districts level. Therefore, NSSO surveys provide reliable state and national level estimates; they can not be used to derive reliable direct estimates at the district level owing to small sample sizes which lead to high levels of sampling variability (see [7] and [8]). Although in Indian context district is a very important domain of planning process but we do not have surveys to produce estimates at these levels. At the same time this is also true that conducting any such surveys aimed at this level is going to be very trivial and costly as well as time consuming job. Using the state level survey data to derive the estimates at district or further smaller level may end up with very small sample sizes which may result in very unstable estimates for these levels.

Due to the lack of statistics at this level proper planning, fund allocation and also monitoring of several plans at these levels is likely to safer. An obvious solution to this problem is to use small area estimation (SAE) techniques. The SAE produces reliable estimates for such small areas with small sample sizes by borrowing strength from data of other areas. The SAE techniques are generally based on model-based methods. The idea is to use statistical models to link the variable of interest with

[#]Corresponding author: Email: hchandra@iasri.res.in, Phone: +91-11-25841475, Fax: +91-11-25841564

auxiliary information, e.g. Census and Administrative data, for the small areas to define model-based estimators for these areas. Such small area models can be classified into two broad types:

(i) Area level random effect models, which are used when auxiliary information is available only at area level. They relate small area direct estimates to area-specific covariates (Fay and Herriot [4]) and

(ii) Nested error unit level regression models, proposed originally by Battese, Harter and Fuller [2]. These models relate the unit values of a study variable to unit-specific covariates. We adopt the area level model since covariates are available only at the area level.

In this paper we use small area estimation techniques to derive model-based estimates of proportion of poor households at small area levels in the State of Uttar Pradesh in India by linking data from the Household Consumer Expenditure (HCE) Survey 2006-07 of NSSO 63rd round and the Population Census 2001. Small areas are defined as the different districts of State of Uttar Pradesh in India. This article, in particular, illustrates how the HCE survey and Census data can be combined to derive reliable small area estimates for various policy relevant parameters. The rest of the paper is organised as follows. In Section 2 we describe the data used for the analysis and in Section 3 we present an overview of the methodology used for the analysis. Section 4 discusses the diagnostic procedures for examining the model assumptions and validating the small area estimates and describes the results. Section 5 finally set out the main conclusions.

2. Data

In this study covariates are available at districts level. Therefore, we adopt an area level small area model to derive the small area level estimates (see [4]). Two types of variables are required for this analysis.

(i) The variable of interest for which small area estimates are required is drawn from the Household Consumer Expenditure Survey 2006-07 of NSSO 63rd round data for rural areas of the State of Uttar Pradesh. The target variable used for the study was poor households. The poverty line has been used to identify whether given household is poor or not. A household having monthly per capita consumer expenditure below the state's poverty line (i.e., Rs. 365.84) is categorised as poor household. The poverty line used in this study is same as those of year 2004-05, given by planning commission, Govt of India. The parameter of interest is the proportion of poor household at the district level.

(ii) The auxiliary (covariates) variables known for the population are drawn from the Population Census 2001.

It is noteworthy that use of covariates from the Population Census 2001 to model poor household from the **HCE Survey 2006-07** of NSSO may raise issues of comparability. However, relationship between variable of interest and covariates used in this study are assumed not to change significantly over the period. There were more 100 covariates available from the Population Census to consider for the modelling. Out of these, suitable covariates were selected for the analysis as follows. We first examined the correlation of all these covariates with the target variable and then selected the covariates with reasonably good correlation with the target variable. This was followed by step-wise regression analysis. Finally, six variables namely (i) sex ratio of SC population, (ii) sex ratio of ST population, (iii) percentage of Other worker Population, (iv) percentage of Literate Male, (v) main other workers female and (vi) marginal other population were identified for the further analysis which significantly explained the model. The R^2 for the chosen model was 48 per cent.

The sampling design used in the NSSO data is stratified multi-stage random sampling with districts as strata, villages as first stage units and households as the second stage units. There are total of 2322 households (i.e. number of surveyed households) from the 70 districts of the Uttar Pradesh.

The district-wise sample size varies from 19 to 48 with average of 33 (Table 1). Our aim is to estimate proportion of poor households at district level. It is evident from that district level sample sizes are very small with very low value of average sampling fraction as 0.0001. Therefore, it is difficult to derive reliable estimates and their standard errors at district levels. The SAE is an obvious answer for such cases. The SAE techniques provide reliable estimates for the districts having small or even no sample data ([8]). The underlining theory of SAE has been illustrated in next Section.

[Table 1 about here]

3. Methodology

This Section illustrates theoretical frame work used to produce the small area estimates of proportion and their measure of precision The theory presented has also successfully been applied in many other small area estimation applications, see [5]. To start, we first fix our notation. Throughout, we use a subscript *d* to index the quantities belonging to small area d $(d = 1,...,D)$, where D is the number of small areas (or areas) in the population. The subscript *s* and *r* are used for denoting the quantities related to the sample and non-sample parts of the population. So that n_d and N_d represent the sample and population (i.e., number of households in sample and population) sizes in district d, respectively. The direct estimator of proportion of poor household is given by $\hat{p}_d^{Direct} = \left(\sum_{i\in s_d} w_{di}\right)^{-1}\left(\sum_{i\in s_d} w_{di} y_{di}\right)$, where w_{di} is the survey weight associated with household *i* in area *d*. Assuming that joint inclusion $1/w_{di,d'j} = 0$ for $d \neq d'$ or $i \neq j$, the estimate of mean square error of direct estimator $\hat{p}_d^{Direct}$ is $v(\hat{p}_d^{Direct}) = \left(\sum_{i\in s_d} w_{di}\right)^{-2}\left\{\sum_{i\in s_d} w_{di}(w_{di}-1)(y_{di}-\hat{p}_d^{Direct})^2\right\}$, see for example [10] page 391. The value of variable of interest *y* (the poor households) in the area *d* is defined by y_d and we denote by y_{sd} and y_{rd} the sample and non-sample counts of poor households in area *d*. Indeed, the variable of interest y_{sd} has a Binomial distribution with parameters n_d and π_d, denoted by $y_{sd} \sim Bin(n_d, \pi_d)$, where π_d is the probability of a poor household in area *d*, often termed as the probability of a 'success'. Similarly, $y_{rd} \sim Bin(N_d - n_d, \pi_d)$. Further, y_{sd} and y_{rd} are assumed to be independent Binomial variables with π_d being a common success probabilities. As mentioned in previous Section in model-based small area estimation the survey data is supplemented by the availability of auxiliary information from various sources, e.g., Census and Administrative records. Let $\mathbf{x}_d$ be the *k*-vector of the covariates for area *d* from the previous sources. The model linking the probabilities of success π_d with the covariates $\mathbf{x}_d$ is the logistic linear mixed model given by

$$logit(\pi_d) = \ln\left\{\frac{\pi_d}{1-\pi_d}\right\} = \eta_d = \hat{\mathbf{a}}_d' + u_d,\ (d = 1,...,D), \qquad (1)$$

where β is the *k*-vector of regression coefficient often known as fixed effect parameters and u_d is the area-specific random effect that accounts for between area dissimilarity beyond that explained by the auxiliary variables included in the in the fixed part of the model. We assume that u_d 's are independent and normally distributed with mean zero and variance φ. Under model (1), we get

$$\pi_d = \exp(\eta_d)\{1+\exp(\eta_d)\}^{-1} = \exp(\mathbf{x}_d'\beta + u_d)\{1+\exp(\mathbf{x}_d'\beta + u_d)\}^{-1}.$$

It is evident that model (1) relates the area level proportions to area level covariates. This type of model is often referred to as 'area-level' model in SAE terminology, see for example [8]. Such a model was originally used by Fay and Herriot [4] for the prediction of mean per-capita income (PCI) in small geographical areas (less than 500 persons) within counties in the United States. The Fay and Herriot

(FH) method for SAE is based on area level linear mixed model and their approach is applicable to a continuous variable. In contrast, model (1) is a special case of a generalized linear mixed model (GLMM) with logit link function (see [3]) and suitable for discrete, particularly binary variable. It is noteworthy that the FH model is not applicable in such cases. Saei and Chambers [9] and Manteiga et al. [6] described this model in the context of SAE. By definition, the means of y_{sd} and y_{rd} given u_d under model (1) are :

$$E\left(y_{sd}\,|u_d\right) = n_d\pi_d = n_d\left[\exp(\mathbf{x}_d'\beta + u_d)\left(1+\exp(\mathbf{x}_d'\beta + u_d)\right)^{-1}\right] \quad (2)$$

$$E\left(y_{rd}\,|u_d\right) = \left(N_d - n_d\right)\pi_d = \left(N_d - n_d\right)\left[\exp(\mathbf{x}_d'\beta + u_d)\left(1+\exp(\mathbf{x}_d'\beta + u_d)\right)^{-1}\right]. \quad (3)$$

Let T_d denotes the total number of poor households in district *d*. We can write $T_d = y_{sd} + y_{rd}$, where the first term y_{sd}, the sample count is known whereas the second term y_{rd}, the non-sample count, is unknown. Therefore, an estimate $\hat{T}_d$ of the total number of poor households in area *d* is obtained by replacing y_{rd} by its predicted value under the model (1). That is,

$$\hat{T}_d = y_{sd} + \hat{y}_{rd} = y_{sd} + \left(N_d - n_d\right)\left[\exp(\mathbf{x}_d'\hat{\beta} + \hat{u}_d)\left(1+\exp(\mathbf{x}_d'\hat{\beta} + \hat{u}_d)\right)^{-1}\right]. \quad (4)$$

An estimate of proportion of poor households p_d in a small area *d* is obtained as

$$\hat{p}_d = \frac{\hat{T}_d}{N_d} = \frac{1}{N_d}\left\{y_{sd} + \left(N_d - n_d\right)\left[\exp(\mathbf{x}_d'\hat{\beta} + \hat{u}_d)\left(1+\exp(\mathbf{x}_d'\hat{\beta} + \hat{u}_d)\right)^{-1}\right]\right\}. \quad (5)$$

It is obvious that in order to compute the estimates given by equation (4) or (5), we require estimates of the unknown parameters β and $\mathbf{u}$. A major difficulty in use of logistic linear mixed model (LLMM) for SAE is the estimation of unknown model parameters β and $\mathbf{u}$ since the likelihood function for LLMM often involves high dimensional integrals (computed by integrating a product of discrete and normal densities, which has no analytical solution) which are difficult to evaluate numerically. We used an iterative procedure that combines the Penalized Quasi-Likelihood (PQL) estimation of β and $\mathbf{u} = (u_1, ..., u_D)$ with restricted maximum likelihood (REML) estimation of ϕ to estimate these unknown parameters. Detailed description of the approach can be followed from [6, 9].

We now turn to estimation of mean squared error (MSE) for predictors given by equation (5). The MSE estimates are computed to assess the reliability of estimates and also to construct the confidence interval (CI) for the estimates. The mean squared error estimate of (5) under model (1) is (see [6, 9]) given by

$$mse(\hat{p}_d) = m_1(\hat{\phi}) + m_2(\hat{\phi}) + 2m_3(\hat{\phi}). \quad (6)$$

The first two components m_1 and m_2 constitute the largest part of the overall MSE estimates in (6). These are the MSE of the best linear unbiased predictor (BLUP)-type estimator when φ is known ([8]). The third component m_3 is the variability due to the estimate of φ. For simplicity, we used few notations to write the analytical expression of various components of the MSE (6). We denote by $\hat{\mathbf{V}}_{sd} = diag\left\{n_d\hat{p}_d(1-\hat{p}_d)\right\}$ and $\hat{\mathbf{V}}_{rd} = diag\left\{(N_d - n_d)\hat{p}_d(1-\hat{p}_d)\right\}$, the diagonal matrices defined by the corresponding variances of the sample and non-sample part respectively. Similarly, $\mathbf{A} = \left\{diag(N_d^{-1})\right\}\hat{\mathbf{V}}_{rd}$, $\mathbf{B} = \left\{diag(N_d^{-1})\right\}\hat{\mathbf{V}}_{rd}\boldsymbol{X}_r - \mathbf{A}\hat{\boldsymbol{T}}_s\hat{\mathbf{V}}_{sd}\boldsymbol{X}_s$ and $\hat{\boldsymbol{T}}_s = \left(\phi^{-1}\mathbf{I}_D + \hat{\mathbf{V}}_{sd}\right)^{-1}$, where $\boldsymbol{X}_s$ and $\boldsymbol{X}_r$ are the sample and non-sample part of covariates and $\mathbf{I}_D$ is an identity matrix of order *D*. We further write $\hat{\mathbf{T}}_{(1)} = \left\{\boldsymbol{X}_s'\hat{\mathbf{V}}_{sd}\boldsymbol{X}_s - \boldsymbol{X}_s'\hat{\mathbf{V}}_{sd}\hat{\boldsymbol{T}}_s\hat{\mathbf{V}}_{sd}\boldsymbol{X}_s\right\}^{-1}$ and $\hat{\mathbf{T}}_{(2)} = \hat{\boldsymbol{T}}_s + \hat{\boldsymbol{T}}_s\hat{\mathbf{V}}_{sd}\boldsymbol{X}_s\hat{\mathbf{T}}_{(1)}\boldsymbol{X}_s'\hat{\mathbf{V}}_{sd}'\hat{\boldsymbol{T}}_s$. With these notations, assuming model (1) holds, the various components of equation (6) are

$m_1(\hat{\phi}) = \mathbf{A}\hat{\boldsymbol{T}}_s\mathbf{A}'$, $m_2(\hat{\phi}) = \mathbf{B}\hat{\mathbf{T}}_{(1)}\mathbf{B}'$, and $m_3(\hat{\phi}) = trace\left(\hat{\nabla}_i\hat{\Sigma}\hat{\nabla}'_j v(\hat{\phi})\right)$ with $\hat{\Sigma} = \hat{\mathbf{V}}_{sd} + \hat{\phi}\mathbf{I}_D\hat{\mathbf{V}}_{sd}\hat{\mathbf{V}}'_{sd}$. Here $v(\hat{\phi})$ is the asymptotic covariance matrix of the estimates of variance components $\hat{\phi}$, which can be evaluated as the inverse of the appropriate Fisher information matrix for $\hat{\phi}$. Note that this also depends upon whether we are using maximum likelihood (ML) or restricted maximum likelihood (REML) estimates for $\hat{\phi}$. We used REML estimates for $\hat{\phi}$, then $v(\hat{\phi}) = 2\left(\hat{\phi}^{-2}(D - 2t_1) + \hat{\phi}^{-4}t_{11}\right)^{-1}$ with $t_1 = \hat{\phi}^{-1}\,trace(\hat{\mathbf{T}}_{(2)})$ and $t_{11} = trace(\hat{\mathbf{T}}_{(2)}\hat{\mathbf{T}}_{(2)})$. Let us write $\Delta = \mathbf{A}\hat{\boldsymbol{T}}_s$ and $\hat{\nabla}_i = \partial(\Delta_i)/\partial\phi\big|_{\phi=\hat{\phi}} = \partial(\boldsymbol{A}_i\hat{\boldsymbol{T}}_s)/\partial\phi\big|_{\phi=\hat{\phi}}$, where $\boldsymbol{A}_i$ is the i^{th} row of the matrix $\boldsymbol{A}$. The numerical results reported in Sections 4 are obtained using R version 2.9.2.

4. Results and Discussions

4.1 *Diagnostic procedures*

Generally two types of diagnostics procedures are tested in small area estimation, the model diagnostics and the diagnostics for the small area estimates, see for example [1]. The first diagnostics are used to verify the assumptions of underlying model and the second diagnostics are applied to validate the reliability of the model-based small area estimates. The random area effects $u_d\,(d = 1,...,D)$ in model (1) are assumed to have a normal distribution with mean zero and variance φ. If the model assumptions are satisfied then the district level residuals are expected to be randomly distributed and not significantly different from the regression line *y=0,* where under model (1), the area level residuals are defined as $r_d = \hat{\eta}_d - \hat{\mathbf{a}}'_d\hat{}$. The distribution of the district level residuals (left side plots) and q-q plots (right side plots) are shown in Figure 1. The Figure 1 clearly reveals that the randomly distributed district level residuals and the line of fit does not significantly differ from the line *y=0* as expected in all the plots. The q-q plots also confirm the normality assumption. Therefore the model diagnostics are fully satisfied for the data.

[Figure 1 and 2 about here]

To validate the reliability of the model-based small area estimates we used the bias diagnostics, coefficient of variation (CV) and computed the 95 percent confidence intervals. The bias diagnostics are used to investigate if the model-based estimates are less extreme when compared to the direct survey estimates, when it is available, see [5]. The bias scatter plot of the model-based estimates against the direct estimates is set out in Figure 2. The plot show that the model-based estimates are less extreme when compared to the direct estimates, demonstrating the typical SAE outcome of shrinking more extreme values towards the average.

We computed the CV to assess the improved precision of the model-based estimates compared to the direct estimates. The CVs show the sampling variability as a percentage of the estimate. Estimates with large CVs are considered unreliable (i.e. smaller is better). There are no internationally accepted tables available that allow us to judge what is 'too large' ([1] and [5]). Figure 3 presents the district-wise distribution of the percentage CV of model based estimates and direct estimates. The estimated CVs show that model-based estimates have a higher degree of reliability when compared to the direct estimates.

[Figure 3 about here]

In Table 2 we present the districts-wise 95 percent confidence intervals of the model-based and the direct estimates. The standard errors of the direct estimates are too large and therefore the estimates are unreliable. Note that for many districts we can even not produce the confidence intervals due to unavailability of standard errors.

4.2 *Discussions*

The small area estimates diagnostic measures clearly depict that the model-based estimates are reliable and more stable than the corresponding direct estimates (Figure 3). Table 2 presents the direct estimates and model-based estimates along with 95 per cent confidence intervals for the State of Uttar Pradesh. These results show the degree of inequality with respect to distribution of poor households in different districts.

[Table 2 about here]

A critical review of Table 2 shows that in many districts the lower bound (Lower) of 95% confidence interval (CI) is negative which results in practically impossible and inadmissible values of CI for direct estimates. In contrast, the model estimate with precise CI and reasonable CV percent are reliable. This problem was mostly observed when there was no variability in the sample data of district. For example where all *y* values in sample were 0 estimated direct proportions was 0. In such circumstance, SAE plays an important role in generating micro level statistics. The results clearly show the advantage of using SAE technique to cope up the small sample size problem in producing the estimates or reliable confidence intervals. These estimates can definitely be useful for resource allocation and policy decision-making relating the living condition of people in rural areas.

5. Conclusions

The method for estimation of proportions for small areas is well developed ([6 and 9]), however, there is limited application in the area of agricultural or social sciences. Further, there is very less known application to the Indian data, particularly, NSSO data. In this article we demonstrate the application of SAE techniques to estimate the district level statistics of poor households using survey and census data. The diagnostic procedures clearly confirm that the model-based district level estimates have reasonably good precision. In India, Censuses are usually limited as they tend to focus mainly on the basic socio-demographic and economic data and not available for every time period. The NSSO survey, on the other hand, contributes to providing estimates at the State and National level. They do not provide sub-state level statistics. However, it is known that regional and national estimates usually mask variations (heterogeneity) at the sub-state or district level and render little information for micro level planning and allocation of resources.

These days lot of emphasis is being given to micro level planning in India. District is an important domain for planning process in the country and therefore availability of district level statistics is vital to monitoring of policy and planning. This study produces reliable statistics at micro level using existing surveys and other already available secondary data and can be seen as an initiative example for further applications. Such micro level statistics can be generated without conducting separate survey for this purpose and unlike Census regularly estimates can be produced from regular existing surveys.

References

[1] R. Ambler, D. Caplan, R. Chambers, M. Kovacevic, and S. Wang, *Combining unemployment benefits data and LFS data to estimate ILO unemployment for small areas: an application of a modified Fay-Herriot method*. Proceedings of the Int. Assoc. of Survey Stat., Meeting of the ISI, Seoul, August 2001.

[2] G. E. Battese, R. M. Harter, and W. A. Fuller, *An error component model for prediction of county crop areas using survey and satellite data,* J. of the Amer. Stat. Assoc. 83 (1988), pp. 28-36.

[3] N. E. Breslow and D. G. Clayton, *Approximate inference in generalized linear mixed models,* J. of the Amer. Stat. Assoc. 88(1993), pp.9-25.

[4] **R. E. Fay and R. A. Herriot, *Estimation of income from small places: an application of james-stein procedures to census data,*** J. of the Amer. Stat. Assoc. 74(1979), pp. 269-277.

[5] F.A. Johnson, H. Chandra, J. J. Brown, and S. Padmadas, *District-level estimates of institutional*

births in ghana: application of small area estimation technique using census and DHS data, J. of Off. Stat. (2009), to appear.

[6] G.W. Manteiga, M.J. Lombardìa, I. Molina, D. Morales, and L. Santamarìa, *Estimation of the mean squared error of predictors of small area linear parameters under a logistic mixed mode*l, Comput. Stat. & Data Anal. 51(2007), pp. 2720-2733.

[7] D. Pfeffermann, *Small area estimation: new developments and directions*. Int. Stat. Rev. 70(2002), pp.125-143.

[8] J.N.K. Rao, *Small Area Estimation*. Wiley Series in Survey Methodology, John Wiley and Sons Inc, 2003.

[9] A. Saei and R. Chambers, *Small area estimation under linear and generalized linear mixed models with time and area effects, W.P. No. M03/15*(2003), Southampton Statistical Sciences Research Institute, University of Southampton, UK.

[10] C.E. Särndal, B. Swensson, and J. Wretman, *Model Assisted Survey Sampling*. Springer-Verlag, New York, 1992.

Table 1. Distribution of districts-wise sample size

S.No.	Sample size	S. No.	Sample size
1	48	36	24
2	48	37	24
3	48	38	24
4	48	39	24
5	24	40	24
6	24	41	24
7	24	42	24
8	24	43	48
9	24	44	24
10	24	45	48
11	48	46	48
12	48	47	24
13	24	48	24
14	24	49	48
15	24	50	48
16	24	51	23
17	48	52	24
18	24	53	48
19	48	54	24
20	48	55	24
21	24	56	24
22	24	57	24
23	48	58	48
24	48	59	48
25	48	60	48
26	48	61	48
27	24	62	24
28	48	63	48
29	24	64	48
30	24	65	48
31	24	66	19
32	24	67	24
33	24	68	24
34	24	69	24
35	24	70	24
		Total	**2322**

Table 2. District-wise model-based and direct estimates of proportion of poor households

	Direct			Model-based				Direct			Model-based		
District	Estimate	Lower	Upper	Estimate	Lower	Upper	District	Estimate	Lower	Upper	Estimate	Lower	Upper
1	0.00	0.000	0.000	0.03	0.016	0.049	36	0.07	-0.024	0.154	0.13	0.081	0.185
2	0.13	-0.106	0.362	0.05	0.031	0.079	37	0.03	-0.030	0.084	0.05	0.022	0.087
3	0.01	-0.006	0.034	0.04	0.023	0.060	38	0.53	0.232	0.826	0.14	0.071	0.211
4	0.33	-0.066	0.734	0.09	0.016	0.171	39	0.03	-0.012	0.068	0.15	0.087	0.205
5	0.00	0.000	0.000	0.04	0.021	0.067	40	0.42	0.011	0.829	0.14	0.083	0.200
6	0.00	0.000	0.000	0.03	0.009	0.044	41	0.19	-0.108	0.496	0.08	0.029	0.138
7	0.03	-0.032	0.088	0.05	0.015	0.095	42	0.08	-0.060	0.214	0.10	0.068	0.130
8	0.00	0.000	0.000	0.03	0.011	0.044	43	0.31	0.073	0.545	0.26	0.153	0.372
9	0.00	0.000	0.000	0.01	0.000	0.022	44	0.06	-0.058	0.172	0.06	0.036	0.085
10	0.00	0.000	0.000	0.02	0.001	0.033	45	0.23	0.017	0.437	0.09	0.044	0.130
11	0.13	-0.026	0.288	0.13	0.035	0.217	46	0.02	-0.015	0.055	0.11	0.069	0.159
12	0.19	-0.082	0.460	0.07	0.038	0.093	47	0.15	-0.060	0.356	0.16	0.108	0.218
13	0.06	-0.055	0.171	0.04	0.022	0.061	48	0.11	-0.045	0.267	0.16	0.102	0.218
14	0.00	0.00	0.000	0.08	0.047	0.111	49	0.31	0.062	0.566	0.19	0.115	0.267
15	0.02	-0.025	0.073	0.03	0.017	0.050	50	0.11	-0.070	0.284	0.06	0.027	0.088
16	0.00	0.00	0.000	0.01	0.001	0.019	51	0.41	0.042	0.786	0.08	0.045	0.119
17	0.02	-0.01	0.046	0.09	0.054	0.126	52	0.24	-0.145	0.619	0.07	0.038	0.107
18	0.03	-0.02	0.086	0.13	0.075	0.193	53	0.12	-0.033	0.263	0.08	0.047	0.116
19	0.11	-0.015	0.241	0.07	0.035	0.101	54	0.11	-0.044	0.27	0.13	0.082	0.174
20	0.01	-0.009	0.031	0.02	0.009	0.040	55	0.06	-0.032	0.142	0.15	0.104	0.200
21	00.0	0.004	0.004	0.06	0.036	0.077	56	0.26	-0.028	0.548	0.16	0.107	0.219
22	0.00	0.00	0.000	0.08	0.05	0.111	57	0.03	-0.027	0.079	0.12	0.082	0.166
23	0.01	-0.006	0.034	0.11	0.068	0.158	58	0.03	-0.006	0.074	0.09	0.053	0.135
24	0.04	-0.007	0.091	0.1	0.058	0.135	59	0.18	-0.011	0.367	0.14	0.084	0.200
25	0.18	-0.096	0.454	0.09	0.050	0.122	60	0.13	0.002	0.248	0.11	0.064	0.165
26	0.06	-0.054	0.168	0.1	0.063	0.136	61	0.32	0.073	0.557	0.20	0.116	0.291
27	0.22	-0.079	0.519	0.06	0.033	0.078	62	0.28	-0.121	0.681	0.17	0.104	0.240
28	0.21	-0.041	0.453	0.15	0.092	0.208	63	0.03	-0.030	0.090	0.11	0.065	0.146
29	0.31	-0.072	0.684	0.12	0.069	0.163	64	0.11	-0.013	0.223	0.23	0.132	0.322
30	0.25	-0.159	0.667	0.09	0.048	0.140	65	0.02	-0.005	0.051	0.15	0.092	0.212
31	0.00	0.000	0.000	0.05	0.014	0.077	66	0.2	-0.149	0.557	0.06	0.038	0.084
32	0.00	0.000	0.000	0.07	0.037	0.105	67	0.11	-0.092	0.304	0.03	0.01	0.046
33	0.00	0.000	0.000	0.09	0.051	0.121	68	0.01	-0.010	0.030	0.03	0.014	0.050
34	0.25	-0.136	0.636	0.08	0.050	0.112	69	0.07	-0.071	0.215	0.07	0.049	0.099
35	0.06	-0.05	0.162	0.12	0.064	0.181	70	0.01	-0.010	0.030	0.09	0.056	0.132

Figure 1. Distribution of the district level residuals (left hand side) and normal q-q plot of the district level residuals (right hand side)

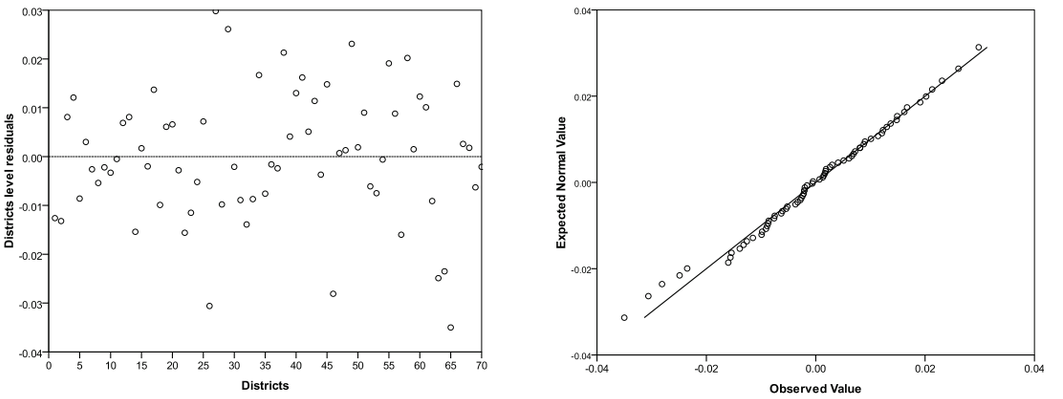


Figure 2. Bias diagnostics plot

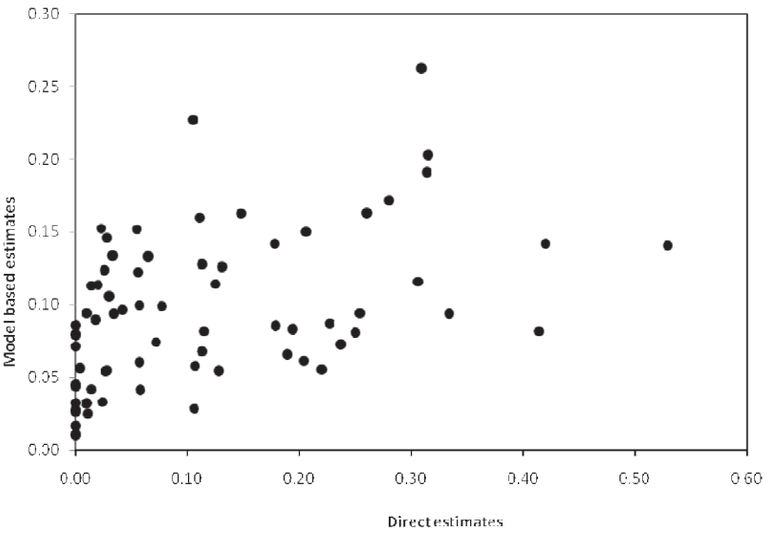
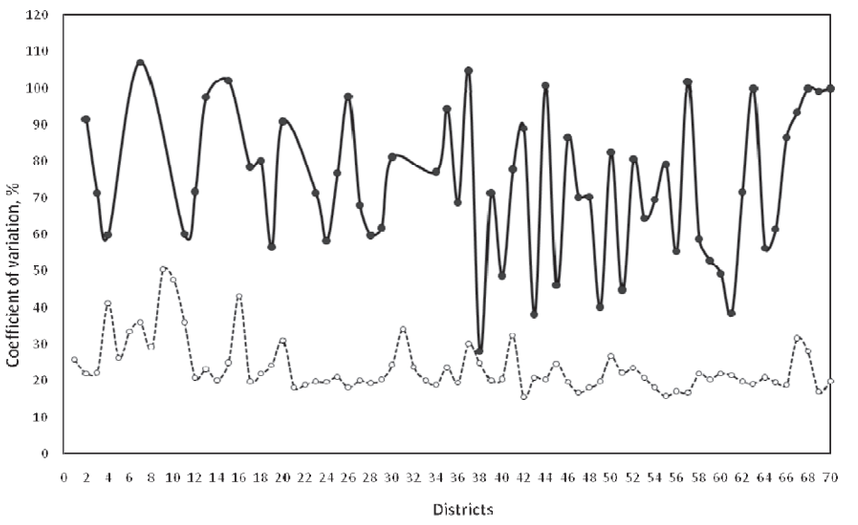


Figure 3. District-wise coefficient of variation for direct (solid line) and model-based estimate (dash line)



On The Pattern of Consumer Expenditure in Major States with Special Reference to West Bengal

Soma Dey

[Abstract: The NSS data set of 53rd round and 63rd round survey has been analysed in rural and urban sector separately for a group of selected states. A comparison of food and non-food expenditure, the share of food and non- food expenditure of total expenditure and the growth in expenditures thereof have been done sector wise for these states. Correlation of ranks of the states between 53rd and 63rd round of survey in respective expenditures has been obtained in both the sectors. Scatter plots are generated from the data of 59th to 63rd round of surveys to show the trend of food and non-food expenditure in relation to total expenditure. **Item wise** comparative study of food and non-food expenditure of West Bengal, vis-à-vis All-India, has been shown from 60th to 63rd round of surveys. The growth in urban sector of West Bengal appears to be significantly higher compared to All-India growth over the time span of 53rd to 63rd round of survey. Some general trends of expenditure have been inferred from the study.]

1. Introduction: The National Sample Survey Organisation (NSSO) has been conducting household consumption expenditure survey regularly, since 1950. Apart from the quinquennial series, annual series exist comprising consumer expenditure surveys conducted in the intervening period between rounds starting from the 42nd round. These surveys provide a time series of household consumer expenditure data and may be regarded as a social indicator of level of living, social consumption and well being, in general.

The objective of this paper is to study the pattern of change of food and non- food expenditure with the rise in income along with some special characteristics. The structure of the paper is as follows:

a) The pattern of total expenditure, food expenditure, and non-food expenditure across the states in 53rd round survey and 63rd round survey.
b) The behaviour of food and non-food expenditure due to increase in income.
c) Item wise food and non-food expenditure and share of food and non-food components of total expenditure in West Bengal and All-India in both rural and urban sector.
d) State wise growth in food and non-food expenditure in absolute term in West Bengal and All-India in rural and urban sector.

2. Data and Methods: To study the pattern of total expenditure, food expenditure and non-food expenditure across the fifteen states the NSS data for 53rd round survey (January December 1997) and 63rd round survey (July 2006- June 2007) have been considered. Correlation between the ranks in 53rd & 63rd round survey, separately, for total expenditure, food expenditure and non-food expenditure in rural and urban sector have been obtained. The NSS data from 59th round survey (January December 2003) to 63rd round survey (July 2006- June 2007) for sixteen states has been used **t**o study the behaviour of food and non-food expenditure. The sector wise state level data being unavailable, the total expenditure is taken as a proxy variable for income. In this case scatter diagram has been drawn and regression line has been fitted to study the relationship. Data from NSS 60th round to 63rd round survey have been used for comparative study in regard to the item wise percentage of food and non-food expenditures and share of food and non-food components of total expenditure. The data of 61st round, although a quinquennial round, has also been taken into account for the sake of uninterrupted time of interval. The growths in food and non-food components among fifteen states have been studied over the time span between 53rd and 63rd rounds of survey. Item wise growth in food and non-food expenditure in West Bengal and All-India has been studied over the same time span.

3. Pattern of Total Expenditure, Food Expenditure and Non-Food Expenditure across the States over the time Span from 53rd Round Survey to 63rd Round Survey: Average total expenditure, food

expenditure and non- food expenditure per person per 30 days and the rank among the fifteen states for 53rd round and 63rd round survey is given in Table 1. In rural sector, Punjab ranked 1 for total expenditure, food expenditure and non-food expenditure in 53rd round and changed to rank 2 in total expenditure and non-food expenditure, maintaining rank 1 only in food expenditure in 63rd round. Regarding food expenditure, West Bengal remained at rank 9 in both the 53rd and 63rd round surveys. In the urban sector in 53rd round Kerala was in rank 1 both in total expenditure and food expenditure and maintained the same rank only in total expenditure in 63rd round. In case of non-food expenditure Kerala has moved to rank 1 in 63rd round from rank 2 in the earlier 53rd round survey. The rank of West Bengal, in the urban sector, in terms of total expenditure, food expenditure and non-food expenditure were 12, 10 and 14, respectively, in 53rd round while in the same in 63rd round are 5, 6 and 6, respectively.

3.1 The correlation between the ranks of 53rd round survey and 63rd round survey for total expenditure, food expenditure and non-food expenditure have been calculated and is shown in Table 2. From the table it is observed that in both rural and urban sector the relative position across the states in respect of total expenditure, food expenditure and non-food expenditure more or less remains same.

Table 1: Average Total Expenditure, Food Expenditure, Non-Food Expenditure (Rs.) per Person Per 30 days and Rank in Total Expenditure, Food Expenditure, Non-food Expenditure in 53rd Round and 63rd Round Survey

Rural

State	53 tot exp	Rank	53 food exp	Rank	53 non-food	Rank	63 tot exp	Rank	63 food exp	Rank	63 non-food	Rank
Andhra Pradesh	420.75	7	238.45	7	182.31	5	727.14	8	380.61	7	346.53	8
Assam	360.43	11	236.19	8	124.24	12	721.37	9	409.48	5	311.90	10
Bihar	294.93	15	194.64	13	100.29	15	541.33	13	323.08	13	218.25	14
Gujrat	484.54	4	286.63	4	197.91	4	796.58	4	432.31	4	364.27	5
Haryana	536.21	3	306.01	3	230.20	3	1012.73	3	480.03	3	532.70	3
Karnataka	344.30	12	221.50	10	122.79	13	624.27	12	326.95	12	297.32	11
Kerala	568.57	2	321.43	2	247.14	2	1250.35	1	505.52	2	744.84	1
Madhya Pradesh	325.94	13	190.90	15	135.03	11	514.93	14	263.86	15	251.07	13
Maharastra	386.09	9	214.42	12	171.67	9	776.09	5	371.60	8	404.49	4
Orissa	298.48	14	192.62	14	105.86	14	458.56	15	265.30	14	193.27	15
Punjab	670.32	1	330.84	1	339.48	1	1198.13	2	511.25	1	686.88	2
Rajasthan	452.28	5	272.87	5	179.42	6	767.39	6	405.45	6	361.94	6
Tamil Nadu	440.56	6	267.67	6	172.89	8	728.78	7	368.00	10	360.78	7
Uttar Pradesh	390.26	8	217.20	11	173.06	7	653.18	10	340.92	11	312.26	9
West Bengal	366.15	10	229.11	9	137.04	10	629.86	11	371.08	9	258.78	12

Urban

State	53 tot exp	Rank	53 food exp	Rank	53 non-food	Rank	63 tot exp	Rank	63 food exp	Rank	63 non-food	Rank
Andhra Pradesh	623.56	8	298.72	12	324.84	7	1360.68	7	507.70	9	852.98	5
Assam	584.89	10	321.45	7	263.44	12	1368.88	6	632.88	1	735.99	9
Bihar	492.37	15	275.44	14	216.93	15	864.96	15	435.56	14	429.39	15
Gujrat	686.82	4	349.30	4	337.52	6	1421.96	4	563.54	5	858.42	4
Haryana	655.25	7	332.08	5	323.17	8	1336.09	8	526.07	7	810.02	7
Karnataka	669.50	5	306.02	11	363.48	4	1180.16	11	468.29	11	711.87	10
Kerala	794.11	1	393.78	1	400.33	2	1681.48	1	578.85	4	1102.63	1
Madhya Pradesh	546.47	14	267.35	15	279.11	10	1001.70	13	409.10	15	592.60	13
Maharasthra	772.87	2	367.88	2	404.99	1	1673.48	2	587.95	3	1085.54	2
Orissa	562.29	11	306.72	9	255.57	13	1072.13	12	451.85	12	620.29	12
Punjab	753.35	3	365.93	3	387.42	3	1609.16	3	596.29	2	1012.87	3
Rajasthan	608.42	9	324.51	6	283.91	9	1184.70	10	508.02	8	676.68	11
Tamil Nadu	657.53	6	318.88	8	338.65	5	1227.19	9	486.48	10	740.70	8
Uttar Pradesh	547.47	13	278.13	13	269.34	11	996.38	14	437.22	13	559.15	14
West Bengal	560.11	12	306.34	10	253.77	14	1371.26	5	551.40	6	819.86	6

Table 2: Correlation of Rank between 53rd Round Survey and 63rd Round Survey for Total Expenditure, Food Expenditure and Non-Food Expenditure for Rural and Urban Sector

Correlation of Rank between 53rd Round & 63rd round Survey	Rural	Urban
Total Expenditure	0.94	0.79
Food Expenditure	0.92	0.83
Non-Food Expenditure	0.89	0.73

4. **Proportion of Food and Non Food Expenditure in Total Expenditure:** State wise percentage of food and non-food expenditures of total expenditure from 59th round to 63rd round is shown in Table 3, separately for rural and urban sector. The composition of food and non-food expenditures in total expenditure reflects the economic well being of the population. For the changes in the consumption pattern, the scatter diagrams (Figure 1 and 2) depict the percentage of food and non-food expenditures of total expenditure in rural and urban sectors.

Table 3: Percentage Distribution of Food and Non Food Expenditure to Total Expenditure (Rs.) per Person per 30 days for Different States

Rural

State	59th round		60th round		61st round		62nd round		63rd round	
	food exp	Non-food exp	food exp	Non-food exp	food exp	Non – food exp	food exp	Non-food exp	food exp	Non-food exp
Andhra Pradesh	52.80	47.20	55.89	44.11	55.19	44.81	55.31	44.69	52.34	47.66
Assam	63.33	36.67	62.40	37.60	65.99	34.01	60.13	39.87	56.76	43.24
Bihar	60.82	39.18	58.89	41.11	64.79	35.21	61.00	39.00	59.68	40.32
Gujrat	54.60	45.40	54.48	45.52	57.95	42.05	55.72	44.28	54.27	45.73
Haryana	49.76	50.24	49.98	50.02	48.60	51.40	50.91	49.09	47.40	52.60
Jharkhand	60.36	39.64	61.28	38.72	61.89	38.11	61.18	38.82	58.24	41.76
Karnataka	52.57	47.43	54.39	45.61	55.67	44.33	51.29	48.71	52.37	47.63
Kerala	44.92	55.08	46.54	53.46	44.97	55.03	43.95	56.05	40.43	59.57
Madhya Pradesh	53.25	46.75	53.60	46.40	52.88	47.12	51.34	48.66	51.24	48.76
Maharasthra	49.61	50.39	50.97	49.03	51.66	48.34	47.86	52.14	47.88	52.12
Orissa	58.04	41.96	58.44	41.56	61.57	38.43	56.58	43.42	57.86	42.14
Punjab	45.43	54.57	45.60	54.40	49.18	50.82	43.80	56.20	42.67	57.33
Rajasthan	54.18	45.82	54.42	45.58	54.83	45.17	52.71	47.29	52.83	47.17
Tamil Nadu	51.70	48.30	52.42	47.58	52.39	47.61	50.35	49.65	50.50	49.50
Uttar Pradesh	53.95	46.05	52.07	47.93	53.45	46.55	54.03	45.97	52.19	47.81
West Bengal	60.44	39.56	59.75	40.25	58.69	41.31	59.29	40.71	58.91	41.09

Urban

State	59th round		60th round		61st round		62nd round		63rd round	
	food exp	Non-food exp	food exp	Non-food exp	food exp		food exp	Non-food exp	food exp	Non-food exp
Andhra Pradesh	39.40	60.60	37.81	62.19	41.55	58.45	36.40	63.60	37.31	62.69
Assam	48.53	51.47	46.80	53.20	49.50	50.50	43.99	56.01	46.23	53.77
Bihar	50.16	49.84	47.89	52.11	51.13	48.87	50.99	49.01	50.36	49.64
Gujrat	43.80	56.20	43.65	56.35	44.87	55.13	42.93	57.07	39.63	60.37
Haryana	39.53	60.47	41.71	58.29	41.38	58.62	39.78	60.22	39.37	60.63
Jharkhand	48.08	51.92	46.89	53.11	46.92	53.08	44.85	55.15	46.41	53.59
Karna taka	43.13	56.87	43.47	56.53	43.21	56.79	38.95	61.05	39.68	60.32
Kerala	38.36	61.64	40.76	59.24	39.97	60.03	37.38	62.62	34.43	65.57
Madhya Pradesh	36.45	63.55	42.36	57.64	38.90	61.10	38.23	61.77	40.84	59.16
Maharasthra	40.44	59.56	39.26	60.74	40.43	59.57	37.31	62.69	35.13	64.87
Orissa	47.16	52.84	47.65	52.35	49.93	50.07	44.72	55.28	42.15	57.85
Punjab	36.75	63.25	39.44	60.56	37.63	62.37	35.53	64.47	37.06	62.94
Rajasthan	43.70	56.30	43.34	56.66	41.61	58.39	43.20	56.80	42.88	57.12
Tamil Nadu	41.56	58.44	38.67	61.33	42.69	57.31	39.95	60.05	39.64	60.36
Uttar Pradesh	45.23	54.77	44.05	55.95	47.13	52.87	43.94	56.06	43.88	56.12
West Bengal	45.68	54.32	45.51	54.49	43.40	56.60	39.76	60.24	40.21	59.79

4.1 Relationship between Total Expenditure and Food and Non-Food Expenditure: To find the relationship between total expenditure with food expenditure and with non food expenditure scatter plot analysis have been done. From this analysis, regression line has been obtained. For the regression analysis a panel data set of sixteen states and all together five rounds of NSS data (59th round to 63rd round survey) for rural and urban sector have been used separately.

To find the regression line between food expenditure and total expenditure, regression equation chosen

$Y_{ij} = a + bX_{ij} + e_{ij}$,

where,

Y_{ij} = total expenditure of j-th state in i-th round

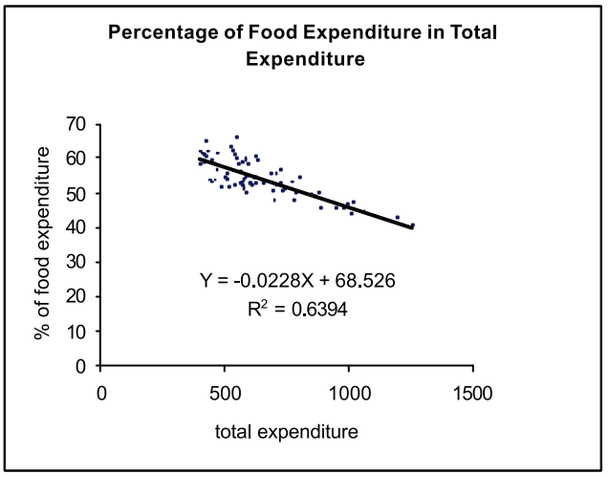
X_{ij} = food or non-food expenditure of j-th state in i-th round as the case may be

e_{ij} = random component

In both the rural and urban sector value of regression coefficient *b* is negative for food expenditure but positive for non-food expenditure. In rural sector the value of b is 0.0228 for food expenditure and the same is 0.0228 for non-food expenditure. In case of urban sector the value of b is 0.0137 for food expenditure and 0.0137 for non-food expenditure.. In both rural and urban sector the fitted curve has downward slope (Fig 1 a & 2a) for food expenditure and upward slope for non-food expenditure. The absolute value of *b* in rural sector being greater than the absolute value of *b* in urban sector in both food and non-food expenditures implies that in rural sector fitted curve for food and non-food expenditure are more steep compared to the corresponding fitted curve in the urban sector (fig 1 a& b and fig 2 a & b). So one may note that the data set also supports the fact that the component of percentage of expenditure on food of the total expenditure has declined in rural and urban sector as income level increases. In all the cases fitted relation is supposed to be good as 64 per cent of the total variation is explained by the fitted regression line (Fig 1 a & 2 a) in rural sector for both food and non-food expenditures. In case of urban sector for food and non-food expenditure 55 per cent of the total variation explains the fitted regression line (fig 1 b & 2 b).

Fig 1

(a) Rural



(b) Urban

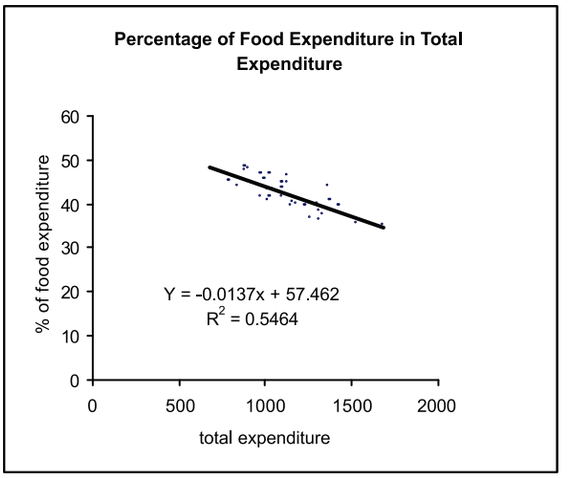
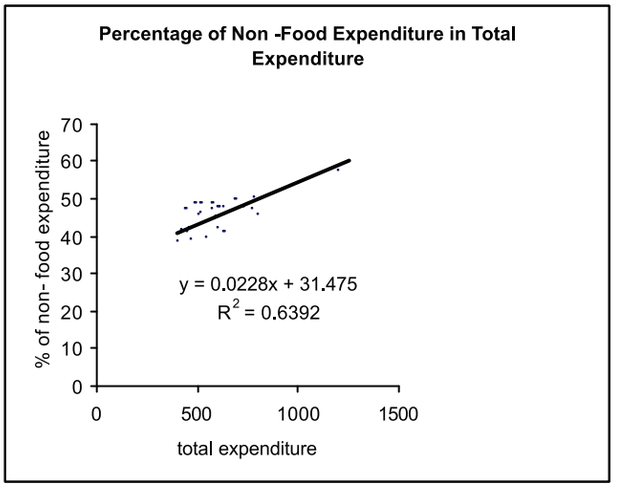
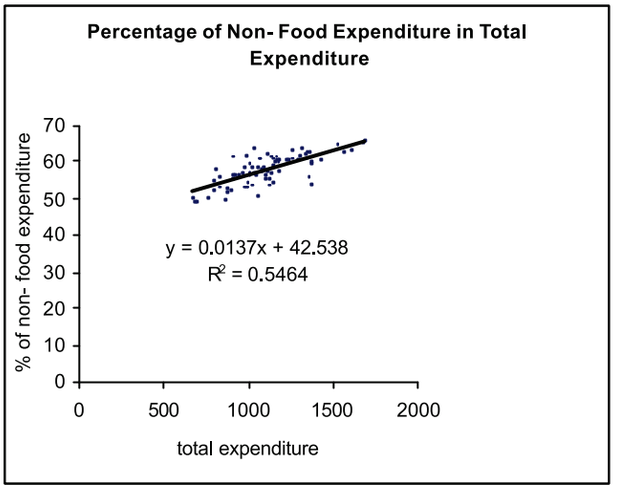


Fig 2

(a) Rural



(b) Urban



5. Item wise Percentage of Food and Non food Expenditure: A comparative study of food and non-food expenditures of West Bengal, vis-à-vis All-India have been made from the 60th round to 63rd round NSS survey results. Item wise expenditures on food and on non-food components of the total expenditure in percentage are shown in Table 4 and Table 5 respectively. Table 6 gives composition of food and non-food expenditures of the total expenditure. Figure 3 depicts percentage expenditure on food items and figure 4 depicts percentage expenditure on non-food items in West Bengal vis-à-vis All-India, separately for rural and urban sector.

From Table 4 it is observed that in rural sector the percentage of consumption of rice in West Bengal is higher compared to All-India scenario. However, a reversal in trend is observed in the consumption of wheat. Total percentage of cereal consumption in West Bengal is higher as compared to All-India in both the rural and urban sector. In both of West Bengal and All-India the percentage of cereal consumption in total food expenditure in rural area is greater than the urban sector. Percentage composition of food items and non-food items of West Bengal and All-India for rural and urban sector are given in figure 3 and

figure 4 respectively. The percentage of consumption of egg, fish and meat, the figure related to West Bengal is nearly double that of All-India in the rural sector and more than double in the urban sector. However, the percentage of consumption of milk and milk products in All-India is nearly three times higher than the corresponding consumption in West Bengal in rural sector and almost two times higher compared to urban sectors. The percentage of consumption of vegetables in both the rural and urban sector in West Bengal is more than the All-India picture.

From Table 5 in the case of expenditure on non-food component, the percentage of expenditure on fuel and electricity is higher in West Bengal than the All India figure as seen in both the rural and urban sector. Medical expenditure in West Bengal is higher than that of all India figure in both rural and urban sector. The percentage of expenditure on education in rural sector of West Bengal is found to be higher than All-India in all the rounds of survey result taken into consideration. While focusing on urban data on the same, it is observed that percentage of expenditure on education is greater in West Bengal than All-India in case of 61st and 62rd rounds of NSS survey. But on the contrary, the same is lower in West Bengal compared to All-India, while considering the NSS survey result of 60th and 63rd round surveys.

From Table 6, in the composition of food and non-food expenditure, it is observed that in rural sector the percentage of expenditure on food items is higher than the percentage of expenditure on non-food items which is opposite to the trend in urban sector of both West Bengal and All-India.

Table 4: Percentage Composition of Consumer Expenditure by Food Group Per Person Per 30 Days : West Bengal and All India from 60th round to 63rd Round

Rural

Item	60th round		61st round		62nd round		63rd round	
	West Bengal	All-India	West Bengal	All-India	West Bengal	All-India	West Bengal	All-India
rice	37.12	20.67	37.17	19.95	35.25	19.17	35.49	18.45
wheat	2.87	10.19	2.77	10.21	3.42	10.67	2.75	10.65
maize	0.00	0.48	0.00	0.56	0.01	0.47	0.01	0.57
other cereals	0.00	2.20	0.01	2.00	0.00	1.60	0.01	1.92
cereals total	**39.99**	**33.55**	**39.95**	**32.72**	**38.68**	**31.91**	**38.26**	**31.59**
cereals substitutes	0.01	0.12	0.01	0.13	0.01	0.13	0.01	0.13
pulses and pulse products*	3.95	5.76	3.61	5.82	4.00	6.30	4.27	6.56
milk and milk products	5.80	15.63	5.72	15.38	6.36	15.29	5.58	15.47
edible oil	8.43	8.53	8.32	8.36	7.61	7.64	7.59	7.49
egg,fish and meat	12.79	6.11	13.49	6.05	13.80	7.30	14.74	6.69
vegetables	14.08	10.80	13.18	11.08	14.15	11.37	14.75	11.85
fruits	1.86	3.23	1.99	3.39	2.47	3.53	2.00	3.43
sugar,salt and spices	6.29	8.29	6.79	8.82	6.24	8.70	6.06	8.35
beverages, refreshments and	6.80	8.00	6.94	8.25	6.68	7.83	6.74	8.44
processed food**								
food total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Urban

Item	60th round		61st round		62nd round		63rd round	
	West Bengal	All-India	West Bengal	All-India	West Bengal	All-India	West Bengal	All-India
rice	20.23	13.21	20.44	13.05	19.39	12.64	19.06	11.76
wheat	5.48	9.88	5.50	9.83	6.78	10.02	6.03	10.48
maize	0.00	0.05	0.01	0.04	0.11	0.08	0.06	0.06
other cereals	0.00	0.78	0.01	0.73	0.02	0.73	0.00	0.67
cereals total	**25.71**	**23.92**	**25.96**	**23.65**	**26.30**	**23.47**	**25.15**	**22.97**
cereals substitutes	0.02	0.11	0.04	0.11	0.00	0.11	0.00	0.10
pulses and pulse products*	3.48	5.26	3.64	5.28	3.97	5.72	4.29	6.14
milk and milk products	9.82	18.80	9.34	18.62	9.27	18.16	9.31	18.85
edible oil	8.57	8.50	8.34	8.13	7.56	7.49	7.52	7.25
egg,fish and meat	15.46	6.31	16.62	6.36	16.33	6.90	17.23	6.61
vegetables	12.13	10.05	11.99	10.47	13.42	10.63	13.75	10.99
fruits	4.14	5.30	3.54	5.29	3.82	5.46	3.83	5.41
sugar,salt and spices	5.95	7.02	6.42	7.49	5.98	7.46	5.66	7.29
beverages, refreshments and processed food**	14.72	14.73	14.11	14.60	13.35	14.60	13.26	14.39
food total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

* includes gram ** includes purchased cooked meals

Table 5: Percentage Composition of Consumer Expenditure by Non Food Group Per Person Per 30 Days: West Bengal and All India from 60th round to 63rd Round

Rural

Item	60th round		61st round		62nd round		63rd round	
	West Bengal	All-India	West Bengal	All-India	West Bengal	All-India	West Bengal	All-India
pan,tobacco and intoxicants	5.05	5.45	5.41	5.98	4.83	5.44	5.44	5.34
fuel and ligjht	23.67	20.82	24.49	22.63	24.49	20.73	24.33	19.91
clothing	18.62	17.45	14.54	11.77	16.13	15.61	15.84	14.76
and footwear								
education	9.17	6.21	7.80	5.94	8.01	5.83	8.59	6.68
medical	13.99	13.48	16.42	14.71	17.55	14.96	16.44	15.76
others	29.50	36.59	31.34	38.97	28.99	37.43	29.36	37.55
non-food total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Urban

Item	60th round		61st round		62nd round		63rd round	
	West Bengal	All-India	West Bengal	All-India	West Bengal	All-India	West Bengal	All-India
pan,tobacco and intoxicants	4.31	2.65	3.52	2.83	3.49	2.45	3.57	2.34
fuel and ligjht	17.52	15.46	18.14	17.29	16.46	15.59	15.96	14.77
clothing and footwear	13.66	12.04	8.93	8.14	11.74	10.77	10.75	10.48
education	9.44	11.17	11.56	8.71	12.44	10.36	10.81	11.51
medical	11.46	9.38	11.19	9.02	13.09	10.06	15.23	10.38
others	43.61	49.30	46.66	54.01	42.78	50.77	43.68	50.52
non-food total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Note: Others include misc. consumer goods, consumer services, rent, taxes and cesses, durable goods total

Table 6: Percentage Composition of Consumer Expenditure by Food and Non Food Group Per Person Per 30 Days: West Bengal and All India from 60th round to 63rd Round

Rural

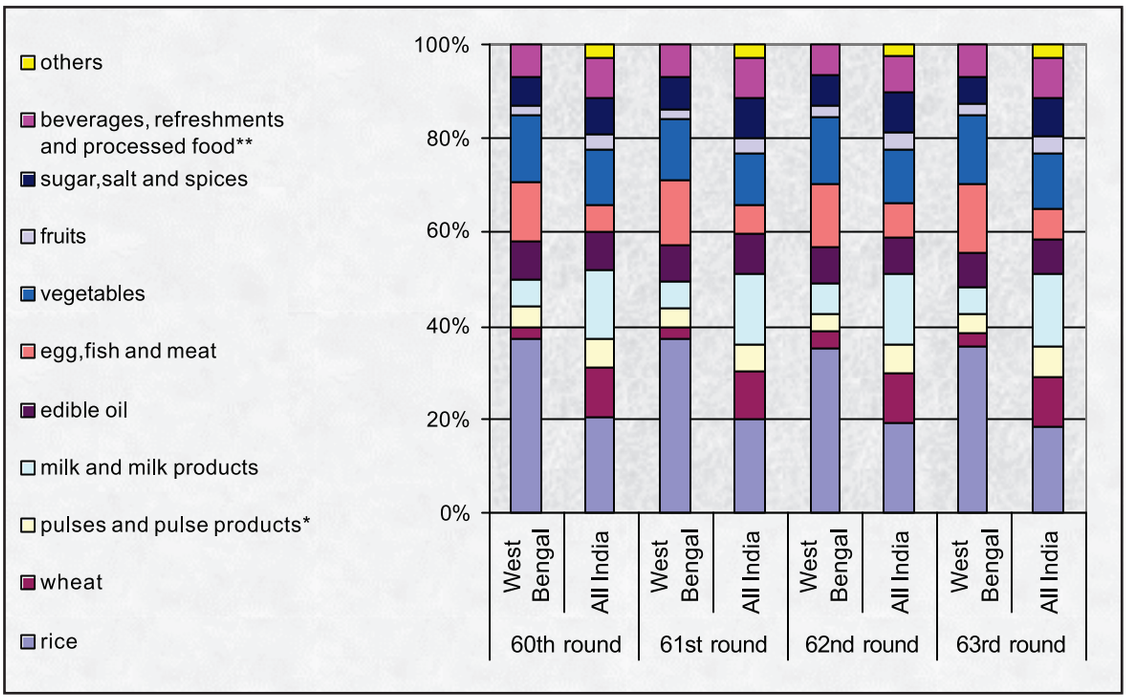
item	60th round		61st round		62nd round		63rd round	
	West Bengal	All-India	West Bengal	All-India	West Bengal	All-India	West Bengal	All-India
food	59.75	53.94	58.69	55.05	59.29	53.34	58.91	52.28
non-food	40.25	46.06	41.31	44.95	40.71	46.66	41.09	47.72
total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Urban

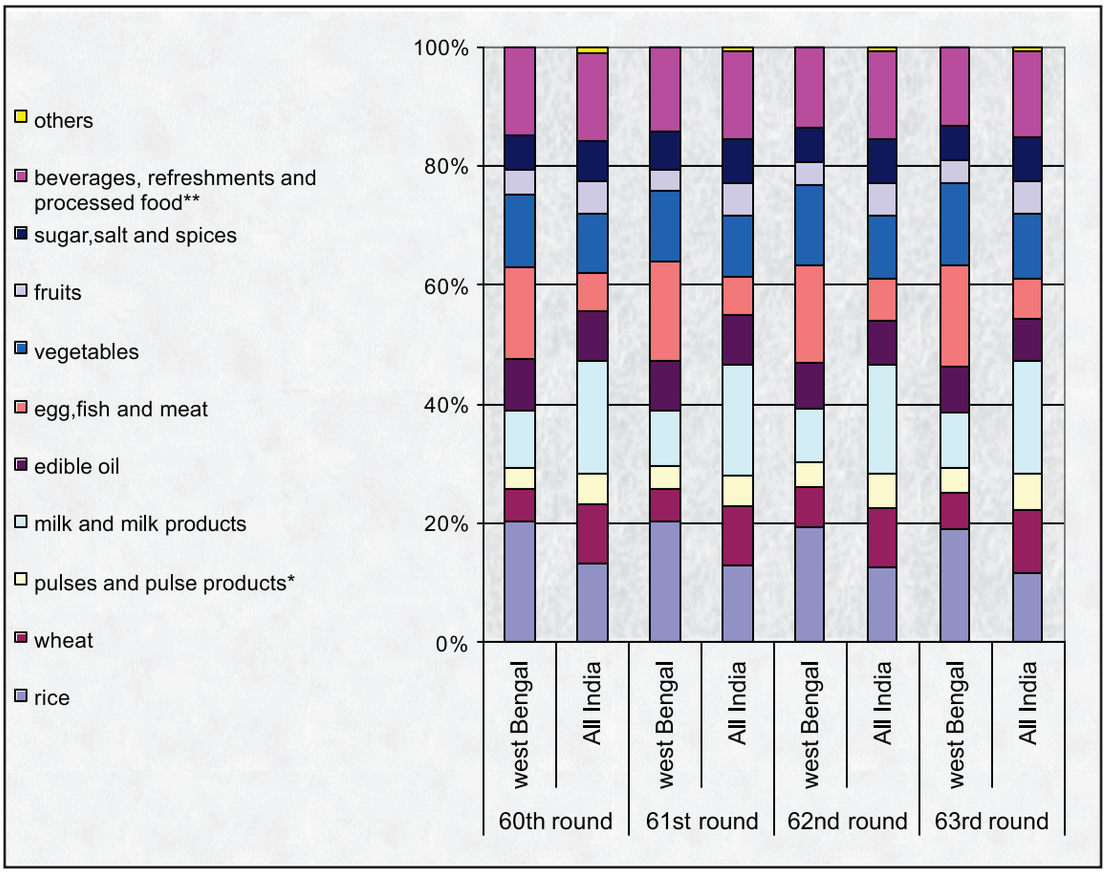
item	60th round		61st round		62nd round		63rd round	
	West Bengal	All-India	West Bengal	All - India	West Bengal	All-India	West Bengal	All-India
food	45.51	41.64	43.40	42.51	39.76	39.96	40.21	39.41
non-food	54.49	58.36	56.60	57.49	60.24	60.04	59.79	60.59
total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Fig 3: Percentage Expenditure on Food Items in West Bengal and All India

(a) Rural



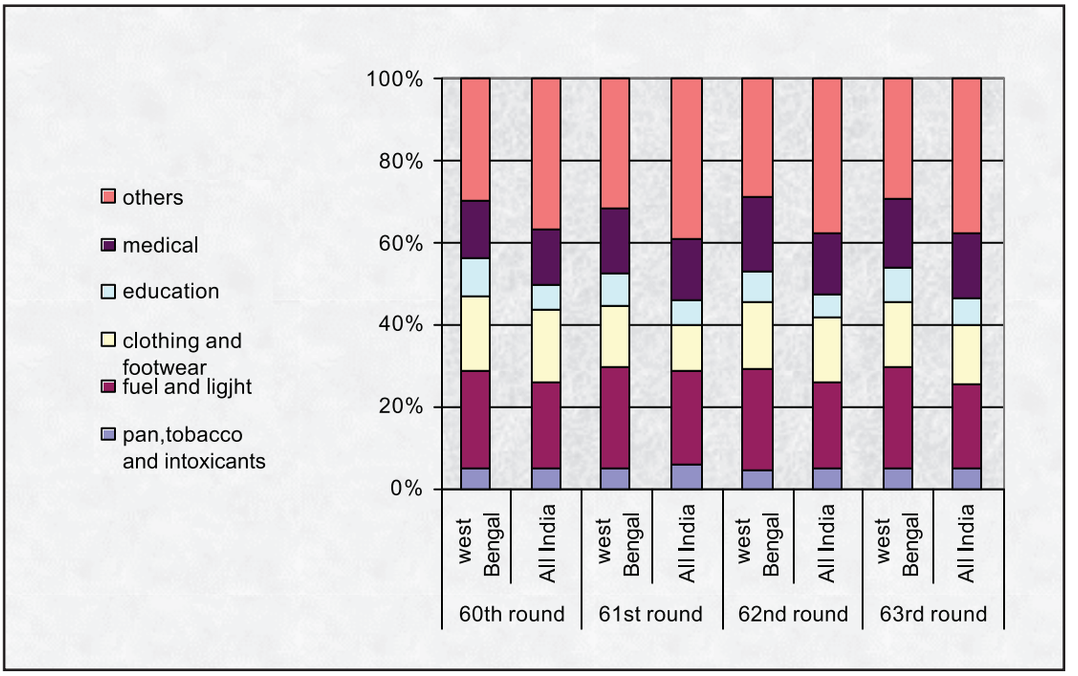
(b) Urban



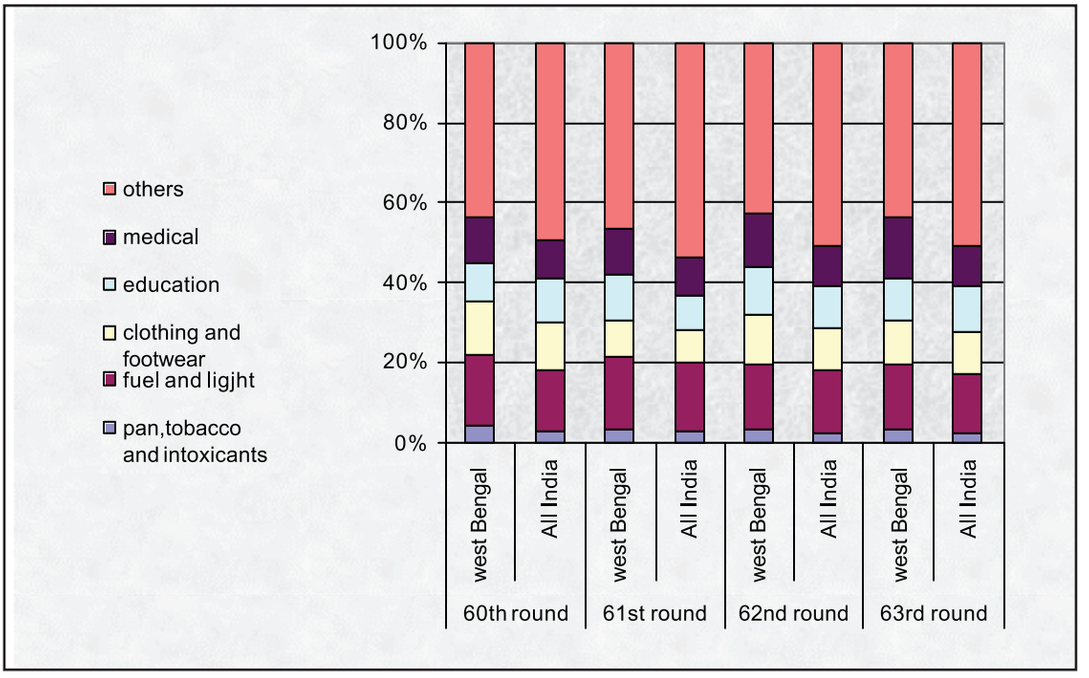
Note: Others include maize, other cereals and cereals substitute

Fig 4: **Percentage Expenditure on Non-Food Items in West Bengal and All-India**

(a) Rural



(b) Urban



6. Study on Growths of Total Expenditure, Food Expenditure and Non Food Expenditure in 63rd Round Compared to 53rd Round: State wise growth of total expenditure, food expenditure and non food expenditure in 63rd round with respect to 53rd round and growth wise rank are shown in Table 7. In rural sector the maximum growth is observed in Kerala, in terms of total expenditure and non-food expenditure and regarding food expenditure Assam ranks first. In the aspect of total expenditure, West Bengal ranks 9th among the states in rural sector. A remarkable observation is that, considering the data on total expenditure

and non-food expenditure in urban sector, West Bengal attained rank 1 among the states selected. While focusing on the expenditure on food items, it may also be seen that of Assam accrued rank 1 whereas West Bengal attained rank 2.

Table 7: Growth of Food, Non- food and Total Expenditure in 63rd Round Compared to 53rd Round and Rank among the States

Rural

State	% cnange in total exp	Rank in growth in total exp	% change in food exp	Rank in growth in food exp	% change non-food exp	Rank in growth in non food exp
Andhra Pradesh	72.82	8	59.62	5	90.08	10
Assam	100.14	3	73.37	1	151.05	2
Bihar	83.55	5	65.99	3	117.62	6
Gujrat	64.40	13	50.83	10	84.06	13
Haryana	88.87	4	56.87	8	131.41	5
Karnataka	81.32	6	47.61	12	142.14	3
Kerala	119.91	1	57.27	6	201.38	1
Madhya Pradesh	57.98	14	38.22	13	85.94	12
Maharasthra	101.01	2	73.3	2	135.62	4
Orissa	53.63	15	37.73	14	82.57	14
Punjab	78.74	7	54.53	9	102.33	8
Rajasthan	69.67	10	48.59	11	101.73	9
Tamil Nadu	65.42	12	37.48	15	108.68	7
Uttar Pradesh	67.37	11	56.96	7	80.43	15
West Bengal	72.02	9	61.97	4	88.84	11
All- India	75.99		56.65		103.5	

Urban

State	% change in total exp	Rank in growth in total exp	% change in food exp	Rank in growth in food exp	% change non food exp	Rank in growth in non food exp
Andhra Pradesh	118.21	3	69.96	3	162.58	5
Assam	134.04	2	96.88	1	179.38	2
Bihar	75.67	15	58.13	8	97.94	14
Gujrat	107.04	7	61.33	5	154.33	7
Haryana	103.91	8	58.42	7	150.65	8
Karnataka	76.27	14	53.03	11	95.85	15
Kerala	111.74	6	47.00	15	175.43	3
Madhya Pradesh	83.30	12	53.02	12	112.32	12
Maharasthra	116.53	4	59.82	6	168.04	4
Orissa	90.67	10	47.32	14	142.71	9
Punjab	113.60	5	62.95	4	161.44	6
Rajasthan	94.72	9	56.55	10	138.34	10
Tamil Nadu	86.64	11	52.56	13	118.72	11
Uttar Pradesh	82.00	13	57.20	9	107.60	13
West Bengal	144.82	1	80.00	2	223.07	1
All- India	103.35		61.51		144.55	

Table 8 shows the growth of food, non-food and total expenditure in 63rd round as compared to 53rd round. While comparing the figures of West Bengal with the All-India it is observed that in the urban sector in West Bengal the figure of growth in total expenditure and food expenditure are higher than the corresponding figure of All-India and the figure of growth in non-food expenditure is substantially higher than that All-India figure. In rural sector the figure of growth in food expenditure only is higher than the All-India figure. In both West Bengal and All-India, among the food items maximum growth is found in case of beverages, refreshments and processed food in the rural sector and in fruits in the urban sector. The growth in fuel and light in West Bengal is higher than the corresponding figure of All-India in both rural and urban sector. In the social sector, growth in education is 69.05 as against 88.92 per cent in All-India in the rural sector, whereas, the same is 184.25 as against 137.49 in All-India in the urban sector. On the other hand, in the rural sector, growth in medical expenses is 111.49 in West Bengal and 132.09 in All-India and in the urban sector the same is 323.38 in West Bengal and 150.32 in All-India.

Table 8: Growth in Food, Non food and Total Expenditure in 63rd Round Compared to 53rd Round West Bengal and All India

Rural

item	63rd round		53rd round		% growth in 63rd round compared to 53rd round	
	West Bengal	All-India	West Bengal	All-India	West Bengal	All-India
rice	131.68	67.06	105.61	52.19	24.69	28.49
wheat	10.21	38.71	7.94	26.63	28.59	45.36
maize	0.02	2.08	0.02	1.21	0	71.90
other cereals	0.05	6.95	0.01	6.45	400	7.75
cereals total	141.96	114.80	113.58	86.48	24.99	32.75
cereals substitutes	0.03	0.46	0.03	0.25	0	84.00
pulses and pulse products*	15.83	23.85	9.46	15.66	67.34	52.30
milk and milk products	20.72	56.23	13.55	39.31	52.92	43.04
edible oil	28.16	27.22	13.95	15.98	101.86	70.34
egg,fish and meat	54.68	24.32	25.70	11.79	112.76	106.28
vegetables	54.73	43.06	25.48	21.10	114.80	104.08
fruits	7.42	12.47	4.13	6.65	79.66	87.52
sugar,salt and spices	22.55	30.34	12.58	20.18	79.25	50.35
beverages, refreshments and processed food**	25.00	30.67	10.65	14.59	134.74	110.21
food total	**371.08**	**363.42**	**229.11**	**231.99**	**61.97**	**56.65**
pan,tobacco and intoxicants	14.08	17.7	8.76	11.67	60.73	51.67
fuel and ligjht	62.96	66.07	26.51	28.30	137.5	133.46
clothing and footwear	41.00	48.95	32.26	32.19	27.09	52.07
education	22.23	22.16	13.15	11.73	69.05	88.92
medical	42.53	52.29	20.11	22.53	111.49	132.09
others	75.98	124.58	36.25	56.6	109.6	120.11
non-food total	**258.78**	**331.75**	**137.06**	**163.02**	**88.84**	**103.5**
total food and non food	**629.86**	**695.16**	**366.15**	**395.01**	**72.02**	**75.99**

Urban

item	63rd round		53rd round		% growth in 63rd round compared to 53rd round	
	West Bengal	All-India	West Bengal	All -India	West Bengal	All-India
rice	105.11	60.81	82.93	49.46	26.75	22.95
wheat	33.23	54.19	20.97	33.43	58.46	62.10
maize	0.34	0.32	0	0.21	-	52.38
other cereals	0	3.48	0.05	2.67	-100.00	30.34
cereals total	**138.68**	**118.8**	**103.95**	**85.77**	**33.41**	**38.51**
cereals substitutes	0.01	0.5	0.01	0.38	0	31.58
pulses and pulse products*	23.65	31.74	14.19	19.33	66.67	64.20
milk and milk products	51.32	97.49	30.29	62.75	69.43	55.36
edible oil	41.44	37.52	21.57	23.6	92.12	58.98
egg,fish and meat	95.02	34.2	40.88	19.58	132.44	74.67
vegetables	75.79	56.87	32.43	30.50	133.70	86.46
fruits	21.14	28.00	7.56	14.11	179.63	98.44
sugar,salt and spices	31.23	37.71	17.43	23.93	79.17	57.58
beverages, refreshments and processed food**	73.12	74.42	38.03	40.31	92.27	84.62
food total	**551.4**	**517.25**	**306.34**	**320.26**	**80.00**	**61.51**
pan,tobacco and intoxicants	29.24	18.58	13.78	11.99	112.19	54.96
fuel and ligjht	130.82	117.44	46.95	45.68	178.64	157.09
clothing and footwear	88.12	83.32	39.57	44.03	122.69	89.23
education	88.60	91.60	31.17	38.57	184.25	137.49
medical	124.94	82.58	29.51	32.99	323.38	150.32
others	358.14	401.73	92.79	151.93	285.97	164.42
non-food total	**819.86**	**795.25**	**253.77**	**325.19**	**223.07**	**144.55**
total food and non food	**1371.26**	**1312.5**	**560.11**	**645.44**	**144.82**	**103.35**

* includes gram

** includes purchased cooked meals

Note: Others include misc. consumer goods, consumer services, rent, taxes and cesses, durable goods total.

7. Conclusions: From the study of consumer expenditure data of NSS 53rd round and from 59th round to 63rd round survey following observations are:

i) As income increases, people generally spend greater percentage of income on non-food items.

ii) In rural sector, in view of total expenditure, food expenditure and non-food expenditure, the relative position among the states more or less remains same over the time span under purview. In urban sector, except very few cases, concomitant trend is found in the relative position across the states in respect of total expenditure, food and non-food expenditure.

iii) In West Bengal, rural people spend approximately 40 per cent of the total expenditure and urban people spend approximately 30 per cent of the total expenditure on main cereal item *i.e.* rice and wheat considering the entire rounds from 60th to 63rd round surveys.

iv) The rural and urban people of West Bengal prefer egg, fish and meat. Rural people spend nearly 14 per cent of total expenditure and urban people spend nearly 16 per cent of the total expenditure on these items.

v) In rural sector, people spend more on the food items than on the non-food items, both in West Bengal and All-India. A reversal of trend is found in the urban area.

vi) Among the states considered, West Bengal ranks first in the growth of total expenditure and of non-food expenditure in urban area in the intervening time period from 53rd round to 63rd round surveys.

vii) In urban sector the growths of total expenditure, food expenditure and non-food expenditure in West Bengal are higher than the corresponding figures of All-India over the time span from 53rd round to 63rd round of surveys. In rural sector growth in food expenditure over the same time span in West Bengal is higher than the corresponding figure of All-India.

viii) In urban sector the growth of medical expenditure is phenomenal in West Bengal, which is almost double the corresponding growth in All-India.

References

1. NSS Report No.442: Household Consumer Expenditure and Employment Situation in India, 1997
2. NSS Report No.490: Household Consumer Expenditure and Employment-Unemploymen Situation in India, 2003
3. NSS Report No.505: Household Consumer Expenditure in India, January-June 2004
4. NSS Report No.508: Level and Pattern of Consumer Expenditure, 2004-05
5. NSS Report No.523: Household Consumer Expenditure in India, 2005-06
6. NSS Report No. 527: Household Consumer Expenditure in India, 2006-07

Service Sector

Economic Inclusion of Non-farm Informal Service Sector: An Effective Safety Net

V.K. Arora and Siladitya Chaudhuri

Abstract

In mainstream economic thinking the informal sector provides a cushion against fluctuations and recession in the formal economy, providing vast populations in developing countries with a safety net. In India, the Informal Sector is a term obscure in the official Statistics. The terms used in the Indian NAS are 'organised' and 'unorganised' sectors. The informal sector can best be considered as a sub-set of the unorganised sector. Again in the non-farm informal sector the service providing units have the overwhelming prevalence. Even in the unorganized manufacturing sector as revealed in the NSS 62nd round Survey, majority of the tiny units are actually engaged in providing manufacturing services. These units, mostly own account enterprises and non directory enterprises, suffer financial exclusion. This paper examines the extent of economic exclusion of the tiny units as revealed from the 62nd and 63rd round of NSS survey and suggests ways and means to monitor the extent of Economic Safety Net available for the informal sector.

Economic Inclusion of Non-farm Informal Sector: An Effective Safety Net

V.K. Arora and Siladitya Chaudhuri

In mainstream economic thinking 'the informal sector provides a cushion against fluctuations and recession in the formal economy, providing vast populations in developing countries with a safety net'. Informal sector in India is broadly characterized as consisting of units engaged in the production of goods and services with the primary objectives of generating employment and incomes to the persons concern. These units typically operate at low level of organisation, with little or no division between labour and capital as factors of production and on a small scale. Labour relations, where they exist, are based mostly on casual employment, kinship or personal or social relations rather than contractual arrangements with formal guarantees. Thus, production units in informal sector are not constituted as separate legal entities independently of the household or house hold members that own them and for which no complete sets of accounts are available which would permit a clear distinction of the production activities of the enterprises from the other activities of their owners.

As a formal definition the UNSC has defined the Informal sector as "The informal sector (SNA-1993, UNSC) consists of units engaged in the production of goods and services with the primary objective of generating employment and incomes to the persons engaged in the activity. These units form part of the household sector as un-incorporated enterprises owned by individual or households and having employment size below a certain threshold."

In line with the international definition and the characteristics of Indian industries, the 'Task Force on Definitions and Statistical Issues' constituted by the NCEUS recommended the following definition for the unorganised /informal sector as "*The unorganised/informal sector consists of all unincorporated private enterprises owned by individual or households engaged in the sale and production of goods and services operated on a proprietary or partnership basis and with less than ten total workers".*

The above definition applies equally to all the sectors of the economy including agriculture. However, statistical surveys like Economic Censuses in India so far have been covering only nonagricultural enterprises in the unorganised sector. Though the above definition does not make any distinction between agricultural and nonagricultural enterprises, the concept of enterprise is generally so far being used in India in the context of the non-agricultural sector. Such a restrictive meaning for enterprises, it is felt, would lead to the exclusion of a large number of workers in the agricultural sector, not engaged directly in cultivation. Hence, the non-farm sector may be defined as one not engaged in crop production, plantation and forestry. Thus, it may include enterprises that engage in animal husbandry, fisheries, poultry and piggery, even though these form part of the primary sector of the economy (NCEUS recommendation).

However the present study covers all economic activities in the informal sector other than primary sector such as. AGRICULTURE, HUNTING AND FORESTRY (NIC2004 section A), FISHING (NIC2004 section B), MINING AND QUARRYING (NIC2004 section C) and secondary, ELECTRICITY, GAS AND WATER SUPPLY (NIC2004 section E), CONSTRUCTION (NIC2004 section F) and tertiary, WHOLESALE AND RETAIL TRADE (NIC2004 section G), PUBLIC ADMINISTRATION AND DEFENCE (NIC2004 section L), EXTRA TERRITORIAL ORGANIZATIONS AND BODIES (NIC2004 section Q)

The main sources of data relating to un-organised sector enterprises are: (i) Economic Census (ii) Census of Small Scale Industries and (iii) Surveys conducted by the National Sample Survey Organisation on informal sector, unorganised manufacturing and unorganised services sector enterprises. The estimated number of enterprises varies from survey to survey essentially because of the coverage.

This paper restricted itself to NSS surveys, deals with the informal sectors, mainly proprietary and partnership enterprises, covering the nonfarm sector activities indicated above. This paper has four sections. Section two discussed the prevalence, employment generation and productivity of the informal sector enterprises namely 'proprietary and partnership' enterprises. Section three presented the financial liabilities of these enterprises and extent financial safety they are covered with. The last section concludes the finding of the study.

Section 2: Prevalance, employability and productivity of Informal sector:

To begin with let us examine how big the informal sector is and how much employment it generates. Table 2.1 presents the distribution of workers including agricultural workers by formal and informal both in organised and unorganised sectors. The estimates of informal and formal employment in organised and unorganised sectors were worked out for the years 1999-2000 and 2004-05. As per these estimates, about 45.7 per cent of the employees in the organised sector were informal workers during 1999-2000 and it went up to 46.6 per cent by 2004-05. There was also formal employment in the unorganised sector to the extent of about 0.4 per cent of the total employment in both 1999-2000 and 2004- 05. Out of the total work force, 91.2 per cent were informal workers in 1999-2000, which increased to 92.4 per cent in 2004-05.

Table 2.1: Distribution of Workers by Type of Employment and Sector (Million)

Sector	1999-2000			2004-2005		
	Informal	**formal**	**Total**	**Informal**	**formal**	**Total**
Unorganised Sector	341.28(99.60)	1.36(0.40)	342.64(100)	393.47(99.64)	1.43(0.36)	394.90(100)
Organised Sector	20.46(37.80)	33.67(62.20)	54.12(100)	29.14(46.58)	33.42(53.42)	62.57(100)
Total:	361.74(91.17)	35.02(8.83)	396.76(100)	422.61(92.38)	34.85(7.46)	457.46(100)

Note: 1. Figures in brackets indicate percentages.
2. Un-organized/Informal workers consist of those working in the un-organized sector or households, excluding regular workers with social security benefits provided by the employers and the workers in the formal sector without any employment and social security benefits provided by the employers.

Source: NSSO 55th Round 1999-00, Employment and Unemployment; NSSO 61st Round 2004-05, Employment and Unemployment.

The distribution of non-farm workers by formal and informal categories is given in Table 2.2. The share of unorganised/informal non-farm workers has gone up from 80 percent in 1999-2000 to 84 percent in 2004-05.

Table 2.2: Distribution of Non-Farm Workers by Type of Employment and Sector						
	1999-2000			2004-2005		
	Informal	formal	Total	Informal	formal	Total
Unorganised Sector	109.37(99.04)	1.06(0.96)	110.43(100)	140.65(99.00)	1.42(1.00)	142.07(100)
Organised Sector	17.58(36.13)	31.08(63.87)	48.66(100)	25.89(45.85)	30.58(54.15)	56.47(100)
Total workers	126.95(79.80)	32.13(20.20)	159.09(100)	166.54(83.89)	31.99(16.11)	198.54(100)

The Approach Paper to the 11th Five Year Plan recognized the "dualistic nature of the economy, with large differences in productivity between agriculture and non-agriculture on the one hand and within the non-agriculture sector, between the organised and unorganised sectors on the other. The trends show that while employment in the unorganised non-agricultural sector has expanded it is generally low quality employment constrained by low productivity. Further the increase is largely in the self-employment category suggesting a relative shrinkage in wage employment opportunities of a decent kind, especially those with some job protection and social security".

Table 2.3: Distribution of Non- Farm Unorganised Enterprises (per cent)			
Employment size (no.)	No. of units	No. of workers	Gross Value added
1	57.10	31.80	29.08
2-5	40.29	54.74	46.94
6-9	1.92	7.5	13.27
Sub total	**99.31**	**94.40**	**89.29**
10-19	0.58	4.08	7.78
20+	0.11	1.88	2.93
All	100.00	100.00.	100.00
Source: NSS 55th Round 1999-00, Informal Non-agricultural Enterprises.			

The Informal Sector Survey conducted during July 1999 - June 2000 covered proprietary and partnership establishments both in manufacturing and service sectors without any size restriction. As per the survey, the estimated number of establishments in the informal sector was about 44.42 million and employed about 79.79 million persons. The number of units employing less than 10 workers was as high as 99.31 per cent but the share of these units in the number of workers and gross value added was only 94.4 per cent and 89.29 per cent, respectively.

Table 2.4. Distribution of Unorganised Manufacturing Enterprises (per cent)			
Employment Size(no.)	Propriety And Partnership	others	All Enterprises
1	42.43	0.01	42.44
2 - 5	53.35	0.03	53.38
6 - 9	2.99	0.01	3.00
Sub-total	**98.77**	**0.05**	**98.82**
10 - 19	0.94	0.03	0.97
20 +	0.19	0.02	0.21
Sub-total	1.13	0.05	1.18
All	99.90	0.10	100.0
Source: NSS 56th Round 2000-01, Unorganised Manufacture Sector in India,			

The unorganised manufacturing enterprises (units not covered under Annual Survey of Industries) were surveyed in the NSS 56th Round during July 2000 and June 2001. As per the survey, there were about 17.02 million unorganised manufacturing units in the country. Of these, about 99.90 per cent of the units were proprietary and partnership establishments and only 0.10 per cent were in the other categories of companies, cooperatives, etc. The establishments employing less than ten workers amongst proprietary and partnership firms were about 98.77 per cent. The percentage distribution of unorganised manufacturing units by employment size and type of ownership is given in Table 2.4.

The unorganised services sector enterprises (units not run by Government or those in the public sector) were surveyed in the NSS 57th Round during July 2001 to June 2002. This Survey however, excluded an important sub-sector namely trade and financial intermediation which was the largest sector providing employment to those engaged in non-farm unorganised economic activities. As per the survey, the estimated service sector enterprises excluding the units engaged in Trade and Financial Intermediation

were 14.47 million. About 98.67 per cent of these enterprises were proprietary and partnership and of these about 97.81 per cent were employing less than ten workers each. In fact, 64.14 per cent units did not have any worker except the entrepreneur (known as Own Account Workers) shown in Table 2.5.

In the NSS 62nd Round during July 2005 and June 2006. As per the survey, there were about 17.05 million unorganised manufacturing units in the country. Of these, about 99.90 per cent of the units were proprietary and partnership establishments and only 0.10 per cent were in the other categories of companies, cooperatives, etc. The establishments employing less than ten workers amongst proprietary and partnership firms were about 98.50 per cent. The percentage distribution of unorganised manufacturing units by employment size and type of ownership is given in Table 2.6. it may be noted that, as compared to 56th round of NSS there was a significant increase in enterprises of employment size 1. Perhaps more and more employment seekers preferred self-employment rather than being working for others and remain underpaid.

Table 2.6: Distribution of Unorganised manufacturing sector enterprises (per cent)

Employment Size(no.)	Propriety And Partnership	others	All Enterprises
1	46.54	0.02	46.56
2 - 5	48.85	0.02	48.87
6 - 9	3.09	0.02	3.11
Sub Total	**98.50**	**0.06**	**98.56**
10 - 19	1.16	0.03	1.19
20+	0.21	0.01	0.21
All	99.90	0.10	100.00

Source: NSS 62nd Round 2005-06, unorganised manufacturing sector in India.

Table 2.5. Distribution of Unorganised Service Sector Enterprises (per cent)

Employment Size(no.)	Propriety And Partnership	others	All Enterprises
1	64.14	0.19	64.33
2 - 5	31.87	0.40	32.27
6 - 9	1.79	0.34	2.13
Sub-total	**97.81**	**0.92**	**98.73**
10 - 19	0.71	0.21	0.92
20 +	0.15	0.20	0.35
Sub-total	0.86	0.41	1.27
All	98.67	1.33	100.00

Source: NSS 57th Round 2001-02, Unorganised Service Sector in India.

As compared to the 57th round the scenario changed quite drastically for the service sector during the period 2006-07 (63rd round). This might be primarily because of the coverage of the two surveys. The inclusion of financial sectors made the invisible market of micro financing intermediation a financial safety net to be reckoned with.

The unorganised services sector enterprises (units not run by Government or those in the public sector) were surveyed in the NSS 63rd Round during July 2006 to June 2007. This Survey excluded trade but unlike 57th round included financial intermediation which was the largest sector providing employment to those engaged in non-farm unorganised economic activities. As per the survey, the estimated service sector enterprises were 16.51 million. About 91.76 per cent of these enterprises were proprietary and partnership and of these about 90.86 per cent were employing less than ten workers each. A significant 8.24 percent of enterprises were either companies or cooperatives. This has been shown in Table 2.7.

Table 2.7. Distribution of Unorganised Service sector enterprises including financial intermediation but excluding trade (per cent)

Employment Size(no.)	Propriety And Partnership	others	All Enterprises
1	61.57	1.36	62.93
2 - 5	27.76	4.79	32.54
6 - 9	1.53	0.27	1.81
Sub Total	**90.86**	**6.42**	**97.28**
10 - 19	0.74	1.54	2.28
20+	0.16	0.29	0.44
All	91.76	8.24	100.00

Source: NSS 63rd Round 2006-07, Service Sector in India.

Table 2.8 reveals that the share of own account enterprises (OAEs) in the total unorganised sector enterprises is very high. The preponderance of Own Account Workers in the total non-farm unorganised enterprises is also confirmed by the results of all the surveys. According to the 55th NSS Round, 57 percent

of enterprises operated with only one worker, which means that they were Own Account Enterprises. This was found to be 42 per cent in the case of manufacturing unorganised enterprises (56th Round) and 46 percent in 62nd round and 64 and 63 per cent in the case of service-related unorganised enterprises in 57th round and 63rd round. In the case of the SSI sector, 40 per cent of the units were Own Account Workers. It is confirmed from all the surveys and also the Census that more than 95 per cent of the enterprises did not have more than 5 workers and almost 99 per cent of enterprises had less than 10 workers.

Table 2.8. Estimated Number of Enterprises by Employment Size (million)

Employment size(no)	55th Round		56th Round		57th Round		62nd Round		63rd Round	
	1999 - 2000		2000 - 2001		2001 -2002		2005 - 06		2006 - 07	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
1	25.36	57.09	7.23	42.57	9.31	64.29	7.94	46.56	10.39	62.93
2 - 5	17.90	40.29	9.09	53.40	4.67	32.27	8.33	48.87	5.37	32.54
6 - 9	0.85	1.91	0.50	2.93	0.31	2.14	0.53	3.11	0.30	1.81
Sub-total	44.11	99.30	16.82	98.80	14.29	98.70	16.80	98.56	16.06	97.28
10 - 19	0.26	0.58	0.17	1.00	0.13	0.90	0.20	1.19	0.38	2.28
20 +	0.05	0.12	0.04	0.20	0.05	0.40	0.04	0.21	0.07	0.44
All	44.42	100.00	17.02	100.00	14.47	100.00	17.05	100.00	16.51	100.00

The number of enterprises and the number of workers steadily (except for OAE and NDE) decreased as employment size of the enterprises increased. However, Gross value added, Gross value added per enterprises and Gross value added per worker steadily increased with the employment size. The phenomena have been observed for both 62nd round and 63rd round. This has been shown in table 2.9.

Table 2.9: Gross value added, GVA per worker and GVA per enterprises for non -farm unorganised enterprises

	62nd round of NSS					63rd round of NSS				
Emp -size (in no.)	ent (in mill.)	workers (in mill.)	GVA (in crore)	GVA per ent. (in Rs.)	GVA per worker in Rs.	Ent. (in mill.)	workers (in mill.)	GVA (in crore)	GVA per ent (in Rs.)	GVA per work in Rs.
1	7.94	7.94	11064	13940	13940	10.39	10.39	33499	32241	32241
2 - 5	8.33	20.73	36789	44155	17748	5.37	12.93	39664	73812	30686
6 - 9	0.53	3.69	18696	353113	50683	0.30	2.13	12252	410546	57651
Sub Total	**16.80**	**32.36**	**66555**	**39610**	**20570**	**16.06**	**25.44**	**85416**	**53177**	**33573**
10 - 19	0.20	2.45	12554	620713	51139	0.38	4.73	17693	469434	37368
20+	0.04	1.39	6448	1767562	46261	0.07	2.70	61132	8386579	226084
All	17.05	36.35	86559	50772	23811	16.51	32.88	164241	99466	49951

Section 3: financial inclusion and safety net

Economic inclusion or inclusive growth embeds 'economic safety nets' in its meaning. Economic inclusion of an enterprise or a self-employed means proper credit flow from institutional sources, institutional assistance for procurement of raw material, institutional assistance for marketing of product, training etc. The All India Debt and Investment Survey revealed that the share of moneylenders in the total dues of rural households rose from 17.5 per cent in 1991 to 29.6 per cent in 2003. *The findings of the NSS 59th Round (2003) revealed that out of the total number of cultivator households, only 27 per cent receive credit from formal sources and 22 per cent from informal sources. The remaining households, of mainly small and marginal farmers, have virtually no access to credit. Which means a large part of the populace is virtually* ***Financially excluded****.*

The *financially excluded* sections largely comprise marginal farmers, landless labourers, oral lessees, self employed and unorganised sector enterprises, urban slum dwellers, migrants, ethnic minorities and socially excluded groups, senior citizens and women. While there are pockets of large excluded population in all parts of the country, the North East, Eastern and Central regions contain most of the financially

excluded population.

Reasons for financial exclusion:

There are a variety of reasons for financial exclusion. In remote, hilly and sparsely populated areas with poor infrastructure, physical access itself acts as a deterrent. From the demand side, lack of awareness, low incomes/assets, social exclusion, illiteracy act as barriers. From the supply side, distance from bank branch, branch timings, cumbersome documentation and procedures, unsuitable products, languages are common reasons for exclusion. On the other hand, the ease of availability of informal credit sources makes these popular even if costlier. The requirements of independent documentary proof of identity and address can be a very important barrier in having a bank account especially for migrants and slum dwellers.

Country's Central bank has proposed many initiatives to bring this vast multitude to its fold. For example: General purpose Credit Card (GCC) facility up to Rs. 25000/- at their rural and semi urban branches, branchless banking with the help of NGO/SHG, setting up pilots for credit counselling and financial education etc.

The RBI report shows that about a total credit of 1.42 lakh crore had been disbursed in 2002 -2003, 1.43 lakh crore in 2003-2004 and about 1.82 lakh in 2004-2005.

Table 3.1. Institutional Credit to Non-Farm Unorganised Enterprises including the SSIs (Rs.: crores)

Sl. No.	Institutional source	March2003	March2004	March2005
1	Scheduled Commercial Banks	94,300	1,05,522	129,785
		(66.7)	(73.0)	(76.7)
2	Regional Rural Banks	11,897	14,393	16,161
		(8.4)	(10.1)	(8.9)
3	Cooperative Banks	25,317	15,117	24,912
	(Urban Cooperative PCBs)	(17.9)	(10.6)	(13.7)
4	SIDBI (Direct Finance)	1,917	2,695	3,494
		(1.3)	(1.9)	(1.9)
5	State Financial Corporations	1,856	1,134	1,495
		(1.3)	(0.6)	(0.8)
6	Small Industries Development	6,789	4,414	6188
	Corporations including NSIC	(4.8)	(3.01)	(3.4)
	Total	1,42,076	1,43,005	1,82,035
		(100.0)	(100.0)	(100.0)

The financial liability from institutional source that came out of our survey was only a fraction of it. Although the coverage of loan disbursement by the institutional sources as reported by the central bank may be bigger than the coverage of NSS 62nd and 63rd round put together. Surely these two rounds occupied the major part of the RBI coverage. More over the data that has been collected was on the outstanding loan from various sources in both the schedules of enquiry. Surely, the outstanding loan was the cumulative amount outstanding as on that date. Therefore, the table 3.1 and 3.2&3.3 are not strictly comparable. However one can have a fair idea about the estimates.

Table 3.2. Financial liabilities of the unorganised manufacturing sector (62nd round) (in Rs. Crore)			
Source	Rural	Urban	Total
Total enter prises (in million)	**12.11**	**4.94**	**17.05**
central and state level term lending institutions, government (central, state, local bodies), banks & societies (public sector, commercial, co-operative)	3198	6351	9548
other institutional agencies	893	526	1418
Sub total	**4090**	**6876**	**10967**
moneylenders	544	1181	1725
business partner(s)	267	348	615
suppliers / contractors	100	267	367
friends and relatives	453	1087	1539
others	138	4570	4708
total liabilities	**5592**	**14330**	**19921**

The loan outstanding for the unorganized manufacturing sectors stood at Rs. 19921 crore with urban share of Rs. 14330 crore. The cumulative government (including bank etc.) lending stood at 9548 crore for 17.05 million units. The total institutional loan estimated to be Rs. 10921 crore. About Rs. 9000 crore outstanding loan was borrowed from informal sources.

Incase of unorganized service sector, the NSS 63rd round revealed that the loan outstanding for the unorganized manufacturing sectors stood at Rs. **241850** crore with urban share of Rs. **200155** crore. The cumulative government (including bank etc.) lending stood at 45394 crore for 17.05 million units. The total institutional loan estimated to be Rs. **54622** crore. About Rs. 18700 crore outstanding loan was borrowed from informal sources. Even after certain adjustment these two major sectors of unorganized enterprises constitute only less than ½ of the bank lending as reported in RBI report.

Table 3.3. Financial liabilities of the unorganised service sector (63nd round)			
Source	Rural	Urban	Total
Total enter prises	**5.37**	**2.30**	**7.67**
long term interest-free loans	778	2197	2975
central and state level term lending institutions, government (central, state, local bodies), banks & societies (public sector, commercial, co-operative)	9992	35402	45394
other institutional agencies	1661	4592	6253
Sub total	**12432**	**42190**	**54622**
member's funds	4199	8505	12705
fixed deposits	11125	25620	36745
moneylenders	644	1237	1881
business partner(s)/ inter-corporate loan	446	8545	8991
suppliers / contractors	69	229	298
others (debentures, etc.)	662	3384	4046
Total liabilities	**41695**	**200155**	**241850**

Such huge difference might be due to the sampling design of the unorganized sector NSS survey, where focus of the survey was not on financial inclusion of unorganized enterprises.

Financial intermediaries

At the national level, the SHG movement has had a longer history through the activities of NGOs-at the community level. The linking of SHGs to microfinance is of a more recent origin. SHGs are groups of usually women who get together and pool their savings and give loans to members. Usually there is a NGO that promotes and nurture these groups. The concept was first promoted by Noble laureate Prof. Md. Yunis of Banladesh. In our country it was only in the late 1980s that a few NGOs initiated experimentation in channeling microfinance through SHGs.

Table 3.4: Cumulative Growth in SHG-Bank Linkage by States (As on March 31st) (Number of SHGs)				63rd round results	
States	2004	2005	2006	63round SHG	Total members
Assam	10,706	31,234	56,449	23496	322140
Bihar	16,246	28,015	46,221	57	283
Chhattisgarh	9,796	18,569	31,291	26548	431496
Gujarat	15,974	24,712	34,160	2769	3166287
Himachal Pradesh	13,228	17,798	22,920	5359	827624
Jharkhand	12,647	21,531	30,819	3705	55438
Maharashtra	38,535	71,146	1,31,470	114787	13299174
Madhya Pradesh	27,095	45,105	57,125	29044	634702
Orissa	77,588	1,23,256	1,80,896	105424	2076170
Rajasthan	33,846	60,006	98,171	2357	24369
Uttar Pradesh	79,210	1,19,648	1,61,911	16265	172127
Uttaranchal	10,908	14,043	17,588	104	241248
West Bengal	51,685	92,698	1,36,251	128563	2936887
Total for 13 states	3,97,464	6,67,761	10,05,272	458479	24187945
	(36.8)	(41.2)	(44.9)	(38.8)	(56.5)
Southern States	6,74,356	9,38,941	12,14,431	716841	18255991
	(62.5)	(58.0)	(54.3)	(60.7)	(42.7)
All-India Total	1,079,091	1,618,456	22,38,565	1181746	42778830
Note: Figures in brackets are the percentages to All-India totals					
Source: NABARD, Progress of SHG - Bank Linkage in India, Various Issues. NSS 63rd round.					

One of the ways in which access to formal banking services has been provided very successfully since the early 90s is through the linkage of Self Help Groups (SHGs) with banks. National Bank for Agriculture and Rural Development has played a very significant role in supporting group formation, linking them with banks as also promoting best practices. The SHG is given loan against guarantee of group members. The recovery experience has been very good and as per RBI there are currently 2.6 million SHGs linked to banks touching nearly 40 million households through its members. Banks provide credit to such groups at reasonable rates of interest. However the size of loans is quite small and used mostly for consumption smoothening or very small businesses. In some SHGs, credit is provided for agricultural activities and other livelihoods and could be several times the deposits made by the SHG. Most of the SHGs have been linked to public sector banks in view of the latter's dominant presence in the rural areas.

The latest data published by NABARD, It emerges that 13 northern, western and eastern states share in SHG growth number has increased from 30.7 per cent of total in 2002 to 44.9 per cent in 2006. Southern States which commanded over 62.5 percent of SHGs in 2004, had to their share more than 54 percent of

SHGs. Contrary to that NSS 63rd round showed that the share of the SHG in southern states is around 61 percents. Interms of absolute number the total SHG in the country was almost half of the SHG with Bank linkage.
The anomaly may again be contributed to the sampling design. The focus of the NSS unorganized sector sampling design was to study the prevalence, employability and productivity of the sector. More focused study is required to gather information on SHG and their role in providing safety net.

Conclusion:

This paper attempted to examine the prevalence, employability and productivity of the informal sector in India, followed by the extent of economic exclusion suffered by these enterprises as well as the extent of Safety Net available to them. The study was based on NSS 62nd round i.e. unorganized manufacturing sectors and 63rd round of NSS dealt with the unorganized service sector.
It has been observed that the share of non-farm informal employment has gone up from 80 percent in 1999-2000 to 84 percent in 2004-05. There was about 28% increase in Informal sector employment have been observed in 2004-05 as compared to 1999-00.

One of the main problems of Informal sector statistics was that there was no time series available. Any inference drawn from the data were based on few independent studies with varying coverage.
It has been observed that the number of enterprises and the number of workers steadily decreased as employment size of the enterprises increased. However, Gross value added, Gross value added per enterprises and Gross value added per worker steadily increased with the employment size.

Economic inclusion or inclusive growth embeds 'economic safety nets' in its meaning. Economic inclusion of an enterprise or a self-employed means proper credit flow from institutional sources, institutional assistance for procurement of raw material, institutional assistance for marketing of product, training etc.

The *financially excluded* sections largely comprise marginal farmers, landless labourers, oral lessees, self employed and unorganised sector enterprises, urban slum dwellers, migrants, ethnic minorities and socially excluded groups, senior citizens and women. While there are pockets of large excluded population in all parts of the country, the North East, Eastern and Central regions contain most of the financially excluded population.

NSS survey both 62nd round and 63rd could identify only a part of the inclusiveness. It has been observed that financial liabilities for the whole of unorganized manufacturing and service sector from the financing institutions were only the half of bank lending towards the unorganized enterprises. Like wise the estimated number of SHG's was also far from the NABARD statistics. This was ostensibly, because of the focus of NSS surveys. The difference may again be contributed to the sampling design. The focus of the NSS unorganized sector sampling design was to study the prevalence, employability and productivity of the sector. More focused study is required to gather information on SHG and their role in providing safety net.

Census authority may be advised to generate complete village level statistics which may include information on SHGs operating in the villages. These informations may be used to generate Sampling frame for such focused surveys.
The workload and mandate of NSSO may not always allow NSSO to undertake such focused study. A separate organization (may be a society), under the aegis of the Ministry, should be created to undertake such focused and follow up surveys.

****

References:

- **NSS Report:** Operational Characteristics of Unorganised Manufacturing Enterprises In India NSS 62nd Round (July 2005-June 2006)
- **NSS Report:** Unorganised Manufacturing Sector In India **Employment, Assets and Borrowings NSS 62nd Round (July 2005-June 2006)**
- **NSS Report: Unorganised Manufacturing Sector in India: Input, Output and Value Added NSS 62nd Round (July 2005-June 2006)**
- **NSS Report:** Service Sector in India (2006-07) Operational Characteristics of Enterprises NSS 63rd Round (July 2006-June 2007)
- **NSS Report:** Service Sector in India (2006-07) Economic Characteristics of Enterprises NSS 63rd Round (July 2006-June 2007)
- **NSS Report: Informal Sector in India, 1999 - 2000 - Salient Features NSS 55th Round**
- **NSS Report:** Unorganised Manufacturing Sector in India 2000-2001 -Characteristics of Enterprises 56th Round (July 2000-June 2001)
- **NSS Report:** Unorganised Service Sector in India 2001 - 02 Characteristics of Enterprises 57th **Round (July 2001-June 2002)**
- REPORTS ON FINANCING OF ENTERPRISES IN THE UNORGANISED SECTOR & CREATION OF A NATIONAL FUND FOR THE UNORGANISED SECTOR (NAFUS) National Commission for Enterprises in the Unorganised Sector

Value Added by the Services Sector in India: A Comparative Analysis Based on NSS 63rd Round Survey and National Accounts Statistics

Ashish Kumar, G C Manna and G S Lakshmi

1. Introduction

1.1 The services sector is a fast growing sector in the Indian economy. Its contribution to GDP has been on the rise. As per the latest National Accounts Statistics 2009 of CSO, services sector had a share of 52.4% in the GDP at constant price during the year 2007-08.

1.2 Keeping in view the importance of the sector as well as the data requirements for national accounting purposes, NSSO carried out a national level survey on services sector excluding trade in the 63rd of NSS during 2006-07. Within the overall domain of services sector activities, the major exclusions of NSS 63rd round were as under:

(a) *In terms of activity*: Transport via railways, air transport, transport via pipeline, operating of real estate of self owned residential buildings, monetary intermediation, and activities of trade unions, religious organisations, political organisations;

(b) *In terms of type of units*: Government/PSUs, government aided educational institutions, and units registered under Factories Act 1948.

1.3 At the all-India level (central sample), establishment level information on number of workers, receipts, expenses, gross valued added, etc. were collected from a random sample of 189,844 establishments spread over a sample of 13,271 villages/urban blocks of the country. Of these establishments, 438 establishments belonged to the 'list frame' and such establishments were relatively large in size as compared to their counterparts in the 'area frame'. As per the survey, an estimated 17 million service sector establishments employing about 34 million workers were operating in the country during 2006-07.

2. Scope of the paper

2.1 Estimates of gross value added (GVA) per worker by industrial activity based on the establishment surveys of NSSO are used as one of the inputs to estimate GDP for national accounting purposes. National Accounts Statistics (NAS) however uses other available sources for finalizing the GDP estimates. Thus, although we have the distribution of GDP by industrial activity based on the NAS as the prime source of information, one can also have the alternative direct estimate of aggregate GVA by industry as per the NSS. In an ideal situation where sampling errors associated with the sample survey and non-sampling errors in both the mechanisms/sources are controlled to a large extent, one would expect the two alternative estimates to be closer to each other. The scope of this paper is to examine this divergence, list out some of the important factors that may have contributed to the observed divergence in the two sets of estimates and suggest some remedial measures for minimizing such divergences in the long run.

3. Activity categories under study

3.1 As per the NAS, distribution of GDP by industry is available at certain level of disaggregation. However, released results of NSS 63rd round are available at somewhat different levels of activity classification. As a result, this study was confined to only those industries/activities which are common to both sources. The details are presented in Table 1 below.

Table 1: Industry/activity categories under analysis

Industry description as per NAS	Corresponding activity categorization as per NSS 63rd round	
	Activity	NIC 2004 codes
(1)	(2)	(3)
1. Hotels and restaurants	As in NAS	551, 552
2. Transport by other means (other than railways)*	Mechanised road transport, non-mechanised motor transport, water transport & other related activities	6021, 60221, 60222, 60231, 60232, 61, 6301, 6303, 6304, 6309
3. Storage	Storage & warehousing	6302
4. Communication	As in NAS	64
5. Real estate, ownership of dwellings & business services**	Real estate, renting & business activities	70 - 74
6. Other services***	Education, health & social work and other community, social & personal activities	80, 85, 90, 9191, 9199, 92, 93

*Air Transport, transport via pipeline not covered in NSS

** Operating of real estate of self-owned residential buildings not covered in NSS

*** NSS did not cover production activities of private households, activities of private households as employers, and activities of extra-territorial organizations and bodies.

4. Findings

4.1 In the NSS 63rd round, data pertaining to receipts, expenses and accordingly GVA correspond to last 365 days preceding the date of survey for establishments not maintaining accounts and it is the last accounting year for those maintaining accounts. Thus, for the establishments not maintaining accounts, reference period for GVA is a moving reference period of one year that varied between July 2005 - June 2006 and July 2006 - June 2007. On the other hand, in case of establishments which maintained accounts, the reference period for GVA was mostly the accounting year of 2005-06 and in the remaining cases, it was the accounting year of 2004-05.

4.2 In Table 2 below, we compare the NSS estimate of GVA with NAS estimate of GDP as per NAS 2005-06 and NAS 2006-07. While considering NAS estimate, we have taken into account the contribution by establishments other than those in the government and public sector so that estimates from two alternative estimates are comparable. While studying the divergence in the two sets of estimates, it needs to be kept in view the fact of exclusion of certain activities in the NSS for three activities i.e. 'Transport by other means'; 'Real estate, ownership of dwellings and Business services' and 'Other services'. However, such exclusions in the NSS might not affect the comparison very seriously.

4.3 For each of the five activity categories studied, the extent of divergence between the two sets of estimates is quite high. It is rather alarming in case of Transport by other means, Storage, and Real estate, ownership of dwellings & business services. Although there are certain differences in the coverage for certain activity categories, it is difficult to explain the divergence of such a high order.

Table 2: Diverg ence between the NSS and NAS estimates of GVA/GDP

Activity category / Industry	GVA as per NSS 63rd round (2006-07) (Rs. Crore)	GDP (by units other than govt/PSUs) at current price as per NAS (Rs. Crore)		Ratio of NAS estimate to NSS estimate for two years of NAS	
		2005-06	2006-07	2005-06	2006-07
(1)	(2)	(3)	(4)	(5)	(6)
1. Hotels and restaurants	28278	53353	64785	1.9	2.3
2. Transport by other means (other than railways)@	32666	168773	185506	5.2	5.7
3. Storage	155	1287	1552	8.3	10.0
4. Communication	10898	21289	58530	2.0	5.4
5. Real estate, ownership of dwellings & business services@	67599	309594	368054	4.6	5.4
6. Other services@	55615	174209	194981	3.1	3.5

@ See footnote in Table 1 specifying the under -coverage of certain activities in the NSS.

5. Methodological issues

5.1 The divergence between the two alternative estimates takes us to the methodological issues involved in the estimation of GVA and GDP by the two sources. NSS estimate is based on the responses given by the sample establishments selected as per an appropriate sample design. In majority of the cases where establishments did not maintain accounts, data were as reported during the oral enquiry. One does not rule out the possibility of under-reporting of receipts and accordingly the GVA. Apart from the response bias, another major problem could be in terms of the very representativeness of the sample itself. Service sector is a heterogeneous group by itself in terms of the size of the establishments, turnover, etc. Attempt to cover all types of establishments irrespective of their size through NSS in a single round may not lead to a proper representation of the sample. There is a likelihood of inadequate representation of bigger establishments. If it happens, the overall aggregate would be underestimated.

5.2 NAS partially uses the data of GVA per worker based on the NSS. It uses various other sources to tap the contribution of various types of establishments in the economy. In the ultimate process of compilation of NAS, certain assumptions might be involved and these assumptions are likely to have a direct bearing on the final estimate.

6. Concluding remarks

6.1 We have come across a wide divergence in the alternative estimates of GVA and GDP as per the two sources namely NSS and NAS. This calls for identifying the reasons behind such divergence and taking remedial measures. Keeping in view vastness and heterogeneity of the services sector, covering all such activities irrespective of the size / type of ownership of the establishments in a single NSS round seems to be not a good option. Putting in place a separate survey of bigger establishments as recommended by the National Statistical Commission is likely to minimize the divergence to some extent. It also may be necessary to re-visit the methodological issues behind the estimation of NAS.

7. Acknowledgement

7.1 The authors are thankful to the National Accounts Division of CSO for furnishing the break-up of GDP estimates separately for Government/PSUs and Others, which was required for this study.

PRIVATE NON-BANKING FINANCIAL INTERMEDIARIES IN INDIA (2006-2007) THEIR ESTIMATED NUMBER, WORKERS AND GROSS VALUE ADDED

By
T.K. BASU*

[*Synopsis*: *Non-banking Financial Intermediaries (NBFI) forms an important part of the service sector in India. In NSS 63rd round, as a part of Service Sector Enterprises in the private domain, NBFI's were also taken up for survey. The paper tries to focus on the size, employment potential and gross value added by these NBFI's. The survey results show that out of a total 1.65 crore service sector enterprises, 15 lakh were NBFI's. Their combined share in employment was about 58 lakh and they contributed about 20% of the GVA of service sector as a whole. Seven states, viz. Andhra Pradesh, Tamil Nadu, Kerala, West Bengal, Maharashtra, Karnataka and Orissa accounted for majority of the NBFI's.* **]**

Key words*:* Enterprises, NBFI, OAE and Establishment

1.0 Foreword :

In the process of development, Economies generally shift from primary to secondary and ultimately towards the tertiary sector i.e. the service sector. India, being in the transition phase, has given a big boost to the service sector in recent times. As per the advanced estimates of GDP at factor cost for 2009-10, contribution of this sector was about 55%. To assess the potential of the Service Sector realistically, NSSO in its 63rd round (2006 - 07), took up a dedicated survey covering almost entire gamut of service sector enterprises present in the economy (except those under the control of Govt. or Public sector or ASI units).

About 5500 villages and 7700 UFS blocks were covered in the year-long survey. Private Non-Banking Financial Intermediaries (NBFI) were included for the first time in the survey along with other service sector units. Two different frames were used for sample selection viz. Area Frame and List Frame. While in the area frame, selection was done at the field level, there was no such selection in case of list frame units. Estimates were built-up from each of the frames separately. Those two sets of estimates were then pulled to arrive at the final estimates. The results show that a total of 1.9 lakh service sector enterprises could be netted, of which 438 were big list frame units. It was estimated that out of a total of 1.65 crore service sector units, 15 lakh were NBFIs. One fifth of the GVA by the whole service sector is contributed by the tiny sector. Based on the results of NSS 63rd round, the paper tries to put a magnifying glass on the size, employment and GVA of these private NBFI's in the economy.

2.0 Introduction:

Financial intermediation is a productive activity in which an institutional unit incurs liabilities on its own for the purpose of acquiring financial assets by engaging in market transactions. Undertakings engaged in such activities are called **Financial Intermediaries**. The role of financial intermediaries is to mainly channel out funds from lenders to borrowers by intermediating between them.

2.1 As per NIC 2004, following were covered as NBFI's in NSS 63rd round.

---

* *The author is DDG of NSSO (FOD), RO, Nagpur*

* *Views expressed in the paper are of the Author's and not of the Organization to which he belongs.*

Broad Category I - NIC 659

a. Activities for higher-purchase financing. **b.** Housing finance company. **c.** Commercial Loan Company. **d.** Other credit activities including pawn shops. **e.** Other financial intermediation. **f.** Mutual fund/ Chit fund/ Kuri companies **g.** Investment companies. **h.** Private money lending, Self-help Groups and Co-operative Credit societies

Broad Category II NIC 66

a. Life Insurance. **b.** Pension funding and non-life insurance.

Broad Category III NIC 67

a. Administration of financial markets. **b.** Security dealing activities. **c.** Activities auxiliary to financial intermediation. **d.** Activities of financial advisor, mortgage advisors and brokers. **e.** Foreign exchange services. **f.** Activities auxiliary to insurance and pension funding, activities of insurance agents. **g.** Average and loss adjusters, actuaries and salvage administrators, etc.

3.0 How much the survey could net:

Table 1: Number of surveyed NBFI's by type x sector in NSS 63rd round.

Sector	OAE	Establishment	All
(1)	(2)	(3)	(4)
Rural India	10817 (15.19)	593 (0.05)	11410 (13.71)
Urban India	3422 (4.48)	1501 (4.89)	4923 (4.60)
All India	**14239 (9.60)**	**2094 (4.90)**	**16333 (8.58)**

Note : Figures within bracket represent percentage among all service sector enterprises.

3.1 From Table 1 we observe that about 8.6% of the total surveyed service sector units in NSS 63rd round were NBFI's. Out of the total 16333 units of this kind surveyed, 14239 units were OAE's and 2094 units establishments. OAEs were netted more in the rural areas but more establishments were netted in the urban areas. In the rural areas 593 establishments were surveyed, whereas in the urban areas 1501 establishments were surveyed. If we see the total share of the OAE's among all **NBFI's** surveyed, it was as high as 87%. Overall, 70% of the NBFI's netted came from the rural areas. An interesting revelation is that 15% of all service sector OAE's netted in rural sector were NBFI's, which is a significant number. Similarly, about 5% of all service sector establishments surveyed in urban areas were actually NBFIs.

3.2 And what were the estimates:

Table 2 : Estimated Number (in lakh) of NBFI's by Enterprise Type and Sector:

Sector	OAE	Establishment	All	RSE (%)
(1)	(2)	(3)	(4)	(5)
Rural India	12.01 (13.34)	0.44 (4.88)	12.45 (12.57)	4.0
Urban India	2.07 (4.08)	0.62 (4.07)	2.69 (4.08)	2.7
All India	**14.08 (9.99)**	**1.06 (4.37)**	**15.14 (9.17)**	**3.3**

Note : Figures within bracket represent percentage among all service sector enterprises. RSE has been calculated for 'all enterprises' only.

Table 2 shows the estimated number of NBFI's in the rural and urban areas of the country. The last column gives the Relative Standard Errors (RSE) of the estimates for all enterprises (OAEs and establishment taken together). From the RSE, one may see that the estimates for urban areas were more precise than the rural areas. This is not unexpected since many of the NBFI's in the rural economy lies dormant and is very difficult to net in voluntary surveys. On the whole, over 15 lakh NBFI's were estimated in 2006-2007. Out of these, 14 lakhs were OAEs and the remaining were establishments. Among the OAEs, major portion i.e. 12 lakh were located in the rural areas. For establishments, however, number was naturally more in the urban areas than their rural counterpart. It is also seen that out of the 15 lakh NBFIs, urban share was only 18% (2.7 lakhs). In the table, figures provided within bracket represent the percentage share of NBFI's among all service sector units estimated at all India level. It is interesting to note that about 10% of the total service sector OAEs were estimated to be NBFI's. But only 4% of the service sector establishments were NBFI's. In other words, on an average every 10th OAE and every 25th establishment in the service sector of the country happened to be an NBFI.

3.3 How many persons were engaged?

Table 3 : No. of workers (lakh) in NBFI's by enterprise type and sector

Sector	OAE	Establishment	All	RSE %
(1)	(2)	(3)	(4)	(5)
Rural India	46.13 (31.71)	2.10 (5.86)	48.23 (26.60)	5.2
Urban India	4.79 (7.14)	4.69 (5.40)	9.48 (6.16)	4.5
All India	**50.92 (23.95)**	**6.79 (5.54)**	**57.71 (17.22)**	**4.3**

Note : Figures within bracket represent percentage among all service sector enterprises.
RSE has been calculated for 'all enterprises' only.

Table 3 deals with the capacity of employment generation by those units. If shows the estimated number of workers engaged by OAE's and establishments in the rural and urban areas of India. In the last column, RSE of the estimates (all enterprises) have been provided. It may be seen again that RSE for the estimated workers was less in the urban areas. The table shows that the NBFI's provided employment to about 57.7 lakh people. OAEs engaged about 50.9 lakh workers in India. That constitutes about 88% of employment potential of all NBFI's. And out of these, only 9% was the contribution of the urban OAE's. Establishments' share in employment generation was 12%. Workers engaged in establishments were double in the urban areas as compared to its rural counterpart.

4.0 The State Scenario:

Table 4 : Number of NBFI's surveyed and estimated for top 7 states

Sr. No.	State	Surveyed	Estimated ('00)	Percent
(1)	(2)	(3)	(4)	(5)
1.	A. Pradesh	21570	3197	21.1
2.	Tamil Nadu	18221	2075	13.7
3.	Kerala	11778	1826	12.1
4.	West Bengal	19959	1701	11.2
5.	Maharashtra	15516	1466	9.7
6.	Karnataka	9393	1411	9.3
7.	Orissa	7122	1235	8.2
8.	**All India**	**190282**	**15140**	**100**

4.1 Table 4 gives the number of NBFI's surveyed and estimated in top 7 states of the country. The last column provides the percentage share of the states in all India. It is seen that more than 85% of the NBFI's were concentrated in the above 7 states. Total number of units surveyed was maximum at Andhra Pradesh (21570) and then West Bengal (19959). Less than 10 thousand units could be netted from the states of Karnataka and Orissa. From the estimates, it may be seen that Andhra Pradesh had the maximum number of NBFI's in India in 2006-07 (3.2 lakh), the next 3 states in the line were Tamil Nadu, Kerala and West Bengal. These 4 states shared 58% of the total NBFI's estimated in India during 2006-2007. Andhra Pradesh alone accounted for 21% of such units estimated at all India level. It was also found that Andhra Pradesh and Tamil Nadu had majority of SHG's. Co-operative credit societies were concentrated in Maharashtra, West Bengal and Kerala.

Table 5 : Number of persons employed ('00) by NBFI's of the top 7 states

Sr. No.	State	Rural	Urban	Rural + Urban	Percent
(1)	(2)	(3)	(4)	(5)	(6)
1.	A. Pradesh	8387	875	9262	16.1
2.	Tamil Nadu	5177	2510	7686	13.3
3.	Kerala	4601	1371	5972	10.3
4.	West Bengal	6411	395	6806	11.8
5.	Maharashtra	3742	1887	5629	9.7
6.	Karnataka	2554	414	2968	5.1
7.	Orissa	10408	166	10574	18.3
8.	**All India**	**48230**	**9476**	**57706**	**100**

4.2 Table 5 presents the employment position in NBFI's of the top 7 states. As already mentioned, at all India level 57.7 lakh persons were engaged in financial intermediation, in which the urban share was only 9.5 lakh. The rest 48.2 lakh employment was generated in the rural areas. The rural domination in NBFI's might have been triggered by the existence of a large number of cooperative credit societies, SHG's and

private money lenders, etc. Maximum number of workers in the rural areas was recorded in Orissa (10.4 lakh). The next two states were Andhra Pradesh (8.4 lakh) and W. Bengal (6.4 lakh). In the urban areas, however, Tamil Nadu provided maximum employment in the financial intermediation (2.5 lakh), next in the line were Maharashtra (1.9 lakh) and Kerala (1.4 lakh). For states as a whole, maximum number of persons employed by NBFI's was surprisingly in the state of Orissa (18%) which had only 1.2 lakh NBFI's. The next two states were Andhra Pradesh and Tamil Nadu. From column 6 which represents the percentage share of the states in employment generation, it is seen that the above 7 states together contributed almost 84% of the employment at all India level.

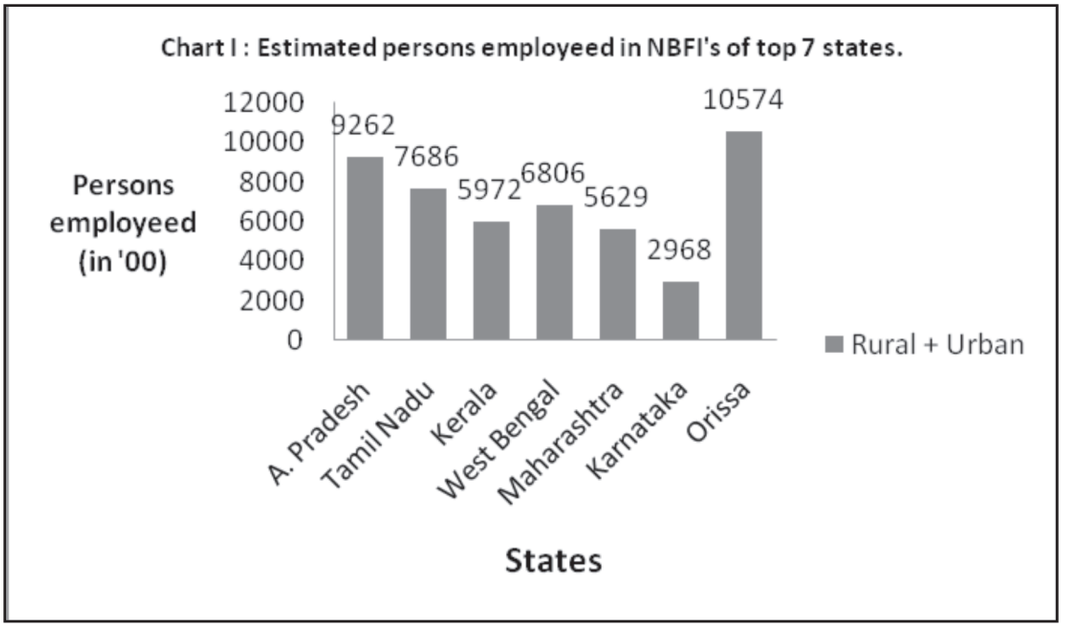
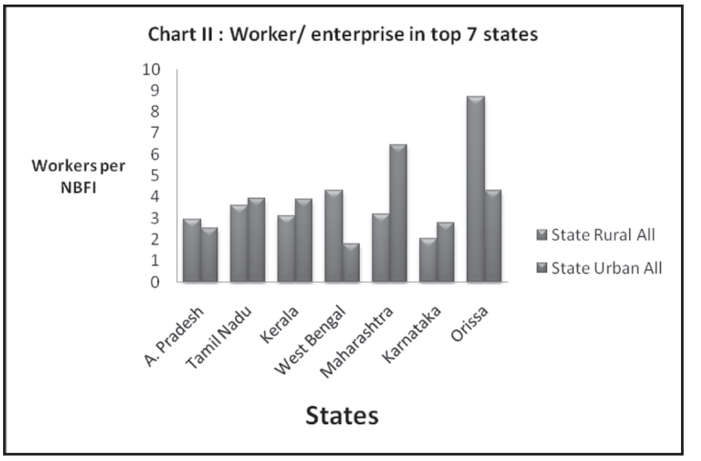


Table 6 : Workers per NBFI in the top 7 states

Sr. No.	State	Rural			Urban		
		OAE	Estt.	All	OAE	Estt.	All
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.	A. Pradesh	2.93	4.09	2.94	1.69	7.01	2.52
2.	Tamil Nadu	3.60	3.56	3.59	3.52	5.62	3.94
3.	Kerala	3.11	3.15	3.12	3.60	5.66	3.90
4.	West Bengal	4.24	7.73	4.32	1.29	6.59	1.81
5.	Maharashtra	2.96	5.45	3.18	1.35	13.05	6.43
6.	Karnataka	2.01	2.28	2.02	1.37	7.70	2.76
7.	Orissa	8.65	10.55	8.70	3.83	10.71	4.30
8.	**All India**	**3.84**	**4.79**	**3.87**	**2.30**	**7.56**	**3.79**

4.3 Table 6 provides the worker per NBFI in the rural and urban areas of the top 7 states. It is interesting to note that at all-India level, number of workers per NBFI was 3.9 in the rural areas, while it was 3.8 in urban areas. Number of workers on the average in the establishments was normally more than the OAE's in both the sectors. The table also reveals that even among the establishments, average number of worker was on the higher side in urban areas. In the rural areas of Orissa, the number of worker per OAE appears to be high (8.6). In the establishments also Orissa records more than 10.5 workers per unit in rural areas.



Among the states Maharashtra shows maximum number of worker per establishment (13.05) in the urban areas. Among the OAE's, number of worker per enterprise was relatively less. However, the figures were relatively more in rural areas than the urban areas. This might have happened due to the existence of private money lenders and similar intermediaries in the rural economy. Another peculiar observation is that the worker per enterprise in Karnataka and West Bengal (urban) was less in comparison to the national average (worker per enterprise) in both the sectors. Maybe, the labour productivity was high in those states which prompted the NBFI's to employ less number of persons.

Table 7.1: Annual GVA (Rs. Crore) at all-India level

Enterprise	Rural	Urban	Combined
NBFI	2590 (7%)	46990 (23%)	49580 (20%)
All Services	37419	207372	244792
No. of NBFI's	1244550	269498	1514048

Figures within bracket show the percentage share of NBFI's among all services

Table 7.2 : Annual GVA (Rs.) per NBFI by activity category

Activity (NIC '04)	Rural	Urban	Combined	Estimated Enterprises
65925	55487	135972	95250	17415
65994	9242	8232	9173	1143158
65995	195468	3826793	1077160	38588
Rest of 659	118407	2565324	1602225	86169
66	25063	5929301	2612609	61963
67	45337	1346544	772630	166755
All	**19492**	**1700341**	**318680**	**1514048**

5.1 Table 7.1 and 7.2 provides Annual Gross Value Added for the NBFI's at all India level. It may be seen that at all India level the NBFI's contributed about 50 thousands crores of rupees to the GDP which is about 20% of the GVA contributed by the whole of service sector. The contribution of the urban sector alone was 47 thousand crores (95%) whereas the rural sector contributed slightly less than 3 crores (5%). While looking at the GVA per NBFI by activity category it is observed that maximum per enterprise GVA was contributed by NIC 66 (Insurance and Pension Funding activities). It was about 26 lakh Rs. per enterprise. Next it was by the Auxiliary Financial Intermediaries (rest of 659). The least contribution was recorded for NIC 65994 which are the Self Help Groups. Interestingly, number wise such enterprises were

maximum. A substantial number of enterprises were found under NIC 65995 (Cooperative Credit Societies), which also contributed handsomely to the GVA. It may be noted that there were 17415 private money lenders (NIC 65925) in the economy during the period and their average contribution to GVA was Rs 95250 which is quite a substantial amount. There were 242 list frame NBFI's of which the rural share was only 3 units. But their weightage was such that if we exclude those units, the GVA by the NBFI's gets downsized by 31000 crores of rupees!

Table 8 : GVA (in Rs.) per NBFI in the seven major states (for area frame only):

Sr. No.	State	Rural			Urban		
		OAE	Estt.	All	OAE	Estt.	All
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.	A. Pradesh	4866	143840	6016	34630	54004	37675
2.	Tamil Nadu	13426	307100	18936	45826	906461	217212
3.	Kerala	16107	276731	33922	27621	518134	97988
4.	West Bengal	8934	138705	11900	49396	761237	119316
5.	Maharashtra	11270	289243	36068	76771	4043802	1790520
6.	Karnataka	10211	52493	11889	48175	13949033	3088891
7.	Orissa	9356	79068	10996	43202	243934	56893
8.	**All India**	**13680**	**214306**	**20732**	**52172**	**2327730**	**574312**

5.2 Table 8 provides the GVA per NBFI in the major seven states for area frame only. Although GVA per enterprise is a weak yardstick to judge the relative contribution of the States, let us just have a quick look at the performance of the states in this regard. It is seen that the GVA per OAE is maximum in case of rural Kerala. Next two states were Tamil Nadu and Maharashtra. In urban areas the maximum GVA per OAE was contributed by Maharashtra; the next two states being West Bengal and Karnataka. For establishments, maximum GVA has been contributed by Tamil Nadu, Maharashtra and Kerala in the rural areas. In the urban areas, maximum GVA per establishment was recorded by Karnataka (139 lakh). The next two states were Maharashtra (40 lakh) and Tamil Nadu (9 lakh). GVA per establishment in urban Karnataka recorded a towering high among the seven states. GVA per enterprise was 21 thousand in rural areas and 6 lakh in urban areas. For OAE, it was 19 thousand. For estt. it was more than 14 lakhs.

Table 9 : GVA (in Rs.) per worker of the NBFI's in the seven major states (for area frame only) :

Sr. No.	State	Rural			Urban		
		OAE	Estt.	All	OAE	Estt.	All
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.	A. Pradesh	1659	35131	2045	20484	10566	16908
2.	Tamil Nadu	3729	86174	5261	13012	189995	57608
3.	Kerala	5166	87761	10872	7663	133317	26882
4.	West Bengal	2106	17924	2754	38251	137220	69799
5.	Maharashtra	3797	53071	11309	56766	548522	452960
6.	Karnataka	5071	23014	5873	35038	2563887	1364191
7.	Orissa	1081	7493	1264	11269	22811	13226
8.	**All India**	**3561**	**44922**	**5351**	**22609**	**421671**	**188623**

5.3 Table 9 gives the GVA per worker for the above seven states for area frame only. Among the rural OAE's, the maximum average GVA comes from Kerala. Karnataka, Maharashtra and Tamil Nadu were the other major contributors. In the urban OAE's, however, maximum comes from Maharashtra. The other two states in the line were West Bengal and Karnataka. For establishments in the rural areas, the maximum GVA per worker came from Kerala; then from Tamil Nadu and Maharashtra. In the urban establishments, Karnataka contributed maximum (more than 25 lakhs). Next in the line were Maharashtra (5.5 lakh) and Tamil Nadu (1.9 lakh). In overall ranking, Maharashtra & Kerala in rural areas and Karnataka & Maharashtra in urban areas dominated the scene. However, GVA per worker in urban establishments of Karnataka showed a towering presence. Perhaps this was due to the high concentration of IT enabled services in the state. GVA per worker was about 5000 Rs. in rural India but it was about 1.9 lakh in urban India. For establishments, it was 2.8 lakh but for OAE it was only 5352 Rs.

6.0. Summary of findings:

The study has revealed a few interesting things about the NBFI's existing in the country during 2006 07. Firstly, almost every 11th service sector enterprise present in the economy was an NBFI. They were more in the form of OAE's and concentrated principally in rural areas. SHG's (NIC 65994) were concentrated in two southern states viz. Andhra Pradesh and Tamil Nadu. Cooperative credit societies (NIC 65995) were seen in Maharashtra, West Bengal and Kerala in large number. At all India level, an NBFI employed about 4 persons on the average. Seven states of the country have accounted for maximum number of NBFI's and their combined share in employment generation was a staggering 49 lakh which is 84% of employment potential at all-India level. GVA by the NBFI's was to the tune of 50 thousand crores (equivalent to the plan outlay of the nation in the transport sector). Per worker contribution to GVA was highest for the NBFI's of Maharashtra in rural areas and those of Karnataka in urban areas.

****

Acknowledgement:

The author likes to acknowledge with thanks the active co-operation he received from Shri S.V. Pandhare, S.I. Grade-II of NSSO (FOD), Zonal Office, Nagpur. The stenographic support for preparing the draft was received from Smt. S.K. Dalvi, Steno Gr. III, Nagpur.

References:

[1] NSS report No. 527 (63rd Round): **Service** Sector in India (2006 -07), Operational Characteristics of Enterprises, February 2009

[2] NSS report No. 529 (63rd Round) : **Service** Sector in India (2006 -07), Economic Characteristics of Enterprises, December 2009

ANNEXURE

ESTIMATED NUMBER OF NBFI's, THEIR WORKERS AND GVA IN DIFFERENT STATES/UT's OF INDIA

(For area frame only)

Sr. No	State	No. of NBFI		Workers engaged		GVA (Rs. in lakh)	
		OAE	Establishment	OAE	Establishment	OAE	Establishm ent
1.	Andhra Pradesh	311886	7801	878354	47875	23366	5934
2.	Arunachal Pradesh	-	4	0	13	-	5
3.	Assam	33590	1558	272858	13992	6820	1527
4.	Bihar	8139	224	8283	617	414	40
5.	Chhattisgarh	28610	812	136511	2542	4169	1086
6.	Delhi	446	237	476	1180	16	400
7.	Goa	192	366	341	2426	58	22014
8.	Gujarat	9619	9452	13238	42569	10298	170153
9.	Haryana	3325	804	4136	15183	1554	1404
10.	Himachal Pradesh	4705	1713	20217	4914	436	4815
11.	Jammu & Kashmir	135	166	165	1242	176	786
12.	Jharkhand	14774	520	20685	5027	1051	944
13.	Karnataka	132854	8283	260057	36752	18012	45954
14.	Kerala	167463	15120	536779	60384	30296	54124
15.	Madhya Pradesh	32673	1885	49808	10713	4235	3840
16.	Maharashtra	123442	23072	339623	223282	2421	540333
17.	Manipur	368	23	3236	764	444	240
18.	Meghalaya	1034	494	9789	6274	589	1521
19.	Mizoram	-	-	0	0	-	-
20.	Nagaland	690	20	4784	230	1134	313
21.	Orissa	120392	3077	1024931	32510	10404	2863
22.	Punjab	2505	2505	2611	12573	788	9596
23.	Rajasthan	9843	2581	12498	9902	4539	56180
24.	Sikkim	166	5	1837	28	409	13
25.	Tamil Nadu	192099	15374	687578	81040	42311	123346
26.	Tripura	2507	72	9465	596	623	57
27.	Uttarakhand	138	432	138	3147	91	11875
28.	Uttar Pradesh	38788	1697	142548	8184	42688	2226
29.	West Bengal	164565	5527	640166	40435	16311	20514
30.	A & N Islands	82	-	233	0	30	-
31.	Chandigarh	-	1418	0	13278	-	17433
32.	Dadra & Nagar Haveli	-	10	0	20	-	45
33.	Daman & Diu	-	-	0	0	-	-
34.	Lakshadweep	3	-	3	0	0.7	-
35.	Puducherry	3242	279	10521	1012	518	650
All India		**1408276**	**105531**	**5091891**	**678703**	**245997**	**1513244**

Comparison of the data on Hotels & Restaurant sector in India from various sources

R. N. Pandey[1] & K. K. Nath[2]

Introduction

The rapid growth of India's exports of commercial services during the period 2000-2006, from US $ 16 billion to US $ 72.8 billion, and of India's share in world exports from 1.1 per cent to 2.7 per cent provides ample evidence of India's international competitiveness in the services sector as a whole[3]. Service sector in India is the most important segment of Economy in terms of its contribution to the over all Gross Domestic Product (GDP). As per National Accounts Statistics, during 2008-09, the services sector had a share of about 57% of the GDP at factor cost.

Service sector consists of a wide diversity in economic activities, size and operational characteristics of units. The entire range of units in the service sector consist of very big corporate entities accounting for bulk of output as well as large number of very small and tiny enterprises with substantial share in employment. It is second only to agriculture in employment generation. Further, the service sector has been recognized universally as the prime driver of accelerated and diversified growth of the economy.

Tourism is considered as one of the vital service sector in India. It contributes 5.92% to GDP and 9.24% to the total employment in the country in the year 2007-08[4]. The hotels & restaurants is an important component of the tourism industry. The hotel & restaurant sector is contributing immensely to the total service sector of the country with overall 12.48% share of number of units and 15.32% share in employment (workers- full time and part time) among the service sectors during 2006-07[5].

II. Sources of Data

There are three main sources of data on hotel & restaurant sector establishments in India:

(i) NSSO surveys
(ii) Economic Census
(iii) Survey of Ministry of Tourism

In this paper an attempt has been made to analyse and compare the data on hotel & restaurant sector available from NSSO Survey, Economic Census and Surveys conducted by Ministry of Tourism.

III. Analysis

(i) Data available from NSSO Surveys

An all- India survey on service sector enterprises (excluding trade) was carried out by the National Sample Survey Organization (NSSO) as a part of the 63rd round of National Sample Survey (NSS) during July 2006- June 2007. This survey was an integrated survey of enterprises and households. The main focus

---

[1] Additional Director General, Ministry of Tourism, Government of India
[2] Deputy Director, Ministry of Tourism, Government of India
Views expressed in this paper are those of the authors and not of the organization to which they belong.

[3] Report of the High Level Group on Services Sector- Planning Commission, Government of India
[4] Latest estimate of Ministry of Tourism on the basis of Tourism Satellite Accounts for India, 2002-03
[5] National Sample Survey Organizations survey on Service sector in India (2006-07).

of the survey was on enterprises belonging to service sector excluding trade. *This 63rd Round NSS survey was the third attempt of NSSO to cover the entire gamut of service sector activities (except trade and finance), the first attempt being made during NSS 34th round (1979-80) and the second attempt being made in 57th round NSS survey in July 2001 to June 2002.*

The 63rd round NSS survey covered broadly service sector enterprises engaged in the activities of hotels and restaurants; transport, storage and communication; financial intermediation; real estate, renting and housing activities; education; health and social work and community; social and personal service activities. Among the industries under coverage of survey, the following units were excluded from the coverage of the survey:

(a) all Govt. and Public Enterprises
(b) all Govt. and Govt. aided educational institutions
(c) all the service sector units registered under Factories Act, 1948, the units appearing in the latest Annual Survey of Industries (ASI) frame
(d) Enterprises which operated for less than 30 days (less than 15 days for seasonal enterprises) during last 365 days preceding the date of survey.

In the area frame, 189844 enterprises (83,184 from rural and 106660 from urban) spread over 5573 villages and 7698 urban blocks across the country were surveyed. From the frame list of 998 units, data could be collected from only 438 enterprises. Thus, altogether a total of 190282 service sector enterprises considering both list and area frame were surveyed.

NSSO defined the "Enterprise" as an undertaking engaged in the production and/ or distribution of full goods and/ or services meant mainly for the purpose of sale, whether fully or partly. An enterprise may be owned and operated by single household or by several households jointly or by an institutional body. "Own Account Enterprise (OAE)" is an enterprise, which is run without any hired worker employed on a fairly regular basis (means the major part of the period during which operation(s) of an enterprise are carried out during a reference period). On the other hand, "establishment" is an enterprise which employs at least one hired worker on a fairly regularly basis. Paid or unpaid apprentices, paid household member/ servant/ resident worker in an enterprise are considered hired workers.

The NSS survey gives two sets of data related to service sector enterprises viz. number of enterprises and their characteristics and employment and their characteristics. Following paragraphs provide information on the number of enterprises, their rural-urban break ups; number of employments, their rural- urban, sex-wise, duration of work, and sector-wise break ups, etc.

Number of Enterprises

The NSS 63rd report on enterprises shows that there were 140.92 lakh OAE and 24.20 lakh Establishments in the country during July 2006- June 2007. This survey shows the distribution of enterprises for rural and urban sectors in India as given in Table-1.

Table-1: Number of Enterprises in Hotel & Restaurant sector in India as per NSSO 2006-2007 survey

Sector	Services sector enterprises (in lakh)			Hotel & Restaurant sector enterprises			% share of H& R to the services sector		
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
OAE	90.04	50.88	140.92	9.22	6.26	15.48	10.24	12.30	10.98
Establishments	8.97	15.24	24.21	1.43	3.68	5.11	16.00	24.15	21.11
Total	99.01	66.12	165.13	10.65	9.94	20.59	10.76	15.03	12.47

Table-1 shows that the hotel & restaurant sector is contributing immensely to the total service sector of the country with overall 12.48% contribution. The other two sectors contributed more than that of hotel & restaurant are- 'Transport, Storage & Communication' and 'Other Community, social and personnel services' with contributions of 38% and 19% enterprises respectively. The number of total establishments in rural areas is more than that of urban areas. However, in case of establishments the number of establishments is more in urban areas than that of rural areas.

The bifurcated figure of hotel & restaurant sector shows that there were 1990393 (1052389- rural and 938004- urban) enterprises in the restaurant sector as compared to 69318 (13442- rural and 55876- urban) enterprises in hotel sector. Out of total 2059711 enterprises in hotel & restaurant sector, majority (96.6%) were in restaurant sector. The number of hotel establishments were also more in urban as compared to rural, however for restaurants 53% units are concentrated in rural areas. This shows that hotel units were mostly concentrated in urban areas. The rural- urban and enterprise-wise breakup of the number of enterprises are given in Table 2.

Table-2: Distribution of number of enterprises (as per NSSO 2006-2007 survey) in Hotels and Restaurants in India

Sector	No. of Enterprises in Hotel sector			No. of Enterprises in Restaurant sector		
	Rural	Urban	Total	Rural	Urban	Total
OAE	3494 (43.1%)	4616 (56.9%)	8110 (100%)	918861 (59.7%)	621437 (40.3%)	1540298 (100%)
Establishments	9947 (16.3%)	51260 (83.7%)	61207 (100%)	133527 (29.7%)	316568 (70.3%)	450095 (100%)
Total	13441 (19.4%)	55876 (80.6%)	69317 (100%)	1052388 (52.9%)	938005 (47.1%)	1990393 (100%)

Number of Workers

The information on whether a person was engaged in the enterprise in a full-time or part time basis, was collected in the survey for each worker and this had been used for generating estimates of full time and part time workers. The full time worker is defined by NSSO as “the worker who work for more than half of the period of normal working hours of the enterprises on a fairly regular basis”. Similarly the part time worker is also defined as “the persons working for less than or equal o half of the normal working hours of the enterprise on a fairly regularly basis are considered as part time worker”.

Table-3 shows that, during July 2006- June 2007 the total number of workers in the service sector (full time and part time) were estimated at 3.35 crore, 54% of which were in rural areas. Out of 3.35 crore workers, hotel & restaurant sector alone had 51.33 lakh workers, with 15.3% share. The other two sectors which had more workers during July 2006-June 2007 are Transport, Storage and Communication (24.97%), Financial Intermediaries (17.22%). Table-3 also shows that the total number of workers in India in rural areas was more than that of urban areas; however in hotel & restaurant sector the number of worker was more in urban areas.

Table-3: Number of workers in Hotel & Restaurant sector in India as per NSSO 2006-2007 survey

Sector	All Service sector enterprises (in lakh)			Hotel & Restaurant sector enterprises			% share of H& R to the Total		
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
OAE	145.48	67.09	212.57	15.77	10.92	26.69	10.84	16.27	12.56
Establishments	35.82	86.76	122.58	5.56	19.08	24.64	15.52	22.00	20.10
All total	181.3	153.85	335.15	21.33	30.00	51.33	11.77	19.50	15.32

Rural- Urban break up

The number of workers engaged in hotels and restaurants separately with Rural- Urban breakups are given in Table 4. From this Table it is clear that out of total 51.33 lakh enterprises in hotel & restaurant sector, the restaurant alone contributes 91.4% (46.9 lakh) enterprises. And in hotel sector 88% workers were from urban areas, however in restaurant sector only 56% workers are from urban areas. This means the hotels are mostly concentrated in urban areas and also the 'average number of workers per hotel' in urban area is about 7 (to be exact 6.9) as compared to about 4 (3.9 to be exact) in rural areas. In restaurants also the 'average number of workers per restaurants' in urban area is 2.9 against 2.0 workers in rural areas.

Table- 4: Distribution of number of workers in NSSO 2006-2007 survey in Hotels and Restaurants in India

Sector	No. of workers in Hotel			No. of workers in Restaurant		
	Rural	Urban	Total	Rural	Urban	Total
OAE	5390 (36.6%)	9334 (63.4%)	14724 (100.0%)	1571931 (59.2%)	1082434 (40.8%)	2654365 (100.0%)
Establishments	46938 (11.0%)	378996 (89.0%)	425934 (100.0%)	508786 (25.0%)	1529945 (75.0%)	2038731 (100.0%)
Total	52328 (11.9%)	388330 (88.1%)	440658 (100.0%)	2080717 (44.3%)	2612379 (55.7%)	4693096 (100.0%)

Gender break ups and details of duration of work

Table- 5 shows that, in hotel & restaurant sector almost 85% workers in rural areas are full time worker against a mere 15% part time workers. This distribution is almost same for restaurants, however in hotels in rural areas 81% were full time against 19% part time workers. Also in rural areas, in hotels & restaurants, 75% workers were male against 25% female workers. This male- female ratio in rural is almost same for restaurant sector, however in hotels, 81% were male workers against 19% female workers.

Table- 5: Distribution of worker (full time and part time) by sex and duration of work in NSSO 2006-2007 survey in hotel & restaurant sector in India

Sector	Rural				Urban			
	Full time worker		Part time worker		Full time worker		Part time worker	
	Male	Female	Male	Female	Male	Female	Male	Female
Hotel	67.3	14.0	14.0	4.7	80.7	10.3	6.4	2.5
Restaurant	68.4	16.6	6.8	8.2	80.2	10.4	5.1	4.4
Hotel & Restaurant	68.4	16.6	7.0	8.1	80.2	10.4	5.2	4.1

(ii) Economic Census 2005

The information on various aspects of service sector enterprises was also collected in Economic Census. The latest and fifth Economic Census (EC) was conducted in 2005 in all States/ UTs in India. It covered all economic activities (agricultural and non-agricultural), except those involved in crop production and plantation, related to production and /or distribution of goods or services other than for the sole purpose of own consumption were covered. The Economic Census defined enterprise, establishment, own account establishments, establishments with hired workers as below:

As per EC 2005 Enterprise is an institutional unit in its capacity as a producer of goods and services. An enterprise is an economic transactor with autonomy in respect of financial investment decision making, as well as authority and responsibility for allocating resources for production of goods and services. It may be engaged in one or more economic activities at one or more locations.

The establishment is defined as an enterprise or part of an enterprise that is situated in a single location in which one or predominantly one kind of economic activity is carried out. It is an economic unit under a single legal entity.

The definitions of OAE and establishments adopted in EC are more or less same as that used in NSSO in 63rd Round survey.

The total number of persons i.e. workers usually working daily in an establishment is the number of persons usually working daily. This will include all persons whether hired or not. The workers with age less than 15 years have been categorized as children. Household members whether paid or not if engaged in any of the activities carried out by the establishments will be included. The figure of number of persons is a position in the last year for perennial establishments and last working season for seasonal establishments. This also includes both supervisory and primary workers. A worker need not mean the same person is continued nut refers to a position. Part time workers are also treated employees as long as they are engaged on a regular basis.

The details of number of enterprises and information relating to them available from EC 2005 are presented below.

Number of Enterprises

The **economic census 2005** showed a total of 41.83 million establishments in the country engaged in different economic activities other than crop production and plantation. Out of 41.83 million establishments, 25.54 million (61.05%) were in rural areas and 16.29 million (38.95%) establishments were in urban areas.

Among these establishments, 35.75 million (85.46%) were engaged in non-agricultural activities while the rest 6.08 million (14.54%) were engaged in agricultural activities other than crop production and plantation. Among the non-agricultural establishments 55.5% were in rural and 44.5% were in urban areas. This shows there were more units in the urban areas as compared to the rural areas in non-agricultural sector than that of all establishments.

About 80.95% of the total own account establishments (21.81 million) were found engaged in non-agricultural activities whereas only around 19.05% (5.13 million) were engaged in agricultural activities. In case of OAEs also the percentage share of non-agricultural establishments in urban areas is better than total establishments in urban areas.

Out of total 35.75 million establishments in non-agricultural sector in India, 13.94 million establishments (39.0%) were with hired workers. There were only 0.66 million establishments (4.7%) in hotel & restaurant sector out of total 13.94 million establishments non-agricultural establishments with hired workers. The breakups of hotel & restaurant enterprises and employees are not available in EC 2005.

Table-6: Number of Non-Agricultural and Hotel & Restaurant Enterprises in India in EC 2005

Sector	No. of Non-Agricultural Enterprises			No. of Hotel & Restaurant Enterprises		
	Rural	Urban	Total	Rural	Urban	Total
OAE	13262173 (60.8%)	8545656 (39.2%)	21807829 (100.0%)	525789 (63.2%)	306271 (36.8%)	832060 (100.0%)
Establishments with hired workers	6564894 (47.1%)	7374283 (52.9%)	13939177 (100.0%)	269769 (40.9%)	389980 (59.1%)	659749 (100.0%)
Total	19827067 (55.5%)	15919939 (44.5%)	35747006 (100.0%)	795558 (53.3%)	696251 (46.7%)	1491809 (100.0%)

From the Table-6 it may be seen that there were 13.94 million non-agricultural establishments with hired workers and amongst these 47.1% in rural areas and 52.9% in urban areas. The total number of establishments with hired workers in hotel & restaurant sector were 0.66 million and amongst these 40.9% were in rural areas and 59.1% were in urban areas. The percentage share of hotel & restaurant sector to the total of non- agricultural sector enterprises were 4.17% (OAEs: 3.82% and Establishments with hired workers: 4.73%). The distribution of rural - urban enterprises in hotels & restaurants in OAEs was around 63:37 (rural: urban) and in 'Establishments with hired workers' was 41:59 and in total it was 53:47. However, the distribution of hotels and restaurants separately is not available in EC 2005.

For better comparability of EC 2005 results with NSS 2006-2007 survey results, the number of non-agricultural units in wholesale and retail trade may be subtracted from total non- agricultural units. Table-7 shows the number of such establishments and the percentage share of hotel & restaurant sector to the non-agricultural establishments without trade. Although the total number of non-agricultural enterprises in the country was 35.7 million, the total number of enterprises without trade (wholesale and retail) was 19.9 million (55.7% only). The rural urban breakup of non-agricultural enterprises (without trade) was 58.5% rural and 41.5% in urban areas. Also the OAE were more than the establishments with hired workers.

Table-7: Number of Enterprises in non- agricultural sector and percentage share of hotel & restaurant sector in India in EC 2005

Sector	Non- Agricultural Enterprises without Wholesale and Retail Trade			% share of Hotel & Restaurant Enterprises to Non- Agricultural units without trade		
	Rural	Urban	Total	Rural	Urban	Total
OAE	6831661	3940293	10771954	7.7	7.8	7.7
Establishments with hired workers	4838691	4330954	9169645	5.6	9.0	7.2
Total	11670352	8271247	19941599	6.8	8.4	7.5

Number of Workers

The Economic Census 2005, shows that in India, about 100.90 million persons, 52.07 million (51.60%) in rural areas and 48.83 million (48.40 %) in urban areas were reported to be working in the establishments found during the census. About 89.99 million workers constituting 89.18% of the total workforce worked in the non-agricultural establishments and only 10.91 million (10.82%) worked in agricultural establishments. There were around 65.17 million persons working in establishments with hired workers in the country and the rest 35.73 million (35.41%) persons were working in the OAE.

Table-8, shows that total number of workers engaged in non-agricultural sector in the country during 2005 were 89.99 million (rural- 41.89 million and urban- 48.10 million). Out of 89.99 million workers 62.1 million (69%) workers were engaged in establishments with hired workers and rest 27.89 million (31%) engaged in OAEs. The rural urban distribution of number of workers in OAE and establishments with hired workers are almost opposite to each other.

Table-8: Number of workers in various Enterprises in India in EC2005

Sector	No. of workers in Non-Agricultural Enterprises			No. of workers in Hotel & Restaurant Enterprises		
	Rural	Urban	Total	Rural	Urban	Total
OAE	17302128 (62.0%)	10591063 (38.0%)	27893191 (100.0%)	748926 (64.6%)	411015 (35.4%)	1159941 (100.0%)
Establishments with hired workers	24592025 (39.6%)	37505304 (60.4%)	62097329 (100.0%)	876392 (33.4%)	1743692 (66.6%)	2620084 (100.0%)
Total	41894153 (46.5%)	48096367 (53.5%)	89990520 (100.0%)	1625318 (43.0%)	2154707 (57.0%)	3780025 (100.0%)

The number of workers engaged in hotel & restaurant sector in the country was 3.78 million (4.2% of total workers in non-agricultural sector), out of which 57% were in urban areas and rest 43% in rural areas. In hotel & restaurant sector also majority of the workers (69%) were engaged in establishment with hired workers and rest 31% engaged in OAEs.

The Table-9 shows the number of female workers in rural and urban areas separately for OAEs and Establishments with hired workers. The number of workers per enterprises (employment rate) in non-agricultural sector in India in 2005 was 2.5, which is same for hotel & restaurant sector. However, in hotel & restaurant sector the employment rate is 1.4 per OAEs and 4 per establishments with hired workers.

Table-9: Rural- Urban and Male- Female break up of number of workers Hotel & Restaurant Enterprises in EC 2005 in India

Sector	Type	No. of workers in OAE	No. of workers in Enterprises with hired workers	Total no. of workers
Rural	Female	150955	149399	300354
	Total*	748926	876392	1625318
Urban	Female	56046	181952	237998
	Total*	411015	1743692	2154707
Combined	Female	207001	331351	538352
	Total*	1159941	2620084	3780025

*Total includes Children also

For better comparability of EC 2005 results with NSS 2006-2007 survey results, the number of workers in wholesale and retail trade may be subtracted from total workers in non-agricultural units. Table-10 shows the number of workers in such establishments and the percentage share of hotel & restaurant sector workers to the total workers in non-agricultural establishments without trade. Although the total number of workers in non-agricultural enterprises were 89.99 million, the number of workers in non-agricultural enterprises (without wholesale and retail trade) were 62.73 million (69.7% only). EC 2005 shows that, there were more enterprises in OAE than establishments with hired workers but there were less number of workers in OAE than establishments with hired workers. The ratio of OAE to Establishments with hired workers (without trade) was 11:9, however the ratio of workers in OAE to Establishments with hired workers (without trade) was 5:16. And the number of workers in non-agricultural sector (without trade) per enterprise in OAE was 1.4 against 5.2 workers in establishment with hired workers.

Table-10: Number of workers in non-agricultural sector (without trade) and percentage share of hotel & restaurant sector in EC2005 in India

Sector	Non-Agricultural Enterprises (without trade)			% share of H& R to the non-agricultural enterprises (without trade)		
	Rural	Urban	Total	Rural	Urban	Total
OAE	9517295	5124974	14642269	7.87	8.02	7.92
Establishments with hired workers	20169270	27913717	48082987	4.35	6.25	5.45
Total	29686565	33038691	62725256	5.47	6.52	6.03

(iii) Survey and Records of Ministry of Tourism

The Ministry of Tourism has a system of approving and classifying the hotels on the basis of the facilities and services provided by them. As on 31.12.2008 there were 1593 classified hotels, out of which 42.9% were three star hotels in India. Ministry of Tourism also commissioned a study in 2003-04 on "Manpower requirement in Hotel Industry, Tour Operators and Travel Sector; Manpower Trained by Different Institutes & Placement Scenario" which shows data on hotel and restaurant sector. The study was based on an extensive primary field survey in 27 important tourist destinations. The study estimated,

(i) number. of hotel rooms in the country: 1.2 million
(ii) number of persons working in hotels: 750000
(iii) in addition 1 lakh employees worked in motels on State& National Highways

(iv) number of restaurants in India in urban India in 2003: 141022
(v) number of persons (both permanent and temporary) were employed in restaurants in India in 2003: 1852859
(vi) in addition there were more than 1.3 million people employed in small restaurants and *dhabas* on the State and National Highways.

Thus, combining the hotels, restaurants and dhabas etc. there were altogether around 28 lakh workers in the sector.

IV. Comparison

Number of Enterprises

The latest data on hotel & restaurant sector on number of enterprises and number of workers are available from three sources- EC2005, NSS 2006-2007 and survey commissioned by Ministry of Tourism. However, the reference period of the three data sources are different. For meaningful comparison the coverage of these studies/ surveys should be same.

Table-12 shows, a total of 14.9 lakh establishments in hotel & restaurant sector in EC 2005, against 20.60 lakh establishments in NSSO 2006-2007survey. However, in EC 2005, in hotel & restaurant sector there were 8.3 lakh OAEs against 15.5 lakh OAEs in NSS 2006-07 survey. And the number of Establishments with hired workers in hotel & restaurant sector in EC 2005 was 6.6 lakh against 5.1 lakh Establishments in NSS 2006-2007 survey**.**

Table-11: Number of Hotel & Restaurant Enterprises in NSS 2006-07 and EC 2005 in India

Sector	No. of Hotel & Restaurant in EC2005			No. of Hotel & Restaurant in NSSO 2006-2007		
	Rural	Urban	Total	Rural	Urban	Total
OAE	525789	306271	832060	922356	626052	1548408
Establishments*	269769	389980	659749	143475	367828	511303
Total Establishments	795558	696251	1491809	1065831	993880	2059711

* Establishments with hired workers for Economic Census 2004-05

The NSS 2006-2007 did not cover establishments belonging to government and public sector. Therefore, the figures based on EC2005 presented in Table-12 have been worked out excluding the establishments pertaining to government and public sector to make them comparable with NSS2006-2007 data. Further EC2005 data have been also adjusted by including only those activities of the service sector have been considered for which separate estimates are available in the released NSS reports.

The comparison of such adjusted EC2005 data with NSS2006-2007 data presented in Table-12 shows that pattern in divergence of data from both the sources are same as that emerging from the data presented in Table-11.

Table-12: Number of enterprises in NSS 2006-2007 and EC 2005 in India

Sector/ Activity	No. of enterprises in NSS2006-2007			No. of enterprises in EC2005		
	OAE	Other Estt.	Total	OAE	Other Estt.	Total
Hotels	8110 (11.7%)	61208 (88.3%)	69318 (100.0%)	89156 (41.4%)	126344 (58.6%)	215500 (100.0%)
Restaurants	1540298 (77.4%)	450095 (22.6%)	1990393 (100.0%)	742904 (59.5%)	506534 (40.5%)	1249438 (100.0%)
Hotel& Restaurants	1548408 (75.2%)	511303 (24.8%)	2059711 (100.0%)	832060 (56.8%)	632878 (43.2%)	1464938 (100.0%)
All Total	10131653 (83.5%)	2003391 (16.5%)	12135044 (100.0%)	3962593 (57.8%)	2895580 (42.2%)	6858173 (100.0%)

Figures in the brackets shows the percentages within the sectors

Number of workers

Table- 14 shows a total of 3.8 million workers (both full time and part time) in EC 2005 against 5.1 million workers in NSS 2006-07 survey engaged in hotel & restaurant sector in India. On the other hand, the survey commissioned by MOT shows a total of about 2.8 million workers engaged hotels & restaurant sector in 2003 in India. Although these figures could not be compared directly, yet it may be seen that there is a clear increase of employment in hotel & restaurant sector from 2003 onwards. However, the number of workers in OAE in EC 2005 was 1.2 million against 1.7 million in NSSO 2006-2007 survey and in establishments the number of workers in EC 2005 was more than that of NSSO 2006-2007 survey; although the total workers in NSSO 2006-07 survey is more than EC 2005.

Table-13: Number of workers in hotel & restaurant in EC 2005, NSS 2006-2007 survey and MOT survey in India

Sector	No. of workers in EC 2005			No. of workers in NSS 2006-2007 survey			No. of workers in MOT survey
	Rural	Urban	Total	Rural	Urban	Total	
OAE	748926	411015	1159941	1577321	1091768	2669089	-
Establishments*	876392	1743692	2620084	555725	1908941	2464666	-
Total	1625318	2154707	3780025	2133046	3000709	5133755	2800000

* Establishments with hired workers for EC 2005; - Not Available

As NSS 2006-2007 data did not cover establishments belonging to government and public sector, therefore, the figures based on EC2005 presented in Table-14 have been worked out excluding the establishments pertaining to government and public sector to make them comparable with NSS2006-2007 data.

Table 1 and 2 of Paper "A Study of Divergence in the Estimates of Number of Establishments and Workers Engaged in the Services Sector in India as per NSS 63rd Round and Economic Census 2005- (A paper prepared jointly by CSO(ESD) and Computer Centre for the Seminar on NSS 63rd Round)" presented by Ashish Kumar, G. C. Manna, P. C. Mohanan, G. S. Lakshmi and P. S. Meena in the NS 63rd Round seminar during 2 and 3rd June 2010 at Delhi

Table-14: Number of workers in NSS 2006-2007, EC 2005 and MOT survey in India

Sector/ Activity	No. of workers in NSS2006-2007			No. of workers in EC2005			No. of workers in MOT survey
	OAE	Other Estt.	Total	OAE	Other Estt.	Total	
Hotels	14724 (2)	425934 (7)	440658 (6)	138361 (2)	631360 (5)	769721 (4)	-- --
Restaurants	2654365 (2)	2038731 (5)	4693097 (2)	1021580 (1)	1856685 (4)	2878265 (2)	-- --
Hotel& Restaurants	2669089 (2)	2464665 (5)	5133755 (2)	1159941 (1)	2488045 (4)	3647986 (2)	2800000 --
All Total	17015434 (2)	10813579 (5)	27829014 (2)	5131912 (1)	11770306 (4)	16902218 (2)	

Figures in the brackets shows the number of workers per enterprises

The comparison of such adjusted EC2005 data with NSS2006-2007 data presented in Table-14 shows that pattern in divergence of data from both the sources are same as that emerging from the data presented in Table-13.

Table-14 also shows the average number of workers per enterprises both in NSS2006-2007 and EC2005. The number of workers per enterprises in overall level for both NSS2006-2007 and EC2005 were same. In NSS2006-2007, the average number of workers per in OAEs were 2 against a significantly higher number of 5 workers per Other establishments. However, in EC2005, the average number of workers per OAEs was only one against 4 workers per Other establishments. The numbers are same for hotel& restaurant sector. However, the bifurcated figure in hotels and restaurants shows that, in restaurants the number of workers per enterprise separately for OAEs and Other establishments were same as that of over all service sector. However, in case of hotels, the average number of workers per enterprises in NSS2006-2007 was 6 against a lower (but it was still higher than total service sector) 4 workers per enterprises. The number of workers for OAEs in hotels in NSS2006-2007 and EC2005 were 2 per enterprises, however, the number of workers in Other establishments were 7 for NSS2006-2007 and 5 for EC2005.

V. Conclusions

The three data source for hotel & restaurant sector in India shows different figures. The EC 2005 shows a total of 14.6 lakh establishments in hotel & restaurant sector, against 20.6 lakh establishments in NSSO survey in 2006-07. However, in EC 2005, there were 8.3 lakh OAEs against 15.5 lakh OAEs in NSS 2006-07 survey. And the number of Establishments with hired workers in EC 2005 was 6.3 lakh against 5.1 lakh establishments in NSS 2006-07. The total number of enterprises in rural areas was more than in urban areas for restaurant sector, however in hotel sector most units were concentrated in urban areas.

A total of 36.5 lakh workers (both full time and part time) in EC 2005 against 51.3 lakh workers in NSS 2006-07 engaged in hotel & restaurant sector in India. On the other hand, the survey commissioned by MOT shows a total of about 28 lakh workers engaged hotels & restaurant sector in 2003 in India. Although these figures couldnot be compared directly, yet it there was a clear increase of employment in hotel & restaurant sector from 2003 onwards. However, the number of workers in OAE in EC 2005 was

Table 1 and 3 of Paper "A Study of Divergence in the Estimates of Number of Establishments and Workers Engaged in the Services Sector in India as per NSS 63rd Round and Economic Census 2005- (A paper prepared jointly by CSO(ESD) and Computer Centre for the Seminar on NSS 63rd Round)" presented by Ashish Kumar, G. C. Manna, P. C. Mohanan, G. S. Lakshmi and P. S. Meena in the NSS 63rd Round seminar during 2 and 3rd June 2010 at Delhi

11.6 lakh against 26.7 lakh in NSS 2006-2007 survey and in establishments the number of workers in EC 2005 was more than that of NSS 2006-07 survey; although the total workers in NSSO 2006-07 survey was more than EC 2005.

Although the reference periods of three data sources compared here are not exactly same, large variation in the number of enterprises and number of workers in EC2005 and NSSO2006-2007 cannot be explained only by this difference. Such a large variation is a cause for worry and efforts may be made to identify the factors responsible for such variation.

References

1. India Tourism Statistics 2008, Market Research Division, Ministry of Tourism, Government of India, New Delhi, November 2009
2. Economic Census 2005 -All India Report, Central Statistical Organization, Ministry of Statistics & Programme Implementation, Government of India, New Delhi, January 2008
3. Service Sector in India (2006-07)- Economic Characteristics of Enterprises, NSS 63rd Round (July 2006- June 2007), National Sample Survey Organization, Ministry of Statistics & Programme Implementation, Government of India, New Delhi, December 2009
4. Service Sector in India (2006-07)- Operational Characteristics of Enterprises, NSS 63rd Round (July 2006- June 2007), National Sample Survey Organization, Ministry of Statistics & Programme Implementation, Government of India, New Delhi, February 2009
5. Unorganized Service Sector in India 2001-02- Salient Features, NSS 57th Round (July 2001- June 2002), National Sample Survey Organization, Ministry of Statistics & Programme Implementation, Government of India, New Delhi, August 2003
6. Unorganized Service Sector in India 2001-02- Characteristics of Enterprises, NSS 57th Round (July 2001- June 2002), National Sample Survey Organization, Ministry of Statistics & Programme Implementation, Government of India, New Delhi, June 2003
7. Tourism Satellite Accounts for India 2002-03, Commissioned by Ministry of Tourism, Government of India, New Delhi, January 2006
8. Report of the High Level Group on Services Sector, Planning Commission, Government of India, New Delhi, March 2008
9. Latest estimate of Ministry of Tourism on the basis of Tourism Satellite Accounts for India, 2002-03
10. Study Report on "Manpower requirement in Hotel Industry, Tour Operators and Travel Sector; Manpower Trained by Different Institutes & Placement Scenario" of MOT
11. A Study of Divergence in the Estimates of Number of Establishments and Workers Engaged in the Services Sector in India as per NSS 63rd Round and Economic Census 2005- (A paper prepared jointly by CSO (ESD) and Computer Centre for the Seminar on NSS 63rd Round) presented by Ashish Kumar, G. C. Manna, P. C. Mohanan, G. S. Lakshmi and P. S. Meena in the NSS 63rd Round seminar during 2 and 3rd June 2010 at Delhi

****

Employment in informal manufacturing and service sectors ; Comparison on some key parameters using NSSO data, exploring some issues on data quality

T. R. Sreenivas, Director, Zonal Office, NSSO(FOD), Bengaluru

Introduction

Employment in informal sector has been much debated. Although in India data is available on „unorganised sector ignoring the differences in the definition inferences can be made to informal sector. Some claim that the employment in this sector could be as high as 90% of total employment in the country. Manufacturing and Service sectors are the two sectors that can provide more employment opportunities as the agriculture sector is almost saturated. The contribution of manufacturing (including construction, electricity, gas & water supply) and service sector to GDP, according to latest National Accounts Estimates are respectively 25.5% and 55%. (Government of India , 2010) . NCEUS estimated the employment in unorganised or informal sector at 86% of total employment (NCEUS,2008). According to Economic Census 2005, the contribution of manufacturing to total employment is 25% and about 64% are employed in service sector (Government of India , 2008). The contribution of the informal sector to GDP is estimated at 50% and those of unorganised manufacturing and services sector are 30% and 45% respectively. (NCEUS, 2008),

The concept of Informal sector is rather well appreciated with the informal nature of the enterprise as the defining characteristic and the NSSO surveys on unorganised manufacturing and service sectors have been used to understand dynamics of these sectors in India. While the 62nd round survey on manufacturing enterprises more or less captured the activities on informal sector alone as the Annual survey of industries captures the activities of the organised manufacturing sector, the 63rd round survey on service sector has also had some bigger units in the list frame. Since data on many variables are available exclusively on area frame a comparison can be made between manufacturing and service sector employment characteristics.

The present comparison , while looking at the data from the perspective of an economic phenomenon , also has the objective of understanding the relevance and adequacy of the data for attempting such an analysis.

Theoretical Issues

ILO characterisation of informal sector (as quoted in Mitra) as : "Informal units comprise small enterprises with hired workers, household enterprises using mostly family labour, and the self-employed. Production processes involve relatively high levels of working capital as against fixed capital, which in turn reflects the relatively low level of technology and skills involved." While this is the general concern. It is also opined that female workforce suffers more than men. It is expressed that "in the developing world, women continue to form a large majority of the worlds working poor, earn less income, and are more often affected by long-term unemployment than men." (ILO website on employment).

The underlying hypothesis of the paper is that the nature of informal employment in service sector is superior to the nature of informal employment in the corresponding manufacturing sector. This characterisation of informal sector suggests that the informal sector in general is low skilled labour intensive and low technology sector. With in this broad umbrella, the services sector should be even less capital and more labour intensive, since services are essentially manpower oriented. Intensive. At the same time services are less 'dirty' than manufacturing and should provide more value addition than manufacturing.

Attempting such an analysis presumes availability of requisite comparable data. At the outset one

may have to identify the variables that can be used as characterising the nature of enterprise and employment in any set of enterprises. The nature of employment in different informal sectors like manufacturing , trade or service can be directly compared with one another since the underling concepts, methodologies and instruments of data collection are more are less standardised in NSSO surveys. One can choose variables like number of workers, value added per worker etc examining their comparability in different surveys. During such an examination data quality issues will be more glaring and provide the rationale for this analysis in the present context.

Results

Number of enterprises

Table 1: Number of enterprises

	RURAL		URBAN	
	OAE	ESTT	OAE	ESTT
62nd Round (manuf.)	9004369	896513	5087842	1523100
63rd round (Service)	11108720	1019546	3504186	1438368

The service sector to manufacturing sector ratio of number of enterprises is about 20% more in rural areas (the ratio is 1.23 and 1.14 for OAE and Establishments respectively in rural areas) and about 25% less in urban areas (the ratio is 0.69 and 0.94 for OAE and Establishments respectively in urban areas) In fact the OAE service enterprises in urban areas are 30% less than manufacturing enterprises. Even allowing for a 5% annual growth rate, OAE manufacturing enterprises in urban areas have outnumber corresponding service enterprises.

Number of workers per enterprise

Table 2: Average Number of workers per enterprise

	RURAL			URBAN		
	OAE	ESTT	ALL	OAE	ESTT	ALL
62nd Round (manuf.)	2.00	6.06	2.37	1.11	4.81	1.96
63rd round (Service)	1.31	3.51	1.49	1.91	5.59	2.98

The average number of workers employed by the service sector is far less than the manufacturing sector in the rural areas, but the sector employs more in the urban areas. On an average the service establishments in rural areas are 40% less labour intensive than manufacturing sector. In urban areas, service industries, however, employ 20% more labour per industry than manufacturing industries.

Comparing with the service – manufacturing mix as seen from Table 1, and looking at the labour intensiveness of industries as seen at Table 2, the observation is that the rural areas are having more of less labour intensive service sector, while the urban areas have more of less labour intensive manufacturing

enterprises. Perhaps, the formation of enterprises finds their own path depending on availability of labour. The better skilled labour are attracted towards the more cleaner service jobs and such labour also tend to migrate to urban areas. The manufacturing sector has to do with the less skilled labour that is comparatively scare. When we examine the number of hired workers per enterprise, the employment generation in these enterprises becomes clearer.

Table 3: Average Number of hired workers per enterprise

	RURAL			URBAN		
	OAME	ESTT	ALL	OAME	ESTT	ALL
62nd Round (manuf.)	**0.00**	**4.11**	**0.37**	**0.00**	**3.37**	**0.78**
63rd round (Service)	**0.00**	**2.34**	**0.20**	**0.01**	**4.13**	**1.21**

Obviously the OAE cater to the owner's family. Their employment generation is limited to entrepreneurship. The manufacturing sector in rural areas is able to provide wage employment by about 20% less than the sector in urban areas. The rural service sector is not as wage employment intensive as other sectors. In fact it is almost 50% less labour intensive than rural manufacturing sector. The urban service enterprises are most labour intensive.

Female work force

Table 4: Percentage of female workers

	RURAL			URBAN		
	OAE	ESTT	ALL	OAE	ESTT	ALL
62nd Round (manufacturing)	50.6%	21.9%	43.9%	50.3%	9.4%	27.3%
63rd round (Service)	39.0%	19.4%	35.1%	20.2%	23.9%	22.3%

Table 5: Number of female workers per enterprise

	RURAL			URBAN		
	OAE	ESTT	ALL	OAE	ESTT	ALL
62nd Round (manufacturing)	**1.01**	**1.33**	**1.04**	**0.56**	**0.45**	**0.54**
63rd round (Service)	**0.51**	**0.68**	**0.52**	**0.39**	**1.34**	**0.66**

The above tables suggest the following

- The enterprises are averse to paid female labour. They constitute at 9.4% to 23.9% of labour force in establishments where paid labour is involved.
- In urban manufacturing establishments the female worker is less preferred. Each urban service establishment employs thrice the female workforce compared to an urban manufacturing enterprise. The rural manufacturing industries are doing much better in this respect. They are employing more women than rural service enterprises not showing gender discrimination like urban manufacturing sector.
- There appears to be not many jobs in rural service sector that can absorb female labour.

What is the nature of women's participation ? Is it as a unpaid family helper or as a regular wage earner. Or as an entrepreneur ? These questions can be answered when a comparison is made between hired workers and other unpaid workers as proportion of such workforce totals.

Table 6: Percent of Female hired workers to total hired workers

	RURAL			URBAN		
	OAE	ESTT	ALL	OAE	ESTT	ALL
62nd Round (manufacturing)	34.9%	23.8%	23.9%	6.9%	8.7%	8.6%
63rd round (Service)	7.1%	23.2%	23.0%	12.3%	28.0%	27.9%

Hired workforce has relevance only for establishments. The table shows the hired female labour in urban manufacturing sector is only 8.7% , where as they constitute 25.% of other labour force. The corresponding figures are 23.8% and 57.6% for rural manufacturing. Such difference suggests that women participation in manufacturing enterprises is not adequately compensated at the individual level. No such differences exist in service sector.

Table 7: Percent of Female other workers to total other workers

	RURAL			URBAN		
	OAME	ESTT	ALL	OAME	ESTT	ALL
62nd Round (manuf.)	64.4%	57.6%	41.6%	57.4%	25.1%	38.8%
63rd round (Service)	70.7%	28.3%	47.8%	42.0%	24.0%	38.7%

Assets and value addition emoluments

Table 8: Owned assets per enterprise

	RURAL			URBAN		
	OAME	ESTT	ALL	OAME	ESTT	ALL
62nd Round (manufacturing)	19222	182824	32975	41839	**138353**	64075
63rd round (Service)	32801	367219	63082	63111	955726	268761
ratio	1.7	2.0	1.9	1.5	6.9	4.2

Figures for establishments are derived for 62nd round

It is normally expected that the manufacturing industries being capital intensive would require more fixed assets than the service industries. The data, however, suggest that the service enterprises are holding more assets than the manufacturing sector. No comparable information on total assets, hired assets; rent payable is available. Rent payable on buildings is excluded from reports.

Table 9: GVA per enterprise

	RURAL			URBAN		
	OAME	ESTT	ALL	OAME	ESTT	ALL
62nd Round (manufacturing)	16946	188352	31355	26356	**280331**	100267
63rd round (Service)	25276	163262	37771	40685	622790	174797
ratio	1.5	0.9	1.2	1.5	2.2	1.7

Table 11: GVA per worker

	RURAL			URBAN		
	OAME	ESTT	ALL	OAME	ESTT	ALL
62nd Round (manufacturing)	10446	35320	16211	16300	**55096**	38167
63rd round (Service)	15644	40891	20629	30853	117937	78333
ratio	1.7	2.0	1.9	1.5	6.9	4.2

The GVA data for service sector is taken from Table 14 and Table 15 of report 529. The service industry in general is adding more value than the manufacturing sector as can be expected. The rural manufacturing

establishments, however, are as good or as bad as corresponding service sector. The burden of workers is pulling down the manufacturing sector to a great extent vis-vis the service sector, both in rural and urban areas.

Discussion

In all the service sector has better financial situation than the manufacturing sector. There are, how ever, some disturbing trends like the service sector is creating more jobs only in urban areas. But the service sector growth can be a double edged phenomenon. There is a chance of small retailers like street vendors, petty shopkeepers being crowded out of business in the wake of expansion of larger foreign and domestic retailers like Wal-Mart, Reliance Fresh, Big-Bazaar etc in the market. Female employment in service sector is more gender neutral than the manufacturing sector, where they are denied or used more as unpaid labour. As has been observed by ILO(1998), when a country's comparative advantage comes from low labour costs, "women tend to benefit more than men from increased exports because of persistently lower female wages".

Data quality issues

- The female participation in urban service OAE sector is only 20%. Ubiquitous presence of female domestic help, street vendors , construction workers in this sector suggests that the data may not have been captured entirely here. Alternatively, when a male member owns a manufacturing OAE, a female is likely to be a partner. In case of service enterprises no such help, perhaps, is needed because of the differences in nature of a service enterprise between rural and urban areas.
- The capital employed by the service and manufacturing sectors are not comparable, as there is no data on total assets in the two rounds. The service sector information is available only for owned assets.
- No comparable data is available on emoluments and wage differences between male and female workers.

References

- Government Of India, Estimates Of Gross Domestic Product For The 3rd Quarter October To December 2009-10, Feb 2010 http://www.mospi.nic.in/estimate_gdp_q3_26feb10.pdf Accessed 31-Mar-2010
- Government Of India, Informal Sector In India Approaches For Social Security, http://labour.nic.in/ss/informalsectorinindia-Approachesforsocialsecurity.Pdf Accessed 31-Mar-2010
- Government Of India, Economic Census All India Report, 2008 http://www.mospi.gov.in/index_6june08.htm Accessed 31-Mar-2010
- Mitra, Amit, Informal Economy, Training and Skill Formation for Decent Work in the Informal Sector: Case Studies from South India, International Labour Office, InFocus Programme on Skills, Knowledge and Employability http://www.ilo.org/wcmsp5/groups/public/---ed_emp/---ifp_skills/documents/publication/wcms_104012.pdf accessed 31-Mar-2010
- ILO, world of work, vol 27 December 1998
- NCEUS, National Commission for Enterprises in the Unorganised Sector, Contribution of the Unorganised sector to GDP Report of the Sub Committee of a NCEUS Task Force ,2008, http://nceus.gov.in/final_booklet_working_paper_2.pdf
- NCEUS, National Commission for Enterprises in the Unorganised Sector, The Challenge of Employment in India: An Informal Economy Perspective Vol 1, 2009, http://nceus.gov.in/the_challenge_of_employment_in_india.pdf

Growth and Structural Changes in Non-agricultural Sector

– An Empirical study

Soumya Chakraborty, Supriya Mukherjee, Dr. Tapas Kumar Saha *

The structure of Indian economy has significantly changed over time and this change has been most profound in the post-reform era. Importance of non-agricultural sector has steadily grown during this time, both in term of its share in GDP and also in its capacity to generate employment. Even within this sector, the dynamics of constituent sub-sectors have changed and their growth has also remained non-uniform. In this empirical study, an attempt has been made to measure the growth and structural changes that have taken place in the non-agricultural sector during 2001-02 and 2006-07 by observing the behavior of the 'big' units (with 20 or more workers). The results reveal that structural shift within this sector and show an impressive growth of the sub-sectors 'real estate, renting and business activities', 'transport, storage and communication' and 'hotels and restaurants' in terms of almost all the important economic parameters during the time span.

1. Introduction

From the days of first Five-Year Planning, it is now more than five decades that India has embarked on the path of planned economic development. During this time span of almost sixty years, Indian economy has matured from tender agro-based economy into one of the largest economies in today's world. Not only did the size of the economy grew many fold, keeping pace with the global trend, the composition and structure of the economy has also undergone major changes. This transition has been most radical in the last two decades when the Liberalization, Privatization and Globalization (the famous LPG of Indian economy) freed the economy from the strangle hold of *license raj* and *state control* and catapulted the economy into the global arena as an economic powerhouse.

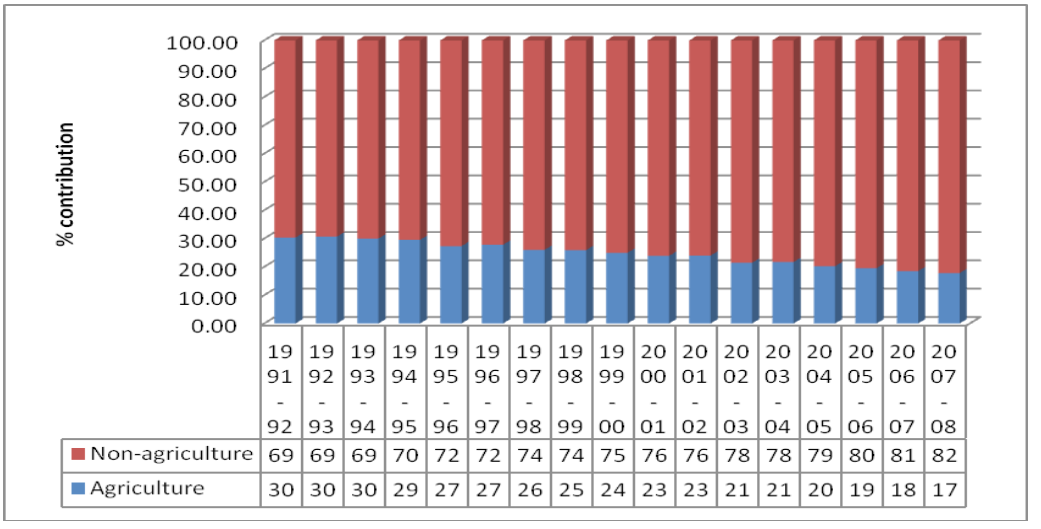
At the time of independence, the Indian economy was overwhelmingly rural and agricultural in nature, as nearly 85% of the population lived in villages and 70% of the working population was engaged in agriculture. Subsequently, the growth and development of other sectors led to an increase in the share of non-agricultural sector and a steady decline of the agricultural sector both in output and employment. This change was most profound in the post-reform era. Although the agricultural sector continues to be the largest sector in term of employment, proportion of employment in agriculture has declined along with the drop in the share of agriculture in GDP. On the other hand, the non-agricultural sector grew both in terms of its share in GDP and its capacity to generate employment.

The non-agriculture sector mainly comprises of the industrial and the services sector, which accounts for about 80% of the GDP and 40% of workforce. Percentage share of non-agriculture sector has steadily increased in the post liberalization era - from 69.68% in 1991-92, its contribution has increased to 82.20% in 2007-08. During the last two decades the non-agriculture sector has grown in importance because of its rapid expansion and continuously increasing contribution in the national GDP and has become the main driver of the economic growth. The main propeller of growth within this sector is again the services sector, which, in the last decade, grew at an average annual rate of nine per cent, contributing to nearly 60% of the overall growth rate of the economy[1]. Main reasons behind the growth of this sector include rapid urbanization and increased domestic and global demand for intermediate and final consumer services. Access to efficient services has become crucial for the productivity and competitiveness of the entire economy.

The graphs given in Fig 1 and Fig 2 show how the composition of GDP in terms of agriculture and non-agriculture sectors has changed over time, and how the non-agriculture sector, has, slowly but steadily, become the epicenter of economic growth in India.

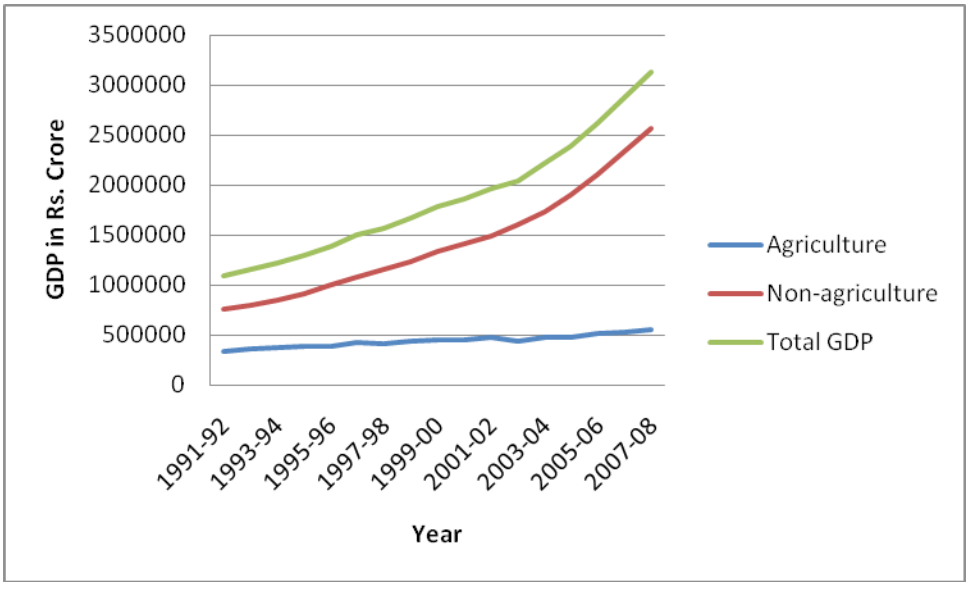
**The authors are from CSO (IS Wing), DGCI&S, and DPD, NSSO, respectively. The views expressed in this paper are of the authors' and not necessarily of the organisations they belong to.*

Fig. 1: Percentage share of agriculture and non-agriculture sector in GDP



	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Non-agriculture	69	69	69	70	72	72	74	74	75	76	76	78	78	79	80	81	82
Agriculture	30	30	30	29	27	27	26	25	24	23	23	21	21	20	19	18	17

Fig. 2: Performance (in Rs. crore) of agriculture and non-agriculture sector in respect of GDP



1.1 Components of Non-agricultural Sector

The main components of the non-agricultural sector are manufacturing, trade, hotels and restaurants, transport, storage and communication, financing, insurance, real estate and business services, community, social and personal services, which taken together, account for more than 86% of total GDP of non-agriculture sector.

It is important to note again that the sub-sectors in the non-agricultural sector, over time, have neither grown at an equal pace, nor their shares in GDP have been uniform (see Table 1 in Section 3). Moreover, the number of units in the non-agricultural sector or in its constituent sub-sectors are although too many, but it has been historically observed, that generally, the relatively large enterprises are the main drivers of economic growth in any sector and play the dominating role in terms of employment, capital and GVA.

[1] World Bank, 2004

1.2 The Study

In this paper, attempt has been made to analyse the performance of the relatively large enterprises in the non-agricultural sector, and study the growth and structural changes that might have taken place during 2001-02 to 2006-07.

1.3 The Big Enterprises

All factories registered under the Sections 2m(i) and 2m(ii) of Factories Act. 1948 i.e. factories employing 10 or more workers using power or 20 or more workers without power, are, generally, known as the Registered Manufacturing Sector. That is, all units with 10 or more workers using power, or units with 20 or more workers not using power belong to the Registered Manufacturing Sector. For this sector, data are collected in ASI by CSO, IS Wing. The remaining units in the manufacturing sector, commonly known as Unorganised Manufacturing Enterprises, are covered in the follow up enterprise surveys of Economic Census conducted by NSSO. It may be noted that as in the case of ASI, there is no separate data indicating the usage of power for the service sector enterprises conducted by NSSO. Thus for the sake of uniformity, the study has been confined to the bigger units with 20 or more workers only, irrespective of usage of power, for enterprises belonging to all sectors and such enterprises, for the purpose of study, are to be termed as 'Big' Enterprises. The economic parameters have accordingly been generated for the big enterprises for examining the growth and structural change in the non-agricultural sector.

1.4 Choice of Indicators

Against this backdrop, in order to examine the sub-sector-wise growth and change in their structure in the non-agricultural sector as manifested by the 'big units', the present study attempts to measure some important economic indicators like employment, emolument, gross value added (GVA), fixed asset, some structural ratios like GVA per worker, GVA per enterprise, fixed assets per enterprise, fixed asset per worker, output per enterprise, emolument per worker etc. and some technical coefficients like output to fixed asset, gross value added to fixed asset, etc. The data used in this study are the results of the surveys on service sector enterprises carried out by National Sample Survey Office (NSSO) in NSS 57th and 63rd rounds and that of Annual Survey of Industries. Two such consecutive surveys were conducted at a span of five years ranging from 2001-02 to 2006-07. During this period the economy was growing very fast and we considered that a gap of five years is good enough to observe the growth and structural changes in respect of the aforesaid operational characteristics of the enterprises.

1.5 Organization of the Study

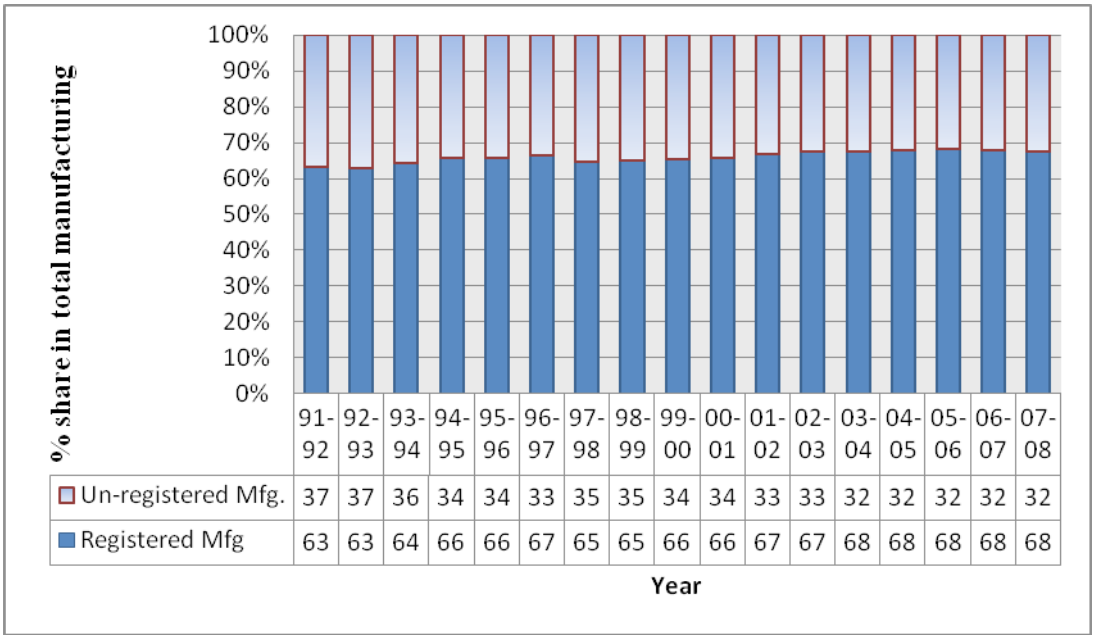
The organization of the study is as follows: in Section 2, data sources and construction is given, which contains a brief description of the data; Section 3 forms the core of the study wherein the findings of the study are presented. Finally, Section 4 offers some concluding remarks and possible extension of the current work.

2. Data Sources and Construction

Although data on registered manufacturing sector has been collected and compiled on a fairly regular basis by the Annual Survey of Industries (ASI), major data gap exists in almost all the segments of the service sector. To fill this data gap in the services sector and also from the need for segmentation of the non-agriculture sector (especially the unorganized part) into sectors of economic activity, an all-India survey on service sector enterprises was conducted for the first time by NSSO in the 57th round of National Sample Survey (NSS) during July 2001 to June 2002. The second such survey was carried out as a part of 63rd round of NSS during July 2006 to June 2007. In absence of a regular data collection mechanism in this sector, we confined our study to the 57th and 63rd round of NSS survey on services sector enterprises.

It has been observed that the contribution of registered manufacturing sector has increased steadily over years and presently accounts for about 68% of GDP from manufacturing sector. Hence, in the industrial sector, the study focuses on the results of Annual Survey of Industries (ASI) of the corresponding years 2001-02 and 2006-07 respectively. Fig 3 shows the percentage share of registered and un-registered sectors in the total manufacturing sector GVA.

Fig 3. Percentage share of registered and un-registered sectors in the total manufacturing sector GVA



	91-92	92-93	93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08
Un-registered Mfg.	37	37	36	34	34	33	35	35	34	34	33	33	32	32	32	32	32
Registered Mfg	63	63	64	66	66	67	65	65	66	66	67	67	68	68	68	68	68

A brief description of NSS 57th and 63rd round survey data and ASI data is given below:

2.1 NSS 57th Round Survey on Service Sector in India:

The NSSO conducted an integrated survey of enterprises and households in its 57th round during the period July 2001 to June 2002. The main focus of the survey was on the unorganised enterprises belonging to the service sector. The survey covered broadly all unorganised service sector enterprises engaged in the activities of hotels and restaurants (Tabulation Category H of NIC 98); transport, storage and communication (I); real estate, renting and business activities (K); education (M); health and social work (N); and other community, social and personal service activities (O).

It did not cover the service sector enterprises pursuing the activities of wholesale and retail trade, repair of motor vehicles, motorcycles and personal and household goods (G); financial intermediation (J); public administration and defence (L); private households with employed persons (P); and extra-territorial organisations and bodies (Q).

2.2 NSS 63rd Round Survey on service sector in India:

The second repeat survey on service sector enterprises (excluding trade) was carried out by the NSSO as a part of the 63rd round of NSS during July 2006 – June 2007. The coverage in NSS 63rd round was broadly the same as that of NSS 57th main focus of the survey was on enterprises belonging to the service sector excluding trade. The 63rd round covered broadly service sector enterprises engaged in the activities of hotels and restaurants (Section H of NIC 04); transport, storage and communication (I); financial intermediation (J); real estate, renting and business activities (K); education (M); health and social work (N) and other community, social and personal service activities (O). An additional feature of the current survey was inclusion of financial intermediation (J) not covered in earlier surveys on unorganised services sector. [2]

2 Under the broad activities noted above, the survey did not cover the following industries/activities:
i) Transport via railways, air transport, transport via pipeline (groups 601, 603 and division 62 of NIC '04),
ii) Operating of real estate of self owned residential buildings (sub-class 70103 of NIC '04),
iii) Monetary intermediation (group 651 of NIC 2004) - the obtaining of funds in the form of transferable deposits i.e. funds that are fixed in money terms and obtained on a day-to-day basis and this includes activities of central banks and monetary institutions other than central banks viz. commercial banks, discount houses, savings banks etc. It may be mentioned that data for this sector are covered through regular surveys of RBI.
iv) Activities of trade unions (sub-class 91200), religious organizations (sub-class 91910) & political organizations (sub-class 91920). Note that a part of sub-class 91910 relating to activities of individuals who provided services directly to worshippers like priests etc was covered.

2.3 Annual Survey of Industries

The Annual Survey of Industries (ASI) is the principal source of industrial statistics in India. The geographical coverage of the ASI extends to the ento\ire country, except for the states of Arunachal Pradesh, Mizoram, Sikkim and the UT of Lakshadweep.

The survey is conducted annually under the statutory provisions of the Collection of Statistics Act, 1953 and the rules framed there under in 1959 except in the State of Jammu & Kashmir where it is conducted under the J&K Collection of Statistics Act, 1961 and rules framed there under in 1964. The ASI covers all the factories registered under the 2m (i) and 2m (ii) of Factories Act, 1948, which means all the factories with 10 or more workers and using power or with 20 or more workers without power. The survey also covers bidi and cigar manufacturing establishments registered under the Bidi and Cigar Workers (Conditions of Employment) Act 1966 with coverage as above. All electricity undertakings engaged in generation, transmission and distribution of electricity registered with the Central Electricity Authority (CEA) were also covered under ASI irrespective of their employment size till ASI 1997-98. Certain services and activities like cold storage, water supply, repair of motor vehicles and other consumer durables like watches etc. are also covered. Defence establishments, oil storage and distribution depots, restaurants, hotels, café and computer services and the technical training institutes, etc. are excluded from the purview of the Survey.

From ASI 1998-99, the electricity units registered with the CEA and the departmental units such as railway workshops, RTC workshops, Govt. Mints, sanitary, water supply, gas storage etc. are not covered.

In the ASI, the manufacturing industry is further classified into different sub-sectors at two-digit industrial classification level as per the National Industrial Classification (NIC).

During the tenure of this study (2001-02 to 2006-07), two different classifications have been used in NSS as well as in ASI. NIC-98 has been used for tabulation of 57th round NSS data as also for ASI 2001-02 and NIC-04 has been used for tabulating NSS 63rd round and ASI 2006-07 data. However, NIC-04 being based on ISIC Rev 3.1, which is only an updation of the ISIC Rev. 3, the basis of NIC-98, there has not been any major changes in the economic activities covered in the study.

Again, the comparison of the economic parameters over the years is based on data generated for 20 or more workers. The percentage contribution of this sector (20 or more workers) in the total estimated GVA of the respective surveys are significantly large in case of ASI (more than 96% of total GVA in both year), but not so large in the NSS data on services sector enterprises (less than 60% in both rounds). 'Worker' in respect of this study includes all kind of workers e.g. workers directly employed, employed through contractors, supervisory and managerial staff, other employees etc.

So the sub-sectors within the non-agricultural sector that are covered in the study are Manufacturing (C), Hotels and Restaurants (H), Transport, storage and communication (I), Real estate, renting and business activities (K), Education (M), Health and social work (N) and Other community, social and personal services (O) and in the analysis section, by 'non-agricultural sector', we mean the sum total of all these sub-sectors.

3. **Quantitative Analysis**

Though the share of non-agriculture sector in terms of GVA has increased and the improvement in the growth has taken place both as a result of growth in industrial and services sectors, marked differences are also noted in the sub-sector-wise composition of growth within the non-agriculture sector. We start with the comparison of broad sectoral composition in the years 2001-02 and 2006-07 and then state the findings of the core study which is confined to the non-agriculture sector employing 20 or more workers.

Change in share of sectors in the GDP

The share of different components in the non-agriculture sector in the total GDP has changed over time. Table 1 gives the sectoral break up of GDP in the years 2001-02 and 2006-07, and shows how the contribution of the sub-sectors in GDP at factor cost has broadly changed over the period 2001-02 and 2006-07.

Table 1: Sectoral break-up (in %) of GDP in 2001-02 and 2006-07

Sector	2001-02	2006-07
Agriculture, forestry, & fishing	23.99	18.51
Mining & quarrying	2.20	2.09
Manufacturing	14.79	15.33
Electricity, gas & water supply	2.34	2.11
Construction	5.71	7.16
Trade, hotels & restaurants	14.86	15.74
Transport, storage & communication	8.15	11.39
Financing, insurance, real estate & business services	13.22	14.26
Community, social & personal services	14.74	13.41

In percentage terms, the share of 'transport, storage and communication' has grown from 8.15% in 2001-02 to 11.39% in 2006-07 and that of 'financing, insurance, real estate and business services' has grown from 13.22% to 14.26% during the same time span. The shares of "trade, hotels and restaurants" and "manufacturing" sectors have also increased marginally, while the share of agriculture sector has gone down from 23.99% in 2001-02 to 18.51%.

In terms of growth rate, again the sub-sector 'transport, storage and communication' registered the highest growth of more than 100% over a span of 5 years. This was followed by the sub-sector 'financing, insurance, real estate and business services' which grew by 57% and then by "trade, hotels and restaurants" (54%) and manufacturing (51%) during the period (2001-02 to 2006-07). The agricultural sector registered the lowest growth among all sectors and registered a meager 12% growth in five years time.

The above figures show, without any doubt, how the importance of non-agricultural sector has grown over the years, both in terms its share in GDP and also in terms of absolute growth rates. It is, therefore, worthwhile to study the structural changes taking place within this sector. The remaining part of this section focuses on that aspect only. From here onwards, the study focuses only on the broad sub-sectors mentioned in Section 2, and that also only for the segment with 20 or more workers.

The results of the study are reported in the following manner

A. *Change in share of sub-sectors in terms of some characteristics like Enterprise, Employment, GVA and Fixed Assets of the non-agricultural sector and their growth rate.*

B. *Growth of the sub-sectors in terms of some economic rates/ratios like GVA per enterprise, GVA per worker, Fixed Asset per worker, Emoluments per worker etc.*

All the value figures used in the study have been converted into constant prices (2001-02) by using appropriate Whole Sale Price indices and growth rates have then been calculated on the basis of such constant prices.

A. *Change in share of sub-sectors in terms of some characteristics within the non-agriculture sector and their growth rate*

The following table (Table 2) shows how the shares of the sub-sectors changed within the non-agriculture sector with respect to number of enterprises, Number of workers, GVA and Fixed Assets.

Table 2: Share of sub-sectors in the non-agricultural sector

Sub-sectors	Enterprise		Worker		GVA		Fixed Asset	
	2001-02	2006-07	2001-02	2006-07	2001-02	2006-07	2001-02	2006-07
H	3.47	5.21	1.77	2.50	1.05	1.91	1.91	1.82
I	2.42	4.69	1.02	2.06	0.76	2.87	0.34	3.95
K	2.55	2.65	2.29	5.08	1.67	9.52	0.31	2.10
M	29.79	20.26	11.08	8.20	2.50	2.73	1.99	2.59
N	4.14	4.02	2.21	3.00	1.16	1.47	1.34	1.82
O	4.09	3.25	2.65	1.11	0.95	0.27	1.46	1.47
C	53.53	59.90	78.98	78.04	91.92	81.23	92.66	86.24

Share in Number of Enterprises: In case of total number of enterprises, in percentage terms, the share of 'transport, storage and communication' has grown from 2.42% in 2001-02 to 4.69% in 2006-07 and that of 'hotels and restaurants' has grown from 3.47% in 2001-02 to 5.21% in 2006-07. Percentage share of manufacturing sector has increased from 53.53% to 59.90% during this time span. Although the percentage share of 'real estate, renting and business activities' has marginally increased, the same has decreased for the sub-sectors 'health and social work', 'other community, social and personal services' and 'education'. The share of education sector in total number of enterprises within the non-agricultural sector has showed a marked decline as its percentage share has gone down from 29.79% in 2001-02 to 20.26% in 2006-07.

Growth in Number of Enterprise: In terms of growth rate, the sub-sector 'transport, storage and communication' registered the highest growth of more than 125% during the period 2001-02 to 2006-07, which is mainly due to very high growth rate observed in the communication. This was followed by the sub-sector 'hotels and restaurants', which grew by 74% and then by 'manufacturing' sector (30%) over a span of 5 years. The 'education' sector registered negative growth of (-) 20%, in five years time.

Share in Number of Workers: In case of total number of workers, expectedly, the manufacturing sector has got the highest share, but its share remained almost the same over years. The percentage share of 'real estate, renting and business activities' has increased significantly from 2.29% to 5.08%, which is probably due to the continuous boom observed in the real estate and software industries during the time frame. Although the shares of 'hotels and restaurants', 'transport, storage and communication' and 'health and social' sectors have marginally grown, that of education sector has gone down significantly from 11.08% in 2001-02 to 8.2% in 2006-07.

Growth in Number of Workers: In terms of growth rate, the highest growth in five years is observed in 'real estate, renting and business activities', which registered more than 200% growth, followed by 'transport, storage and communication' (180%) and 'hotels and restaurants' (94%). The phenomenally high growth rate is again attributed to the very high employment rate in the Information Technology (IT), real estate and communication sectors, which were in a very fast track growth mode during the time period of the study.

It would not be out of context to mention here the female participation rate in the labour force as depicted by female per thousand of male workers. Table 7 shows the sub-sector-wise female participation rate and its growth over the time span 2001-02 to 2006-07. It may be seen from the table that incidence of female participation is maximum in the sub-sector 'education' in both the years, followed by 'health and social work'. For all other sub-sectors, the sex ratio in the workforce is still very much tilted in favour of male.

Table 7: Sub-sector-wise female per 1000 of male worker

Sector	Female per 1000 male worker		
	2001-02	2006-07	Growth
H	103	119	15.44
I	61	88	43.58
K	137	304	121.81
M	927	1041	12.25
N	712	896	25.82
O	915	202	-77.93
C	247	273	10.24

However, the growth in female per thousand of male is maximum for the sub-sector 'real estate, renting and business activities' followed by the sub-sector 'transport, storage and communication'. The growth is only moderate for 'education' and 'health and social work'. For the sub-sector 'other community, social and personal services', this has declined from 915 in 2001-02 to 202 in 2006-07. Such an abrupt decline may be attributed to the very diverse nature of the sector.

Share in GVA: In terms of GVA, as in case of workers, the percentage has share has increased most significantly for 'real estate, renting and business activities' from 1.67% in 2001-02 to 9.52% in 2006-07. Share of 'transport, storage and communication' has grown from 0.76% to 1.91% during this time, while most of the other sub-sectors' share did not change significantly, except for manufacturing, the share of which has reduced by more than 10%.

Growth in GVA: In terms of growth rate, the same trend, as observed in case of workers, is observed in case of GVA too. The highest growth is registered by 'real estate, renting and business activities', followed by 'transport, storage and communication' and 'hotels and restaurants'. The only sub-sector that showed a negative growth in GVA over this time is 'other community, social and personal services'.

Share in Fixed Asset: In terms of percentage share, it has increased most significantly for 'real estate, renting and business activities' from 0.31% in 2001-02 to 2.10% in 2006-07 and decreased markedly for manufacturing sector (more than 6%).

Growth in Fixed Asset: In terms of growth rate, very high growth is observed for 'transport, storage and communication' followed by 'real estate, renting and business activities' where as all other sub-sectors registered a moderate to low growth rate, the lowest growth in five years being registered by the 'hotels and restaurant' sector (33.63%) and manufacturing sector (34.18%).

B. *Growth of the sub-sectors in terms of some economic rates/ratios*

The performances of the sub-sectors with respect to different parameters are stated below:

GVA per enterprise and GVA per worker:

Table 3: Sub-sector-wise GVA per worker and GVA per enterprise

Sector	GVA per worker (Rs.)			GVA per enterprise (Rs.)		
	2001-02	2006-07	Growth	2001-02	2006-07	Growth
H	78632	166171	111.33	3271188	7691218	135.12
I	99191	302857	205.33	3383973	12854813	279.87
K	96438	407808	322.87	7072032	75465040	967.09
M	29887	72423	142.32	905145	2830927	212.76
N	69550	106506	53.14	3021219	7675551	154.05
O	47591	53861	13.17	2508526	1775339	-29.23
C	172565	261030	51.26	20737710	32842716	58.37

Growth of GVA per worker, which is an indicator of labour productivity, is maximum for 'real estate, renting and business activities' followed by 'transport, storage and communication' and 'education' and 'hotels and restaurants', which are all typically highly capital intensive sectors. Growth of GVA per worker is moderate for 'manufacturing' and 'health and social work' sectors and very low in 'other community, social and personal services'.

The picture does not change if we consider GVA per enterprise in place of GVA per worker, except for 'other community, social and personal services', a very heterogeneous and scattered sector, that showed a negative growth during the five year time span. Quite expectedly, the manufacturing sector, which is more labour intensive than the service sector, showed a very moderate growth in both the parameters.

Output per Enterprise and Output per Worker

Table 4: Sub-sector-wise Output per worker and Output per enterprise

Sector	Output per enterprise (Rs.)			Output per Worker (Rs.)		
	2001-02	2006-07	Growth	2001-02	2006-07	Growth
H	9410563	27263296	189.71	226215	589031	160.39
I	7794464	33935006	335.37	228443	799502	249.98
K	15719545	110946226	605.79	214367	599546	179.68
M	1194921	4230626	254.05	39449	108232	174.36
N	5919599	14576625	146.24	136271	202265	48.43
O	5122340	5216759	1.84	97180	158269	62.86
C	106777509	168958232	58.23	888527	1342858	51.13

Growth rate in output per worker and output per enterprise should show the same pattern as GVA per worker and GVA per enterprise unless there is a major change in the input structure for that sector. Figures in Table 4 reveal the same fact except for output per worker, where the growth of 'transport, storage and communication' has surpassed the growth of 'real estate, renting and business activities'.

Fixed Asset per Enterprise and Fixed Asset per Worker

Table 5: Sub-sector-wise Fixed Asset per worker and Fixed Asset per enterprise

Sector	Fixed Asset per enterprise (Rs.)			Fixed Asset per worker (Rs.)		
	2001-02	2006-07	Growth	2001-02	2006-07	Growth
H	13957675	10675541	-23.51	422878	230648	-45.46
I	3518908	25691914	630.11	150314	605296	302.69
K	3064825	24198456	689.55	125608	130767	4.11
M	1701110	3908026	129.73	102003	99979	-1.98
N	8194656	13828782	68.75	210529	191888	-8.85
O	9047838	13828782	52.84	207108	113582	-45.16
C	49185553	50657526	2.99	409288	402620	-1.63

Fixed asset per enterprise grew phenomenally in the sectors 'real estate, renting and business activities' and 'transport, storage and communication' and moderately in 'education' sector. It, however, showed little growth in 'manufacturing' sector and showed substantial decline in 'hotels and restaurants', where the growth is (-) 23.51%.

Fixed asset per worker, which can be perceived to be a measure of capital intensity, showed a very high growth in five years only for 'transport, storage and communication' and very little growth in 'real estate, renting and business activities'. For all other sectors, it showed a negative growth, the highest negative growth being registered in 'hotels and restaurants', and 'other community, social and personal services'

Emolument per Worker

Table 6: Sub-sector-wise Emolument per worker

Sector	Emolument per Worker (Rs.)		
	2001-02	2006-07	Growth
H	32776	37739	15.14
I	36292	65263	79.83
K	63549	237365	273.51
M	21140	38739	83.25
N	35535	36409	2.46
O	9766	25110	157.12
C	47928	49683	3.66

Emolument per worker, which is an indicator of the wage rate prevailing in the sector of economy showed highest growth rate for 'real estate, renting and business activities', which also registered highest growth in terms of GVA per worker and GVA per enterprise, implying that the sector grew in all respect as reflected by different indicators discussed above. The sector 'other community, social and personal services' replaced all other better performing sectors with respect to emolument per worker and registered the second highest growth. Growth of emolument per worker remained nominal in case of 'Health and social work' and for the manufacturing sector.

Output to Fixed Asset and GVA to Fixed Asset

Table 7: Sub-sector-wise output to fixed assets and GVA to fixed assets.

Sector	Output to Fixed Asset			GVA to Fixed Asset		
	2001-02	2006-07	Growth	2001-02	2006-07	Growth
H	0.5	2.6	390.57	0.2	0.7	268.42
I	1.5	1.3	-14.47	0.7	0.5	-24.24
K	1.7	4.6	169.01	0.8	3.1	302.60
M	0.4	1.1	182.05	0.3	0.7	141.38
N	0.7	1.1	69.23	0.3	0.6	81.82
O	0.5	1.4	197.87	0.2	0.5	117.39
C	2.2	3.3	53.64	0.4	0.6	53.77

Both these parameters are crude measures of capital productivity and barring 'manufacturing', 'health and social work' and 'transport, storage and communication', sectors, the performance of all other sectors have been quite impressive with respect to these indicators.

4. Concluding Remarks

The study reveals that the non-agricultural sector has become the most dominating sector and the main driving force of the Indian economy over the years. Even within this sector, the dynamics of the constituent sub-sectors is changing - it is gradually shifting from the manufacturing to the services sub-sectors.

Even in the 'Big' non-agricultural sector, the manufacturing sector still remained the most powerful sector in terms of GVA share and also in respect of employment and fixed asset. However, the share of the manufacturing sub-sector reduced significantly within this sector during the tenure of study. Although the share in terms of GVA, has increased for almost all the sub-sectors during period of the study, the increase has been most pronounced for the sub-sector 'real estate, renting and business activities'. This sub-sector also registered the highest growth in GVA within the non-agricultural sector, followed by 'transport, storage and communication' and 'hotels and restaurants'. The only sub-sector that shrank in terms of its GVA share and also showed a negative growth during this time span is 'other community, social and personal services'.

The growth rate observed in labour productivity, measured as GVA per worker, among the different sub-sectors is again not uniform. While it has increased many fold for 'real estate, renting and business activities', followed by 'transport, storage and communication' and 'hotels and restaurants', the growth has remained only moderate in sub-sectors like 'manufacturing' and 'health and social work' and quite low again for 'other community, social and personal services'.

The incidence of women participation has been maximum for the 'education' sector, closely followed by the 'health and social work' sector and remained considerably low in all other sub-sectors.

'Transport, storage and communication' has emerged as the most capital intensive sector, followed by 'manufacturing' and 'hotels and restaurants'.

The highest wage rate is observed in 'real estate, renting and business activities' followed by 'transport, storage and communication'. The wage rate has remained almost uniform for all other sub-sectors.

In terms of capital productivity, the performance of the sub-sector 'real estate, renting and business activities' has been most impressive.

The study points out to the structural shift within the non-agricultural sector and shows impressive growth of the sub-sectors 'real estate, renting and business activities', 'transport, storage and communication' and 'hotels and restaurants' in terms of almost all the important economic parameters during the time span 2001-02 to 2006-07. These sub-sectors remained the main propeller of growth of the entire economy. The findings of the study mostly corroborate the general facts about this sector obtained from independent sources.

A logical extension of the study would be to take it to the sub-national (state/regional) level and observe the changing behavior of the non-agricultural sector in general and its sub-sectors in particular over time in different states/regions of India. This extension would also enable one to understand the regional pattern and diversification in growth and change in the non-agricultural sector.

Acknowledgement: We want to gratefully acknowledge the help of Shri B.K.Giri, DDG, CSO (ISW) in every step of writing this paper by giving valuable suggestions and guidance.

***References**:*

National Sample Survey Organisation, NSS report No. 482: Unorganised Service Sector in India, 2001-02: Salient Features

National Sample Survey Organisation, NSS report No. 483: Unorganised Service Sector in India, 2001-02: Characteristics of Enterprises

National Sample Survey Organisation, NSS report No. 528: Service Sector in India , 2006-07: Operational Characteristics of Enterprises

National Sample Survey Organisation, NSS report No. 529: Service Sector in India , 2006-07: Economic Characteristics of Enterprises

Central Statistical Organisation, Annual Survey of Industries (ASI), 2001-02, Volume-I.

Central Statistical Organisation, Annual Survey of Industries (ASI), 2006-07, Volume-I.

Central Statistical Organisation, National Accounts Statistics, 2008

Globalisation and Structural Adjustment, Summary Report of the Study on Globalisation and Innovation in the Business Services Sector, OECD 2007.

Website of Office of Economic Adviser, Ministry of Commerce and Industry, Govt. of India: eaindustry.nic.in for WPI series.

Identification of Key Service Sectors in India using a MCDM Technique: An Empirical Study Based on 63rd Round

NSS Data (2006-07)

Gopaldeb Chattopadhyay*

ABSTRACT

Indian Economy is a growing economy and service sector plays an important role in this growth process. Value added by any sector/sub-sector normally treated as an indicator for identifying the key sectors/sub-sectors in an economy. However, growth in any economy is not only directly linked with value added by any sector/sub-sector but also with many other criteria like generation of employment and fixed assets, involvement of operating expenses etc. Growth of a sector/sub-sector associated with growth of many other sub-sectors within that sector or outside the sector. While some sectors/ sub-sectors are labor-intensive, some may be fixed-asset or operating-expense intensive. In addition, input of one sector/sub-sector may indirectly help in the growth process of another sector/sub-sector. Furthermore, depending on the socio-economic condition of a State, preference of type of sectors/sub-sectors may be different in different States. Therefore, economic planning process is very complex. Many times, a planner needs to take decision in presence of multiple, usually conflicting criteria, termed as multiple criteria decision-making (MCDM). The objective of the present empirical study is to identify key service sectors of India for Own Account Enterprises as well as Establishments, separately for Rural and Urban India, using MCDM technique. Results obtained in 63rd round NSS data on various criteria of service sub-sector utilized for that empirical analysis. Technique for Ordered Preference by Similarity to an Ideal Solution (TOPSIS), a MCDM technique based upon the concept that the chosen alternative should have the shortest distance from the 'ideal solution' and the farthest distance from the 'negative ideal solution', adopted for data analysis. The coefficient of relative closeness (CRC) to the 'ideal solution' of each sub-sectors within service sector determined. Rank of each sub-sector determined based on those CRCs. In addition, the ranks of the various States, in terms of their performances in service sectors, evaluated using TOPSIS analysis.

***JEL* Classification**: O14

Key Words & Phrases: Entropy; MCDM; NSS; Service Sector; TOPSIS.

---

* ***Address for correspondence:*** *Dr. Gopaldeb Chattopadhyay, Assistant Director, Socio-Economic Survey Office, Bureau of Applied Economics and Statistics, Government of West Bengal, IA 277/1, Sector-III, Saltlake, Kolkata-700097, e_ mail:gopaldeb25@yahoo.co.in*

The usual disclaimer applies. The views expressed are those of the author and not of the institution to which he belongs.

1. INTROUCTION

Indian Economy is a growing economy. India now ranks among ten fastest growing economies in the world, with average economic growth at over 7 per cent a year during the past decade and over 9.5 per cent in 2006-07. Everything that grows also changes its structure. Just as a growing tree constantly changes the shape, size, and configuration of its branches, a growing economy changes the proportions and interrelations among its basic sectors—**agriculture, industry,** and **services** and between other sectors—rural and urban, public and private, domestic- and export-oriented. In India, also there are changes in shares of contribution of basic sectors.

The service sector produces "intangible" goods, some well known—government, health, education—and some quite new—modern communications, information, and business services. Producing services tends to require relatively less **natural capital** and more **human capital** than producing agricultural or industrial goods. As a result, demand has grown for more educated-workers, prompting countries to invest more in education—an overall benefit to their people. Another benefit of the growing service sector is that by using fewer **natural resources** than agriculture or industry, it puts less pressure on the local, regional, and global environment. Conserving natural capital and building up human capital may help global development become more environmentally and socially **sustainable.** However, growth of the service sector will not be a miracle solution to the problem of sustainability, because agricultural and industrial growths are also necessary to meet the needs of the growing world population.

In India, the services sector has been the key driver of this growth for over a decade. During the 1990s, India's service sector grew at an average annual rate of 9 per cent, well ahead of the growth rate of industry at 5.8 per cent per annum and that of agriculture at 3.1 per cent per annum. In India, the service sector contributed approximately 68.6 per cent of the overall average real GDP growth (Service Value Added) in the past five years between 2002-03 and 2006-07. In 2006-07, growing at 11.2 per cent year on year, services (excluding construction) constituted 54.9 per cent of Indian GDP[1].

Service sector has a diverse domain in terms of economic activities, sizes, and operational characteristics of the units. The entire range of units in the service sector consist of very big corporate entities accounting for bulk output as well as large number of small and tiny enterprises with substantial share in employment. The estimated share of unorganized service sector in total Net Domestic Product (NDP) increased from 52.4 percent in 1999-00 to 54.1 percent in 2007-08, while the share of unorganized agriculture sector is 91.2 percent and that of manufacturing sector including mining, electricity, and gas is 38.7 percent in 2007-08. Among contribution from unorganized sector, unorganized service sector alone contribute 51 percent share in NDP in 2007-08 compared to 44.8 percent in 1999-2000[2].

Although contribution of unorganized service sector in NDP is quite high, major data gap exists in all segments of this sector because of their irrespective growth and spread over geographical domain. To meet up the data gap National Sample Survey Organisation (NSSO) conducted an integrated survey of enterprises and households in its 63rd round during July 2006- June 2007 through a specially designed schedule (Schedule 2.345) and collected various information on operating expenses, receipts, gross value added, employment particulars, fixed assets etc. The focus of the survey was on enterprises belonging to the service sector excluding trade.

Rangarajan[3] stressed upon creating productive employment opportunities to absorb the newly added population in labour force and to improve the 'quality' of employment such that real wages rise through improved productivity. Motivated by this, the present study aims to identify key service sectors in India amidst multiple conflicting criteria derived from the survey of NSS 63rd round. Section 2 of the paper describes multiple-criteria framework, Section 3 describes the survey data and selection of independent economic indicator. Section 4 deals with TOPSIS, a MCDM technique used for data analysis. Analytical observations presented in Section 5. The paper ends with concluding remarks in Section 6.

2. MULTIPLE CRITERIA FRAME WORK

One way to look at the structure of an economy or any sector of an economy is to compare the shares of different sectors/sub-sectors in terms of its contribution to the country's total output and employment. Service sector growth in India is broad-based (details in Table 1 below), and cross-sectoral complementarities and synergies are helping to strengthen the overall performance of the sector, given that some of these services constitute important inputs for both manufacturing and services growth and productivity. For example, the communications sub-sector has grown at over 15 per cent since 1980s. Consequently, shares of services sub-sectors dependent on advanced IT and telecom technology, also increased. Data from India's National Accounts Statistics for the period 1981-82 to 2006-07 indicate that the share of communications sub-sector increased from 1.8 per cent to 7.5 per cent, while banking and insurance sub-sectors increased their share from 6.5 to 11.3 per cent[1]. During this period that shares of all other traditional services either declined or at best remained same (details in Table 1 and 2 below).

At present services account for about 26 per cent of total organized sector employment in the country while contributing a little over 55 per cent to the national GDP, which has led to concerns about the job-less growth phenomenon in this high growth sector. A sectoral disaggregation of the employed workforce shows that in 2004-05, the four services categories (excluding construction) contributed 23.4 per cent to the total incremental employment generated in the five year period between 1999-2000 and 2004-05 (gross incremental employment was around 60.82 millions). The services sector improved its share from 22.8 per cent of gross employment to 23.4 per cent in the same period, adding 16.8 million workers in the five-year period. However, despite the low overall elasticity of employment in the country at just 0.48, the 61st round NSS data shows that employment elasticity is reasonably high (and increasing) in certain service categories, with financing, insurance, real estate and business services registering an elasticity of employment of 0.94 followed by construction sector employment elasticity at 0.88 (details in Table 3 below)[1,4].

Table 1: Share of Different Sub-sectors within Services *(at 1999-2000 prices)*

Service Sectors	1981-82	1986-87	1991-92	1996-97	2001-02	2006-07
Trade	28.3	27.0	25.1	27.3	26.6	26.7
Hotel & Resturant	2.0	2.0	2.0	2.4	2.6	2.5
Railway	4.4	4.0	3.5	2.7	2.3	2.2
Other transport	9.5	9.4	9.5	10.0	9.2	10.1
Storage	0.4	0.3	0.3	0.2	0.2	0.1
Communications	1.8	1.7	1.7	2.3	4.3	7.5
Banking & Insurance	6.5	8.1	10.2	10.7	11.2	11.3
Real Estate & Business Services	13.8	14.8	16.0	15.1	14.7	14.1
Public Administration	14.7	15.3	14.5	12.4	12.8	10.6
Other services	18.8	17.5	17.1	16.8	16.2	14.9
Total	100	100	100	100	100	100

Source: National Accounts Statistics, Government of India, several years

Table 2: Growth Rates within the Services Sector

Service Sectors	6th Plan	7th Plan	8th Plan	9th Plan	10th Plan
Trade	5.3	6.5	9.1	7.3	9.3
Hotel & Resturant	5.4	6.9	11.2	9.3	9.0
Railway	2.8	5.7	1.9	4.7	7.7
Other transport	6.9	7.0	8.4	6.0	11.4
Storage	3.5	1.8	2.4	2.2	5.6
Communications	6.7	5.3	14.1	21.8	22.1
Banking & Insurance	7.5	13.4	8.2	9.0	9.3
Real Estate & Business Services	7.3	8.1	6.1	7.2	8.3
Public Administration	6.1	7.9	3.9	8.5	5.2
Other services	3.9	6.0	7.0	7.0	7.6

Source: National Accounts Statistics, Government of India, several years

Table 3: Employment Statistics (disaggregated)

Sectors	Sectoral Share (%)		Elasticity
	1999-2000	2004-05	
Agriculture, forestry & fishing	59.8	58.4	1.52
Mining & quarrying	0.6	0.6	0.82
Manufacturing	12.1	11.7	0.34
Electricity, gas and water supply	0.3	0.3	0.33
Construction	4.4	5.6	0.88
Trade, Hotels & restaurant	9.4	10.3	0.59
Transport, storage & communication	3.7	3.8	0.27
Financing, insurance, real estate and business services	1.3	1.5	0.94
Community, social and personal services	8.4	7.8	0.28
Total	100	100	0.48

Source: Rangarajan et al (2007); data from NSSO 2004-05, based on 61st Round Survey.

Accelerating growth and expanding employment opportunities are the goals of economic policy. However, employment elasticity varies from sector to sector. Some sectors, by their very nature, are labour intensive, while some are capital intensive. In addition, demand for labour depends on the relative prices of capital and labour. In a labour abundant economy, the price of labour is cheaper than that of capital, favouring labour intensive technologies wherever feasible. Thus, any programme aimed at expanding employment opportunities must focus on three factors- growth, productivity of labour, relative price of labour and capital. Therefore, the economic planning process is not straightforward and involves responsibility of taking decision amidst multiple conflicting criteria.

3. THE SURVEY DATA AND SELECTION OF ECONOMIC INDEPENDENT INDICATORS

The Survey Data:

NSSO conducted an integrated survey of households and service sector enterprises in the 63rd round of NSS during July 2006-June 2007. The focus of the survey was on enterprises belonging to the service sector excluding trade. The round covered broadly service sector enterprises engaged in the activities of hotels and restaurants (Section H of NIC 04); transport, storage and communication (I); financial intermediation (J); real estate, renting and business activities (K); education (M); health and social work (N) and other community, social and personal service activities (O).

The survey did not cover (i) transport via railways, transport via pipeline (groups 601, 603 and division 62 of NIC 04), (ii) operating of real estate of self owned residential buildings (sub-class 70103 of NIC'04), (iii) monetary intermediation (group 651 of NIC'04)- the obtaining of funds in the form of transferable deposits i.e., funds that are fixed in money terms and obtained on a day-to-day basis and this includes activities of central banks and monetary institutions other than central banks viz. commercial banks, discount houses, saving banks etc. (iv) activities of trade unions (sub-class 91200), religious organizations (sub-class 91910) & political organizations (sub-class 91920). A part of the sub-class 91910 relating to activities of individuals who provided services directly to worshippers like priests etc. was covered.

Among the industries under coverage of survey, the units excluded were (i) all Government and Public Sector enterprises, (ii) all Government and Government aided educational institutions, (iii) service sector units registered under the Factories Act 1948, units appearing in the Annual Survey of Industries (ASI) frame 2004-05, (iv) enterprises which operated for less than 30 days (less than 15 days for seasonal enterprises) during last 365 days preceding the date of survey.

The survey also did not cover the service sector enterprises engaged in the activities of wholesale and retail trade, repair of motor vehicles, motorcycles and personal and household goods (G); public administration and defence (L); production activities of private households and activities of private households as employers (P) and extra-territorial organizations and bodies (Q) (hereafter 'service sector enterprises' would mean 'service sector enterprises under coverage of the survey'). Table 4 below provides concordance table for notation used for activity category and we shall use these notations throughout this paper.

The survey covered the whole of the Indian Union except (i) Leh (Ladakh), Kargil, Punch and Rajuri districts of Jammu and Kashmir, (ii) interior villages situated beyond 5 km of a bus route in Nagaland, (iii) villages of Andaman and Nicobar Islands, which remain inaccessible throughout the year.

The entire survey period divided into four sub-rounds, each consists of three consecutive months starting from 1st July'2006 to 30th June'2007. Equal numbers of sample villages and urban frame survey blocks allotted to each sub-round. Within a particular sub-round, the fieldwork spread out evenly over different months to the extent possible. Use of list frame, comprising relatively large units, envisaged to improve the efficiency of estimate of gross value added. In area frame, a stratified multi-stage sampling design adopted. In area frame, total 13,271 (Rural: Urban:: 5573:7698) first stage units surveyed out of total allotment of 13,322 (Rural: Urban:: 5601:7721) first stage units in all over India. In list frame only 438 (Rural:Urban::13:425) units could identified/surveyed out of 998 (Rural: Urban::21:977) big service sector companies distributed all over India.

Selection of Independent Economic Indicators:

The NSS 63rd round survey collected information through a designed schedule (Schedule 2.345). The items of information collected through different blocks of the schedule included (i) particulars of operation and background information of the enterprise, (ii) principal operating expenses, (iii) other operating expenses, (iv) principal receipts, (v) other receipts, (vi) other receipts/expenditures (non-entrepreneurial) for non-financial enterprises, (vii) gross value added, (viii) employment particulars, (ix) compensation to workers, (x) fixed assets owned and rent payable on hired assets, (xi) financial liabilities. There after estimates obtained adopting estimation procedure of muti-stage stratified sampling design. Estimated values are presented in the 63rd round NSS report on service sectors[5,6]. The data source of the present empirical study is the said reports.

The tabulated survey data provides many criteria. Now, to judge the performance of different service sub-sectors and further to study the relative position of various States about their contribution in service sector, amidst various conflicting criteria, we select nine (9) independent key economic indicators to derive a composite index termed coefficient of relative closeness (CRC) to 'ideal-solution'. The judgment will be based on those CRCs. The selected indicators along with goal and data source mentioned in Table 5 below.

Table 4: Concordance table for notations for activity category

Section/ activity		**NIC 2004 codes**	**Notations used in tables for 'activity category'**
(1)		(2)	(3)
H	Hotels	551	H1
	Restaurants	552	H2
	All	All codes combined	H
I	Storage and warehousing	6302	I1
	Mechanised road transport	6021, 60221, 60231	I2
	Non-mechanised motor transport, water transport and other related activities	60222, 60232, 61, 6301, 6303, 6304, 6309	I3
	Communication	64	I4
	All	All codes combined	I
J	Non-banking financial intermediation except insurance and pension funding	659	J1
	Insurance and pension funding and auxiliary activities	66,67	J2
	All	All codes combined	J
K	Real estate, renting and business activities	70-74	K
M	Education	80	M
N	Health and social work	85	N
O	Other community, social and personal service activities	90, 9191, 9199, 92, 93	O
All section categories under survey coverage (H, I, J, K, M, N, O)			All

Table 5: Few selected independent economic indicators

Economic Indicator	Goal	Data Source
Ratio of total receipts to employment	Maximize	Table 31 and Table 32 of NSS Report No. 529 (63/2.345/2)
Ratio of total receipts to fixed assets	Maximize	
Ratio of total receipts to operating expenses	Maximize	
Ratio of value added to employment	Maximize	
Ratio of value added to fixed assets	Maximize	
Ratio of value added to total receipts	Maximize	
Ratio fixed assets to employment	Maximize	
Average number of workers per enterprise	Maximize	Table 4, Table 5 of NSS Report No. 529 (63/2.345/2)
Ratio of Emoluments to Gross Value added	Maximize	Table 8 and Table 9 of NSS Report No. 529 (63/2.345/2)

4. THE METHODOLOGY: TOPSIS

Hwang and Yoon[7] advocated the Technique for Ordered Preference by Similarity to Ideal Solution (TOPSIS) based upon the concept that the chosen alternative should have the shortest distance from the ideal solution and the farthest from the negative-ideal solution. A number of developments in this took place since then. Among them, a few are Zeleny[8], Yoon and Hwang[9], Sinha and Shah[10]. Building blocks of this part of a methodology consists of decision matrix, entropy method for weighting criteria, and multi-criteria method for evaluating decision matrix and pointing the best scenario.

Decision Matrix:

If number of scenarios is *n* and number of indices of system performance is *m*, the decision matrix $R = \left(\left(r_{ij}\right)\right)_{i=1(1)n, j=1(1)m}$ can be constructed as:

$$\left(w_1, w_2, ..., w_m\right)$$
$$\left(C_1, C_2, ..., C_m\right)$$

$$R = \begin{matrix} A_1 \\ A_2 \\ . \\ . \\ A_n \end{matrix} \begin{bmatrix} r_{11} & r_{12} & .. & r_{1m} \\ r_{21} & r_{22} & .. & r_{2m} \\ . & . & .. & . \\ . & . & .. & . \\ r_{n1} & r_{n2} & .. & r_{nm} \end{bmatrix} \qquad (1)$$

In our case, scenarios are service sub-sectors or States $\left(A_1, A_2, ..., A_n\right)$, and independent economic indicators are criteria $\left(C_1, C_2, ..., C_m\right)$. Values $\left(w_1, w_2, ..., w_m\right)$ written above the matrix are an importance weights of criteria defined by economic policy maker, or derived in another way; they usually (but not necessarily) sum to one. Entries r_{ij} in (1) represent scenarios' scores with respect to criteria set.

Entropy Method

Entropy is generally understood as a measure of uncertainty in the information. By considering scores of scenarios as specific emitters of information about importance of each criterion, entropy approach enables measuring that source and determining the relative weights of criteria $(w_1, w_2, ..., w_m)$ in rather simple and straightforward manner. By additive normalization (2) of each column in matrix (1), a new matrix (3) derived containing relative scores of scenarios across criteria.

$$x_{ij} = r_{ij}\left[\sum_{k=1}^{n} r_{kj}\right]^{-1},\ i = 1, 2, ..., n. \tag{2}$$

$$(C_1, C_2, ..., C_m)$$

$$X = \begin{array}{c} \\ A_1 \\ A_2 \\ . \\ . \\ A_n \end{array} \begin{bmatrix} x_{11} & x_{12} & .. & x_{1m} \\ x_{21} & x_{22} & .. & x_{2m} \\ . & . & .. & . \\ . & . & .. & . \\ x_{n1} & x_{n2} & .. & x_{nm} \end{bmatrix} \tag{3}$$

The information contained in matrix X can be considered as 'emission power' of each criterion C_j (j = 1, 2,..., m), and used to compute an entropy value e_j :

$$e_j = -k\sum_{i=1}^{n} x_{ij} \ln x_{ij},\ j = 1, 2, ..., m \tag{4}$$

Constant k = 1/ln n is used to guarantee that $0 \le e_j \le 1$. Degree of divergence f_j of average intrinsic information contained in each criterion calculated as:

$$f_j = 1 - e_j,\ j = 1, 2, ..., m. \tag{5}$$

It means that if more divergent are initial scores r_{ij} of scenarios A_i (i = 1, 2,..., n) for given criterion C_j , the higher is its f_j and more important is criterion C_j for the problem. Consequently, if all scenarios have similar scores for given criterion, this criterion is less important for specific problem, and if all scores against this criterion are the same, criterion can be eliminated because it transmits no information to the economic policy maker. If f_j is considered as specific measure of inherent contrast intensity of the criterion C_j , final relative weights for all criteria can be obtained by simple additive normalization:

$$w_j = f_j\left[\sum_{k=1}^{m} f_k\right]^{-1},\ j = 1, 2, ..., m. \tag{6}$$

Because the criteria weights are obtained directly from the decision matrix, which means independently of the economic policy maker, this qualifies the entropy method as unbiased ('objective') evaluation procedure and the same may be adopted as valid for the result obtained – criteria weights $(w_1, w_2, ..., w_m)$.

TOPSIS Method

TOPSIS is based on order preference by similarity to ideal solution. The underlying concept is that most preferred alternative should not only have shortest distance from 'ideal' solution, but also longest distance from 'negative-ideal' solution. Notice that similar concept has been pointed out by Zeleny[8]; in his approach, however, multidimensional distances are measured from so-called a 'utopia point'. TOPSIS is rational and relatively simple. It evaluates a decision matrix (1) in several steps starting by normalizing columns of a decision matrix and then multiplying values in columns is by corresponding criterion's weights. TOPSIS then identifies best and worst value in each column and create two sets of these values across all columns named 'ideal solution' and 'negative-ideal solution, respectively. In the next step so-called separation measures for all scenarios are computed based on their Euclidean distances from 'ideal' and 'negative-ideal' solutions (across all criteria). Finally, the coefficient of relative closeness (CRC) to 'ideal' solution calculated for each scenario as ratio of separation measure from negative ideal solution to sum of the separation measures both from 'ideal' and 'negative-ideal' solution and scenarios ranked appropriately based on CRC value. The minimum CRC value will be zero and the maximum will be one. Ranking of the scenarios will be as per descending order of CRC. Top-ranked scenario is with the shortest distance from ideal solution and TOPSIS guarantees that it also has the longest distance from negative-ideal solution.

5. ANALYTICAL OBSERVATIONS BASED ON THE EMPIRICAL STUDY

It may be observed that if gross value added per worker were the only criteria for evaluating the performances in service sub-sectors then, in all India, based on 63rd Round NSS data, the sub-sectors according to their descending order of importance turned out to be J2, H1, K, I1, N, I2, M, I3, I4, H2, J1, O. However, as per TOPSIS ranking, as seen from Table 6, the order of importance is J2, H1, J1, K, I1, H2, N, I2, I3, M, I4, O. That is, due to TOPSIS ranking, the rank of J1 forwarded to third position straightway from 11th position. One of the reasons for the same may be higher value of average number of worker involved in J1 and higher 'ratio of value added to fixed asset' compared to others. In fact, in terms of average number of workers per enterprise J1 stands 3rd immediately after H1 and I1 and value of 'ratio of value added to fixed asset' it is in second position immediately after J2. Similarly, in between K and H2, there were I1, N, I2, M, I3, and I4, when the rankings were based on only gross value added per worker. However, TOPSIS ranking depicts that in between K and H2, there is only I1. One of the reasons for the same may be the values of 'ratio of emoluments to gross value added'. In case of I1, N, I2, I3, I4 these are much lower compared to K, H2. In case of service sub-sector M, although the 'average number of worker' and the 'ratio of emolument to GVA' of M are higher than that of K and H2, the 'ratio of GVA to fixed asset' is low. Thus, TOPSIS provides a decision considering multiple criteria. However, economic planner, instead of determining objective weights, may consider subjective weights as per requirement of the State and/or economic policy and perform an analysis using MCDM technique to determine priority sectors. The importance order of service sub-sector based on TOPSIS ranking tabulated in Table 6 below. Also the relative position of the States tabulated in Tables 7 to 9.

Based on the results of the present analysis, it may observed that the sub-sector H1 and J1 performed fairly well in both Rural and Urban sector, while J2 is in better position in Establishment sector of Urban areas. Reflection of I4, especially in Rural India, is not very good. The sub-sector M and O is in a lower side of the stratum. I1 performed better in rural areas.

Among the States/UT Chandigarh has the highest CRC (more than 90%), followed by Goa, Karnatak, Gujarat and Maharashtra (25-20%). The CRC ranged between 20-15% in case of Aandaman Nicobar Island, Daman & Diu, D & N Haveli, Mizoram & Delhi and 15-10% in case of Punjab, Jammu & Kashmir, Arunachal Pradesh, Nagaland, Sikkim, Rajasthan, Manipur, Himachal Pradesh, Kerala, and Haryana. Bihar, West Bengal, Tripura, Uttar Pradesh, Assam, Chattisgarh, and Orissa have CRC less than 5%. The remaining States namely Puduchery, Uttarakhand, Tamil Nadu, Megahlaya, Lakshadeep, Madhya Pradesh, Andhra Pradesh and Jharkhand performed slightly better (10-5%) in terms of CRC. In OAE sector, Nagaland, Meghalaya, and Manipur are on the upper stratum both in

Rural and Urban part of India. In establishment sector, Goa, Daman & Diu, Delhi, D & N Haveli, Punjab are on the upper stratum in Rural India while Chandigarh, Karnatak, Gujarat, Maharshtra, and Goa are on upper stratum in Urban India.

This may be noted here that ranks of service sub-sectors depend on data of both list frame as well as area frame, while that of the States depend on data of area frame only.

6. CONCLUDING REMARKS

TOPSIS is one of the MCDM techniques. There are several other techniques like Simple Additive Weighting Method, Hierarchical Additive Weighting Method, and ELECTRE Method. Secondly, the method of determination of weights is also many, e.g., Eigenvector Method, Weighted Least Square Method, LINMAP etc., besides Entropy Method. Further, one can construct the separation measures using some other method than Euclidean distance. 'Ideal' and 'negative-ideal' solutions can also be determined subjectively based on experience/demand of the economic planner. In different techniques, the ranks may thus vary and as such, the present ranking procedure is not unique. However, the main emphasis of the present study is to take decision under multiple conflicting criteria based on MCDM techniques and the analysis depicts that use of MCDM technique may lead a planner to think alternatively. An economic planner may also include or discard few indicators from the analysis as per importance. Furthermore, before interpreting the results of the analysis one should keep in mind the coverage area. Since not all types of service sub-sectors surveyed, one should interpret the ranks accordingly.

Table 6: Rank of different service sub-sectors in descending order of CRC

RURAL						
Rank	OAE		ESTABLISHMENT		ALL	
	Sub-Sector	CRC	Sub-Sector	CRC	Sub-Sector	CRC
1	I1	0.600691	H1	0.570586	H1	0.741812
2	H1	0.382821	I1	0.494381	I1	0.690191
3	I2	0.288037	J1	0.435782	J1	0.257716
4	K	0.244106	H2	0.304425	H2	0.224416
5	H2	0.207611	J2	0.202207	I2	0.219905
6	J2	0.175567	I2	0.177494	M	0.209699
7	I3	0.159986	I4	0.139838	I3	0.192296
8	J1	0.158476	N	0.133564	J2	0.175469
9	N	0.147673	I3	0.118749	N	0.143677
10	M	0.124761	M	0.104875	K	0.129605
11	O	0.121565	K	0.08251	O	0.109974
12	I4	0.105892	O	0.065848	I4	0.084091
URBAN						
1	H1	0.629224	J2	0.818766	J2	0.680619
2	J1	0.372094	J1	0.47393	H1	0.43535
3	I3	0.22944	H1	0.265806	J1	0.362184
4	H2	0.226602	K	0.262348	K	0.235769
5	I1	0.167834	I4	0.191513	I1	0.146696
6	K	0.153005	I3	0.180742	H2	0.12472
7	I2	0.143789	H2	0.132641	N	0.117591
8	J2	0.116635	I2	0.120719	I2	0.103398

9	N	0.099806	N	0.079403	I3	0.095437
10	I4	0.094723	I1	0.074681	M	0.084517
11	O	0.091005	O	0.070853	I4	0.079408
12	M	0.082193	M	0.069375	O	0.055025
COMBINED						
1	H1	0.721774	J2	0.816299	J2	0.620782
2	J1	0.275297	J1	0.391854	H1	0.532587
3	H2	0.229996	H1	0.271953	J1	0.238573
4	I1	0.219815	K	0.24889	K	0.237377
5	K	0.206642	I3	0.172857	I1	0.221501
6	I3	0.198145	I4	0.170694	H2	0.12686
7	I2	0.185603	H2	0.144331	N	0.118234
8	J2	0.153875	I1	0.093967	I2	0.103909
9	N	0.123722	I2	0.088013	I3	0.092499
10	O	0.115473	N	0.076093	M	0.08972
11	I4	0.103886	M	0.063161	I4	0.072192
12	M	0.097212	O	0.058596	O	0.057611

Table 7: Rank of different States in descending order of CRC

RURAL

Rank	OAE		ESTABLISHMENT		ALL	
	State	CRC	State	CRC	State	CRC
1	Nagaland	0.81717	Goa	0.779925	Goa	0.739937
2	Meghalaya	0.738004	Daman & Diu	0.522047	Delhi	0.590279
3	Manipur	0.675327	Delhi	0.45822	Daman & Diu	0.487168
4	Arunachal Pradesh	0.261449	D & N Haveli	0.457145	Punjab	0.418349
5	Delhi	0.195165	Punjab	0.429364	Mizoram	0.41082
6	Mizoram	0.182913	Manipur	0.40412	Nagaland	0.404398
7	A & N Island	0.166238	Puducherry	0.388307	A & N Island	0.399125
8	Chandigarh	0.138058	Himachal Pradesh	0.373008	Manipur	0.374055
9	Sikkim	0.12826	Rajasthan	0.344897	Himachal Pradesh	0.361872
10	Jammu & Kashmir	0.11634	A & N Island	0.343923	D & N Haveli	0.359994
11	Himachal Pradesh	0.109981	Tamil Nadu	0.323947	Jammu & Kashmir	0.337898
12	Goa	0.100533	Maharashtra	0.301238	Rajasthan	0.320112
13	Daman & Diu	0.100021	Mizoram	0.299587	Meghalaya	0.300154
14	Punjab	0.099876	Chandigarh	0.284383	Arunachal Pradesh	0.26725
15	Lakshadweep	0.09447	Sikkim	0.280713	Chandigarh	0.259317
16	Uttarakhand	0.094129	Kerala	0.27871	Lakshadweep	0.253274

17	Gujarat	0.091103	Jammu & Kashmir	0.273488	Sikkim	0.237916
18	D & N haveli	0.089903	Nagaland	0.273261	Gujarat	0.236665
19	Rajasthan	0.086927	Gujarat	0.260005	Haryana	0.229199
20	Karnataka	0.085105	Haryana	0.231834	Kerala	0.22477
21	Bihar	0.081166	Jharkhand	0.226801	Uttarakhand	0.217184
22	Haryana	0.078854	Meghalaya	0.214798	Puducherry	0.163588
23	Kerala	0.066373	Tripura	0.213397	Maharashtra	0.161232
24	Tamil Nadu	0.063933	Karnataka	0.212369	Tamil Nadu	0.130703
25	Puducherry	0.058758	Orissa	0.211879	Madhya Pradesh	0.124496
26	Orissa	0.049182	Andhra Pradesh	0.208362	Tripura	0.115616
27	Maharashtra	0.04882	Uttarakhand	0.191917	Karnataka	0.108256
28	Chhattisgarh	0.047004	Arunachal Pradesh	0.190733	Jharkhand	0.103178
29	Andhra Pradesh	0.045073	West Bengal	0.172	Andhra Pradesh	0.09794
30	Tripura	0.045006	Madhya Pradesh	0.169769	Orissa	0.093777
31	Madhya Pradesh	0.043496	Bihar	0.157452	Bihar	0.093103
32	Jharkhand	0.042949	Lakshadweep	0.138052	Uttar Pradesh	0.089733
33	Uttar Pradesh	0.040785	Assam	0.122111	West Bengal	0.085225
34	Assam	0.037769	Chhattisgarh	0.11735	Assam	0.080691
35	West Bengal	0.036747	Uttar Pradesh	0.116511	Chhattisgarh	0.054446

Table 8: Rank of different States in descending order of CRC

URBAN

Rank	OAE		ESTABLISHMENT		ALL	
	State	CRC	State	CRC	State	CRC
1	Nagaland	0.890387	Chandigarh	0.853627	Chandigarh	0.900299
2	Meghalaya	0.844213	Karnataka	0.66653	Karnataka	0.408863
3	Manipur	0.761067	Gujarat	0.389718	Gujarat	0.261912
4	Arunachal Pradesh	0.229645	Maharashtra	0.364107	Maharashtra	0.248145
5	Chandigarh	0.099447	Goa	0.256515	Goa	0.214501
6	Mizoram	0.081593	Kerala	0.23753	A & N Island	0.196492
7	Himachal Pradesh	0.075799	D & N Haveli	0.1968	Sikkim	0.15637
8	A & N Island	0.071483	A & N Island	0.173607	Kerala	0.151081
9	Bihar	0.071081	Jharkhand	0.165227	Jammu & Kashmir	0.148452
10	Sikkim	0.070856	Sikkim	0.161286	D & N Haveli	0.139435
11	Jammu & Kashmir	0.066678	Jammu & Kashmir	0.148885	Nagaland	0.136907

12	Daman & Diu	0.064065	Punjab	0.147021	Himachal Pradesh	0.124755
13	Lakshadweep	0.063772	Bihar	0.146442	Arunachal Pradesh	0.117361
14	Gujarat	0.06153	Lakshadweep	0.140322	Daman & Diu	0.110052
15	Rajasthan	0.054366	West Bengal	0.139487	Delhi	0.106741
16	Karnataka	0.052784	Nagaland	0.134881	Mizoram	0.1062
17	Tamil Nadu	0.052491	Puducherry	0.133132	Punjab	0.105816
18	Puducherry	0.049518	Andhra Pradesh	0.132148	Jharkhand	0.09569
19	Andhra Pradesh	0.047972	Himachal Pradesh	0.127663	Meghalaya	0.093179
20	Haryana	0.047233	Tamil Nadu	0.121856	Haryana	0.092583
21	Tripura	0.045252	Arunachal Pradesh	0.117805	Rajasthan	0.090847
22	Madhya Pradesh	0.0433	Mizoram	0.112718	Assam	0.090144
23	West Bengal	0.041559	Daman & Diu	0.110708	Bihar	0.090039
24	Delhi	0.041052	Assam	0.108936	Manipur	0.087729
25	Orissa	0.040831	Delhi	0.107323	Andhra Pradesh	0.086465
26	Jharkhand	0.040203	Haryana	0.106519	Tamil Nadu	0.08548
27	Assam	0.039305	Rajasthan	0.100549	Uttarakhand	0.084379
28	Maharashtra	0.038053	Uttarakhand	0.099341	West Bengal	0.082987
29	Punjab	0.03768	Manipur	0.098483	Puducherry	0.080545
30	Chhattisgarh	0.03763	Madhya Pradesh	0.094321	Lakshadweep	0.069352
31	Kerala	0.036653	Chhattisgarh	0.090772	Madhya Pradesh	0.065286
32	Uttarakhand	0.035956	Meghalaya	0.087455	Chhattisgarh	0.056974
33	Goa	0.034629	Uttar Pradesh	0.056327	Uttar Pradesh	0.039286
34	Uttar Pradesh	0.034465	Tripura	0.055222	Orissa	0.038899
35	D & N Haveli	0.031227	Orissa	0.052427	Tripura	0.035931

Table 9: Rank of different States in descending order of CRC

COMBINED

Rank	OAE		ESTABLISHMENT		ALL	
	State	CRC	State	CRC	State	CRC
1	Nagaland	0.843366	Chandigarh	0.908369	Chandigarh	0.939665
2	Meghalaya	0.777315	Karnataka	0.569596	Goa	0.249638
3	Manipur	0.712797	Gujarat	0.351522	Karnataka	0.248716
4	Arunachal Pradesh	0.219754	Maharashtra	0.31767	Gujarat	0.239761
5	Chandigarh	0.172364	Goa	0.257362	Maharashtra	0.200048
6	Mizoram	0.137067	D & N Haveli	0.184234	A & N Island	0.184518

7	A & N Island	0.128516	Kerala	0.152329	Daman & Diu	0.165757
8	Sikkim	0.112635	A & N Island	0.145533	D & N Haveli	0.156366
9	Himachal Pradesh	0.090709	Daman & Diu	0.142277	Mizoram	0.149686
10	Jammu & Kashmir	0.089713	Punjab	0.139495	Delhi	0.14879
11	Delhi	0.087123	Puducherry	0.124979	Punjab	0.135273
12	Lakshadweep	0.078766	Sikkim	0.120754	Jammu & Kashmir	0.131155
13	Bihar	0.07813	Tamil Nadu	0.116534	Arunachal Pradesh	0.129987
14	Daman & Diu	0.077241	Manipur	0.114248	Nagaland	0.129713
15	Rajasthan	0.07685	Delhi	0.111621	Sikkim	0.121795
16	Haryana	0.07402	Andhra Pradesh	0.1085	Rajasthan	0.112213
17	Gujarat	0.072515	Arunachal Pradesh	0.103063	Manipur	0.108237
18	Punjab	0.071532	Himachal Pradesh	0.102652	Himachal Pradesh	0.107397
19	Goa	0.069083	Mizoram	0.101227	Kerala	0.106529
20	Uttarakhand	0.068725	West Bengal	0.100739	Haryana	0.10103
21	Karnataka	0.061084	Nagaland	0.099301	Puducherry	0.096491
22	D & N Haveli	0.058815	Rajasthan	0.098714	Uttarakhand	0.090285
23	Tamil Nadu	0.054966	Jammu & Kashmir	0.098477	Tamil Nadu	0.0848
24	Kerala	0.052251	Uttarakhand	0.081379	Meghalaya	0.079725
25	Puducherry	0.051187	Haryana	0.081111	Lakshadweep	0.069566
26	Maharashtra	0.048734	Jharkhand	0.077531	Madhya Pradesh	0.063306
27	Madhya Pradesh	0.044015	Bihar	0.072315	Andhra Pradesh	0.057766
28	Orissa	0.04397	Madhya Pradesh	0.069758	Jharkhand	0.054563
29	Andhra Pradesh	0.04391	Meghalaya	0.060849	Bihar	0.046973
30	Chhattisgarh	0.040225	Lakshadweep	0.05344	West Bengal	0.045247
31	Tripura	0.039928	Chhattisgarh	0.049938	Tripura	0.041948
32	Jharkhand	0.039474	Orissa	0.048838	Uttar Pradesh	0.04123
33	Uttar Pradesh	0.035396	Assam	0.048005	Assam	0.040036
34	West Bengal	0.035318	Tripura	0.047937	Chhattisgarh	0.036981
35	Assam	0.030738	Uttar Pradesh	0.037974	Orissa	0.033878

REFERENCES

1. Government of India (2008): *Report of high level group on services sector*, Government of India, Planning Commission.

2. Government of India (2009): *National Accounts Statistics 2009*, Central Statistical Organisation, Ministry of Statistics and Programme Implementation, Government of India.

3. C. Rangarajan (2006): *Employment and Growth*, Madras School of Economics, Gandhi Mandapam Road, Chennai 600 025, Monograph 2/2006, October 2006.

4. C Rangarajan et al (2007): 'Revisiting Employment and Growth', *ICRA Bulletin* – Money & Finance Vol 3(2).

5. Government of India (2009): *Service Sector in India (2006-07), Operational Characteristics of Enterprises*, NSS 63rd Round (July 2006-June 2007), National Sample Survey Organisation, Ministry of Statistics and Programme Implementation, Government of India (Report No. 529 (63/2.345/1).

6. Government of India (2009): *Service Sector in India (2006-07), Economic Characteristics of Enterprises*, NSS 63rd Round (July 2006-June 2007), National Sample Survey Organisation, Ministry of Statistics and Programme Implementation, Government of India (Report No. 529 (63/2.345/2).

7. Hwang, C. L. and Yoon, K. (1981): *Multiple Attribute Decision Making: Methods and Applications*, Lecture Notes in Economics and mathematical Systems, Springer-Verlag, New York.

8. Zeleny, M. (1982) : *Multiple Criteria Decision Making*. McGraw Hill.

9. Yoon, K. and Hwang, C. L.1995) : *Multiple Attribute Decision Making :*

   An Introduction. Sage Publication.

10. Bikas K Sinha and Kirit R Shah (2003): 'On some aspects of data integration techniques with environmental applications', *Environmetrics*.

NSS 63rd round enterprise survey: Certain conceptual issues and operational experience

By T. K. Sanyal, DDG, SDRD

Abstract:

Service sector contributes more than fifty percent of the GDP of India. However, major data gaps exist in this sector. NSS 63rd round enterprise survey was an attempt to bridge the data gaps. In this paper the experience of tabulating the results of enterprise survey is documented. It starts with highlighting the shortcomings noticed in designing the schedule and its impact on the tabulation. Then an attempt is made to narrate the data collection problems and its impact on the tabulated results. Certain other problems encountered in validating the tables are taken up in the next section. The issue of sample size in enterprise survey is then discussed by citing an example from NSS 63rd round. The paper concludes by saying that no attempts should be made in future to cover the extremely big enterprises along with micro and small enterprises. In such a case, estimates produced at the disaggregated level are more likely to be subject to high sampling errors.

****

1. **Introduction**: In post 90's economic scenario, Service sector enterprises continue to have a dominant share of GDP of the country. But several data gaps exist in this sector. To give a few examples, data on private non-financial services are not available regularly. Also, major data gaps exist in respect of private non-banking financial sectors (NBFCs), Self-Help Groups (SHGs), Co-operative credit societies, Micro-finance institutions etc. Unorganised manufacturing and unorganised service sector enterprise surveys are periodically (normally after a gap of five years) conducted by NSS. Central Statistical Organisation (CSO) uses the results of unorganised enterprise surveys of NSS as benchmark estimates for contribution of this sector to GDP and they project estimates for the subsequent years using the indices of change. For organised service sector enterprises, CSO depends on company finance studies of RBI. But the estimates generated through these studies of RBI suffer from very serious limitation of small sample size and as such are not very reliable. It is against this background that NSS 63rd round enterprise survey was launched covering the entire service sector excluding trade. One notable feature of the survey was the coverage of financial enterprises in the survey, which had not been done in the past.

1.1 Schedule of enquiry designed for enterprise survey of NSS 63rd round was one of the most complex schedules designed for any enterprise survey in the history of NSS. In the course of field-work and data processing and tabulation, considerable difficulties were experienced. After the trial tables were generated, considerable efforts were put in to remove the anomalies in the tables owing to omissions or commissions in the schedule designing stage and data collection stage. The following sections give a critical assessment of enterprise survey of NSS 63rd round based on the experience of tabulating the results.

2. **Shortcomings in the schedule**: The following paragraphs list the shortcomings in the designing of the schedule, which had impacted the tabulation.

2.1 Item number 221 in block 2.1 enquires whether the surveyed enterprise is a private non-profit institution (NPI) or not. A private NPI may be a market or non-market entity. A private non-market NPI is called NPISH. Methods of Valuation of output of an **NPISH** and a **market NPI** are totally different. In the absence of follow-up questions to item 221, it was not possible to know the whether the surveyed enterprise answering 'yes' to item 221 is really an NPISH or a market NPI.

2.2 Item 357, block 3.1 (i.e. taxes on products) is part of distributive expenses. It should not have been part of other operating expenses. Distributive expenses (item 453), which includes, inter alia, taxes on products, was recorded in block 4.2. So, in deriving value added in item 459, block 4.2, taxes on products gets subtracted twice. At the tabulation stage, it created lot of problems.

2.3 Similarly, item 447 (production subsidy/interest subsidy), block 4.1 and item 645 (production subsidy/interest subsidy), block 6 relates to 'subsidies on products and other subsidies on production' (as per para 3.0.9, p C-13, Instruction to field staff, vol. 1, NSS 63rd round). This should have been taken out of the respective blocks.

2.4 Block 4.2 (value added block) was relevant for non-financial enterprises whereas block 6 (value added block) was relevant for financial enterprises. Some enterprises (possibly mixed activity units) reported entries in both block 4.2 and block 6. At the tabulation stage, this created problems in taking into account the value added contribution of financial part when the NIC code of the enterprise belonged to non-financial sector and vice-versa.

2.5 Financial enterprises, which included insurance enterprises and pension funds, were covered for the first time in service sector enterprise surveys of NSS. However, receipts of both life insurance and non-life insurance companies consist of premium received and investment income on premium received (notionally known as supplementary premium paid by the policy–holder) while expenditures consist of adjusted claims paid. Similar procedure is applicable for pension funds. However, none of these items was included in block 6 (related to financial enterprises). This was one of the serious drawbacks noticed in designing the schedule.

2.6 Item 802, block 8 gives the salary and wages (in cash and kind) to hired workers while item 804 gives the imputed value of group benefits to 'hired and other workers'. Annual salary per hired workers cannot, strictly speaking, be derived by adding item 802 and 804 and then dividing the 'total' by 'total number of hired workers'.

2.7 Service sector enterprises also include enterprises engaged generation of software, motion picture production etc. In many cases, such enterprises produce output that has not yet reached the stage (during the accounting period) in which it is normally supplied to others. But ownership of such products is nevertheless transferable, if necessary. Therefore, value of semi-finished goods must be recorded for any output that is not yet complete at the end of the accounting period. But this item was not included either in receipts blocks i.e. block 4 or block 4.1.

3. Data collection problems and its impact at the tabulation stage: Because data collection was predominantly carried out through oral enquiry (an estimated 1.3% enterprises only provided data from books of accounts), some of the blocks could not be properly filled in. The following sections document the data collection problems encountered by the field staff and its impact at the tabulation stage.

3.1 Multiple reference periods were followed for data collection. For enterprises maintaining accounts and also providing data from books of accounts, reference period of data collection was accounting year. For oral enquiry, the reference period of data collection was one month. While one cannot deny that ideally this should be the practice, our experience of processing and tabulating the enterprise surveys of both 62nd and 63rd round shows that the multiple reference period of data collection created lot of problems at the reporting stage by the field staff. There were discrepancies in the reference period of data collection in block 2.1 and actual entries recorded in other blocks. This went unnoticed by the data processing staff in many cases and was detected after the results were tabulated. All the relevant unit records were looked into again to rectify the discrepancies and this also contributed to delay in the release of the report. It may be pertinent to mention here that results of successive enterprise surveys of NSS 62nd round and NSS 63rd round revealed that number of enterprises maintaining accounts and providing data from books of accounts were very small (1.3%, 63rd round; 0.7%, 62nd round).

3.2 In significant number of cases entries were recorded in block 7 (employment particulars) with no corresponding entries in block 8 (compensation to workers) even when hired workers were reported in block 7 and vice-versa. This was also noticed in some list frame enterprises. This resulted in imputation either in block 7 or block 8. This was difficult as the imputation needs to be industry-specific as the salary and allowances were not uniform across all industries.

3.3 Instruction was given in Vol. 1 that for enterprises maintaining accounts but not giving data from books of accounts, data should be collected through oral enquiry. However, serious problems were faced in data reporting through oral enquiry in case of big enterprises as many items were left unreported. This was specially revealed in blocks 5, 6, 9, 10, as these blocks included complex accounting items which are very difficult to fill up through oral enquiry. At the tabulation stage, these non-reported items caused serious bottlenecks.

3.4 Many items in the schedule involved complex accounting principles. Investigators were not properly trained to fill up these items even when Profit and Loss (P&L) accounts and balance sheets were made available to Investigators. This might have been responsible for wrong reporting in certain cases resulting in failure of consistencies in different items in the schedule and it impacted the inter-consistencies among different tables at the tabulation stage. It should be remembered here that there was no statutory legislation making it incumbent upon Companies to furnish the requisite information.

3.5 In some cases, after checking of trial tables references were made to data processing centres and it was revealed that entries in the schedule were not tallying with the P&L accounts and balance sheets attached with the schedule. It was difficult to rectify such errors as the data processing staff was ill-equipped to handle such cases owing to their lack of exposure to business accounting

principles. Moreover, the structure of P&L accounts and balance sheets were not uniform in case of all enterprises.

3.6 In the absence of any instruction for valuation of output for private non-market NPI, the value added was calculated for such enterprises in the usual 'Product Approach' by the field-staff. This resulted in negative GVA in considerable number of cases. This was revealed during checking of trial tables. Considerable amount of time was spent to rectify such anomalies at the post tabulation stage resulting in delay in finalising the report.

4. Other remarks:

4.1 At the tabulation scrutiny stage, considerable difficulties were experienced in detecting errors which occurred in area frame enterprises, which are smaller enterprises and medium enterprises. Errors of such enterprises got subsumed in the combined (list frame and area frame together) estimates generated in the trial tables owing to overriding contribution to such estimates by list frame enterprises.

4.2 To obviate the above difficulties, all the tables were regenerated separately for area frame and list frame. Scrutiny of separate sets of tables was done to rectify the anomalies.

4.3 The economic characteristics of service sector enterprises were analysed separately for the enterprises covered under list frame and area frame. List frame enterprises, by definition, were big enterprises and had dominant share in various economic characteristics. Several of the list frame units had number of branches spread across the states. The disaggregation of their characteristics needed apportionment using some auxiliary information such as number of workers in the branches located in different states. However, such break-up was not available for a number of list frame units surveyed**.** Keeping in view this limitation of the survey, the state-wise break-up of various characteristics was given only in respect of area frame enterprises.

4.4 The issue of multi-establishment enterprises is a complex one. Instruction was given in 63rd round that if the surveyed list frame enterprise is a multi-establishment one having enterprises spread across states, a combined return may be filled up for the same. It got revealed during the scrutiny of tables of area frame enterprises that several area frame enterprises belonging to segment 9 had entries similar to or higher than several list frame enterprises. The same logic of combined return given for list frame enterprises applies here as well.

5. Issues related to sample size:

5.1 The issue of sample size needs proper consideration for giving disaggregated estimates like 'all-India x Tabulation category', 'State x Tabulation category' etc. As for example, 'storage and warehousing' units not covered under ASI were surveyed in NSS 63rd round. But estimates generated for 'estimated number of enterprises', estimated number of workers, GVA per worker etc. is subject to high relative standard (RSE) error. The following table may be seen.

Table 1: Relative Standard Errors (RSE) by sector

Storage and Warehousing (I1)	Relative Standard Error(RSE)	
	rural	urban
Est. no. of enterprises	44.7	20.2
Est. no. of workers	48.0	38.6
GVA per enterprise	20.0	44.79
GVA per worker	28.3	23.5

5.2 GVA estimates of State x Tabulation Category (I1) have come blank in many states in the tabulated results though such estimates were generated in 57th round survey. This is possibly because the number of FSUs surveyed in 63rd round (13271 FSUs) was much lower than the same for 57th round (15869 FSUs). Consequently, in the selected villages and UFS blocks in several states during listing stage, no sample enterprise was found under 'storage and warehousing (I1)'. To illustrate, State-wise sample size under tabulation category I1 in 57th round and 63rd round is presented in Table 2 below. Only 82 sample enterprises were surveyed in 63rd round as against 726 enterprises in 57th round.

Table 2: Sample enterprises surveyed under 'Storage and Warehousing' (I1) in 57th round and 63rd round

State/UT	No. of enterprises surveyed In 57th round in category 'Storage and Warehousing '(I1)	No. of enterprises surveyed In 63rd round in category 'Storage and Warehousing '(I1)
	Total FSUs surveyed=15869 (57th round)	Total FSUs surveyed=13271(63rd round)
Andhra Pradesh	77	2
Arunachal Pradesh	1	0
Assam	43	9
Bihar	55	5
Chhattisgarh	14	1
Delhi	18	14
Goa	0	0
Gujarat	9	2
Haryana	15	0
Himachal Pradesh	6	0
Jammu & Kashmir	20	3
Jharkhand	25	0
Karnataka	30	0
Kerala	10	2
Madhya Pradesh	18	8
Maharashtra	68	9
Manipur	14	4
Meghalaya	38	3
Mizoram	4	0
Nagaland	9	0
Orissa	1	0
Punjab	15	1
Rajasthan	4	0

State/UT	No. of enterprises surveyed In 57th round in category 'Storage and Warehousing '(I1)	No. of enterprises surveyed In 63rd round in category 'Storage and Warehousing '(I1)
Sikkim	0	0
Tamil Nadu	17	3
Tripura	32	2
Uttarakhand	1	0
Uttar Pradesh	34	7
West Bengal	141	7
A & N Islands	0	0
Chandigarh	0	0
D & N Haveli	3	0
Daman & Diu	0	0
Lakshadweep	0	0
Puducherry	4	0
all-India	726	82

Source: NSS Report No. 483 and NSS Report No. 528

6. Concluding remarks:

6.1 The difficulties encountered during NSS 63rd round highlight the fact that a survey of very big enterprises and small, medium and micro-enterprises should never be done together. This leads to difficulties in adopting efficient sampling design. The survey also revealed that in the absence of statutory legislation, attempts to cover big enterprises through oral enquiry are not desirable. The experience of 63rd round led to the decision of covering unincorporated manufacturing, trade and service sector enterprises in NSS 67th round enterprise survey.

A Study of Divergences in the Estimates of Number of Establishments and Workers Engaged in the Services Sector in India as per NSS 63rd Round and Economic Census 2005

(A Paper Prepared Jointly by CSO (ESD) and Computer Centre

for the Seminar on NSS 63rd Round)[1]

1. Introduction

The services sector is a fast growing sector in the Indian economy. As per the latest National Accounts Statistics 2009 of CSO, services sector had a share of 52.4% in the GDP at constant price during the year 2007-08.

Keeping in view the importance of the sector, NSSO conducted the follow-up establishment survey on services sector in the 63rd round (2006-07) of National Sample Survey (NSS). The sample size at the all-India level (central sample) was 189,844 establishments[2] spread over a stratified random sample of 13,271 villages/urban blocks of the country. Of the total number of establishments surveyed, 438 were establishments belonging to the 'list frame' which were relatively large in size as compared to their counterparts in the 'area frame'. As per the survey, an estimated 17 million service sector establishments employing about 34 million workers were found to be operating in the country during 2006-07.

2. Scope of the paper

Apart from the NSS follow-up surveys, information on number of establishments and workers is also available from the Economic Censuses (EC) conducted from time to time. The last EC was conducted during 2005. Although survey period of NSS 63rd round (2006-07) differs from that of EC 2005, it may be useful to study the closeness of the related estimates based on the two sources. Scope of this paper is confined to this study with a view to identifying the sub-domains/activities within the services sector where the divergence is more prominent so that remedial corrective measures can be taken in future.

NSS 63rd round did not cover establishments belonging to government and public sector. Accordingly, figures based on EC 2005 presented in this report do not include such establishments to make the comparison with the NSS meaningful. Further, in all the statistical tables, only those activities of services sector have been considered for which separate estimates are available in the released NSS reports.

3. Findings on the divergences in the alternative estimates

A. All establishments taken together

Table 1 shows the divergence in the number of establishments and number of workers in terms of ratio of NSS estimate to that of EC. It may be seen that, in general, across all activities except hotels and storage & warehousing, NSS estimate is much higher than that of EC. The divergence is quite alarming in case of communications, non-banking financial intermediation, and insurance & pension funding. The time difference in the conduct of fieldwork of the two sources cannot probably explain the said divergence.

---

1 Team members include Ashish Kumar, G. C. Manna, P. C. Mohanan, G S Lakshmi and P. S. Meena.

2 The term 'establishment' used in this paper covers both own account units without hired workers and other types of units that employed hired workers.

Table 1: Divergence with regard to number of establishments and workers

Activity	Number of establishments		Ratio of NSS to EC	Number of workers		Ratio of NSS to EC
	NSS 63rd Round	EC 2005		NSS 63rd Round	EC 2005	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Hotels	69318	215500	0.32	440658	769721	0.57
Restaurants	1990393	1249438	1.59	4693097	2878265	1.63
Storage and Warehousing	2719	95221	0.03	17910	263707	0.07
Communications	1893347	623994	3.03	2665392	1101650	2.42
Non Banking financial Intermediation*	1285330	98429	13.06	5332671	325632	16.38
Insurance and pension funding	228718	66372	3.45	437814	164796	2.66
Real Estate, renting and Business activities	1400966	996398	1.41	3098087	2572698	1.20
Education	1041208	544418	1.91	3873975	2827658	1.37
Health and Social work	1094815	596334	1.84	2181238	1655093	1.32
Other Community, social and personal services	3128230	2372069	1.32	5088172	4342998	1.17
All	12135044	6858173	1.77	27829014	16902218	1.65

* Excluding insurance and pension funding

B. Divergence by type of establishment

If we look at the extent of divergence in the figures of both number of establishments and number of workers by type of establishments in terms of whether they hired workers or not, the former being categorized as Own Account Establishments (OAEs), interestingly it reveals that (see Tables 2 and 3) estimates of number of OAEs as per NSS are much higher than those of EC across the activity categories except hotels and storage & warehousing. Reverse is the case with 'Other type of establishments' which operated with the help of hired workers. For such units, EC figures are generally found to be on the higher side.

Table 2: Divergence in the total number of establishments by type of establishment

Activity	OAE		Ratio of NSS to EC	Others		Ratio of NSS to EC
	NSS 63rd Round	EC 2005		NSS 63rd Round	EC 2005	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Hotels	8110	89156	0.09	61208	126344	0.48
Restaurants	1540298	742904	2.07	450095	506534	0.89
Storage and warehousing	678	42124	0.02	2041	53097	0.04
Communications	1753260	428939	4.09	140087	195055	0.72
Non Banking financial Intermediation*	1209330	44866	26.95	75999	53563	1.42
Insurance and pension funding	198964	45252	4.40	29754	21120	1.41
Real Estate, renting and Business activities	1039673	538987	1.93	361293	457411	0.79
Education	712596	199057	3.58	328612	345361	0.95
Health and Social work	813315	311335	2.61	281500	284999	0.99
Other Community, social and personal services	2855429	1519973	1.88	272802	852096	0.32
All	10131653	3962593	2.56	2003391	2895580	0.69

Table 3: Divergence in the total number of workers by type of establishment

Activity	OAE		Ratio of NSS to EC	Others		Ratio of NSS to EC
	NSS 63rd Round	EC 2005		NSS 63rd Round	EC 2005	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Hotels	14724	138361	0.11	425934	631360	0.67
Restaurants	2654365	1021580	2.60	2038731	1856685	1.10
Storage and warehousing	787	49369	0.02	17123	214338	0.08
Communications	2227525	481166	4.63	437867	620484	0.71
Non Banking financial Intermediation*	4879945	84558	57.71	452726	241074	1.88
Insurance and pension funding	211839	49306	4.30	225975	115490	1.96
Real Estate, renting and Business activities	1292441	645557	2.00	1805646	1927141	0.94
Education	774060	278145	2.78	3099915	2549513	1.22
Health and Social work	896497	384930	2.33	1284741	1270163	1.01

Other Community, social and personal services	4063251	1998940	2.03	1024921	2344058	0.44
All	17015434	5131912	3.32	10813579	11770306	0.92

* Excluding insurance and pension funding

C. Divergence by rural and urban

The divergence in the alternative estimates by rural and urban is shown in Table 4. Problem is relatively more in case of rural. The divergence is alarmingly high in case of establishments in the non-banking financial intermediation located in the rural areas.

Table 4: Divergence (ratio of NSS estimate to EC) by rural and urban

Activity	Number of establishments		Number of workers	
	Rural	Urban	Rural	Urban
(1)	(2)	(3)	(4)	(5)
Hotels	0.13	0.49	0.20	0.76
Restaurants	1.56	1.64	1.58	1.67
Storage and warehousing	0.03	0.03	0.05	0.07
Communications	3.82	2.52	3.62	1.87
Non Banking financial Intermediation*	26.04	2.72	35.25	3.28
Insurance and pension funding	4.73	2.77	3.63	2.41
Real Estate, renting and Business activities	1.43	1.39	1.18	1.21
Education	1.89	1.93	1.28	1.44
Health and Social work	2.43	1.34	1.58	1.19
Other Community, social and personal services	1.46	1.10	1.37	0.94
All	2.03	1.50	2.10	1.33

* Excluding insurance and pension funding

4. Concluding remarks

There are wide divergences in the figures thrown up by two sources. OAEs seem to have been grossly under-reported in the EC. There are wide divergences in the figures of number of establishments/ workers as per the two sources in case of hotels, storage & warehousing, communications, non-banking financial intermediation, insurance and pension funding, education, and health and social work. The reasons for divergences could be many like (a) lack of clarity of the concepts and definition of the term 'establishment' particularly in case of enumerators of EC, (b) under-listing of establishments in EC, and (c) sampling errors associated with the NSS estimates. Ascertaining of the exact reasons would require in-depth study at disaggregated level like village/block level at least for some villages/ blocks selected for the NSS 63rd round. With the constraint of time and resources, this study could not be undertaken. However, from the limited analysis and findings presented in this paper, it is evident that divergences in the alternative estimates are quite alarming in case of certain activities. Both the sources are required to take remedial measures so that observed divergences are minimized in future.

Observations on NSS 63rd Round by DP Centre, Bangalore

Misclassification of Second Stage Strata

Schedule 2.345 (Service Sector Enterprises excluding Trade)

1. The 63rd Round of NSS was earmarked for collection of data on economic and operational characteristics of enterprises in Service Sector excluding Trade and also on the household consumption expenditure. The main focus of this paper is to highlight the misclassification of enterprises among the different second stage strata, which has been examined by this centre. Based on the NIC-2004 code and the description of the service enterprises, all eligible enterprises were classified into 8 SSSs.

2. For the 63rd Round, the overall allotment of this center was 1767 covering the states of Karnataka ,Tamilnadu, and Puducherry. For the analysis purpose, we have taken the states of Karanataka and Tamilnadu data comprising of 1717 FSU's. The following table depicts the allotment of FSU's and the no of enterprises canvassed.

State	Allotment		No of FSUs canvassed
	Rural	Urban	
Karnataka	240	395	635
Tamil Nadu	449	633	1082
Total	689	1028	1717

3. To study the extent of the misclassification of the enterprise among the Second Stage Strata, the data with respect to NIC code, and enterprise code, were compared with Second Stage Strata classification. Accordingly, we have arrived the frequency of misclassification as indicated below.

SR	STATE/ SECTOR	No. of SSUs in Processed	No. of SSUs in Error	R-1	R-2	R-3	R-4	R-5	R-6	R-7	R-8	R-9	R-10
I	KTK(R)	855	5	1	0	0	2	1	0	0	1	2	1
	KTK(U)	1595	22	2	0	0	11	2	1	5	1	4	5
	TN(R)	2208	15	3	0	0	4	1	1	2	4	4	6
	TN(U)	2935	42	2	4	0	8	8	2	9	9	15	19
II	KTK(R)	994	5	0	0	0	0	0	0	4	1	0	1
	KTK(U)	1569	16	0	0	0	9	0	0	2	5	0	7
	TN(R)	2221	7	0	0	0	2	0	0	0	5	0	5
	TN(U)	2705	23	0	1	1	4	2	0	8	7	2	10
III	KTK(R)	771	4	0	0	0	3	0	0	0	1	0	1
	KTK(U)	1263	12	0	0	0	5	3	2	0	2	3	4
	TN(R)	1969	5	0	0	0	5	0	0	0	0	0	0
	TN(U)	2176	14	1	0	0	4	0	1	3	5	1	9
IV	KTK(R)	973	6	0	0	0	3	2	0	0	1	2	1
	KTK(U)	1322	23	3	0	0	12	3	0	0	5	6	5
	TN(R)	1979	2	0	0	0	0	0	0	0	2	0	2
	TN(U)	1987	18	1	0	0	4	7	2	0	4	9	6
Total		27522	219	13	5	1	76	29	9	33	53	48	82

(Rules are enclosed as annexure)`

4. In few cases we have identified that the enterprise code reported in the listing schedule differs from the detailed schedule 2.345. For example, in listing schedule enterprise was reported as “OAE”, while in the detailed schedule the same was reported as “Establishment”.

5. The coding structure is not uniform in the listing as well as detailed schedule 2.345. The coding was ‘1’ for establishments and ‘2’ for own account enterprises in listing schedule, where as in schedule 2.345, the coding was “2’ for establishments and ‘1’ for own account enterprises. This different coding structure may be one of the reasons for the misclassification. This may lead to confusion for the field investigator in giving proper coding.

6. For example, all establishments having NIC code 6301,6303,6304,6309 etc should have been classified under SSS4. But as per instructions NIC 6302 should go to SSS2 and 6305, 6306 should go to SSS5. Such a robust classification may lead to confusion in classifying the establishments/OAEs by the investigators

7. On examining the distribution of errors across the second stage strata 219 no of SSUs in error were observed out of 1632 FSU’s canvassed. The patterns of error were not randomly distributed, but more concentrated in SSS4, SSS5, SSS7 and SSS8. This would probably have overall impact on the estimation.

8. An attempt was made to classify the 219 misclassified SSS out of 27522 SSS canvassed. These schedules are classified into appropriate SSS with the help of NIC and establishment codes. The details are given below.

SSS	1	2	3	4	5	6	7	8	Total
Total Schedules Canvassed	420	99	39	1411	4345	3671	1437	16100	27522
Wrong Classification	13	5	1	76	29	9	33	53	219
Correct Classification	8	1	0	12	137	15	5	41	219
Net	415	95	38	1347	4453	3677	1409	16088	27522
Percentage Change	-1.2	-4.0	-2.6	-4.5	2.5	0.2	-1.9	-0.1	

9. It may be observed from the above table, the estimates relating to SSS2, SSS3, SSS4, and SSS7 are overestimated, where as that of SSS5 is underestimated. It may be inferred from the above, such a robust classification will have impact on the estimation.

***

. NSS 63rd Round (July 2006 - June 2007)

Schedule 2.345: SERVICE SECTOR ENTERPRISES(EXCLUDING TRADE)

The following rules are checked for misclassification of enterprises by Enterprise type / NIC 2004.

sl. no.	reference to schedule			Rule
	block	item	col.	
(1)	(2)	(3)	(4)	(5)
1	1 2	15 202, 228	- -	For SSS-1, (i) If Blk-1/It-15 = 1 then Blk-2 /It-228 = 2 and Blk-2/It-202 (NIC) should be any one of '659, 66, 67' (ii) If Blk-1/It-15 = 1 then Blk-2 /It-228 = 2
2	1 2	15 202, 228	- -	For SSS-2, (i) If Blk-1/It-15 = 2 then Blk-2 /It-228 = 2 and Blk-2/It-202 (NIC) should be any one of '72, 73, 6302' (ii) If Blk-1/It-15 = 2 then Blk-2 /It-228 = 2
3	1 2	15 202, 228	- -	For SSS-3, (i) If Blk-1/It-15 = 3 then Blk-2 /It-228 = 2 and Blk-2/It-202 (NIC) should be any one of '61, 90, 9191, 9199' (ii) If Blk-1/It-15 = 3 then Blk-2 /It-228 = 2
4	1 2	15 202, 228	- -	For SSS-4, (i) If Blk-1/It-15 = 4 then Blk-2 /It-228 = 2 and Blk-2/It-202 (NIC) should be any one of '551, 6301, 6303, 6304, 6309, 641, 701, 742, 743, 851, 921' (ii) If Blk-1/It-15 = 4 then Blk-2 /It-228 = 2
5	1 2	15 202, 228	- -	For SSS-5, (i) If Blk-1/It-15 = 5 then Blk-2 /It-228 = 2 and Blk-2/It-202 (NIC) should be any one of 'codes under coverage other than above' (ii) If Blk-1/It-15 = 5 then Blk-2 /It-228 = 2

sl. no.	reference to schedule			Rule
	block	item	col.	
(1)	(2)	(3)	(4)	(5)
6	1 2	15 202, 228	- -	For SSS-6, (i) If Blk-1/It-15 = 6 then Blk-2 /It-228 = 1 and Blk-2/It-202 (NIC) should be any one of '659, 66, 67' (ii) If Blk-1/It-15 = 6 then Blk-2 /It-228 = 1
7	1 2	15 202, 228	- -	For SSS-7, (i) If Blk-1/It-15 = 7 then Blk-2 /It-228 = 1 and Blk-2/It-202 (NIC) should be any one of '70, 72, 73, 74' (ii) If Blk-1/It-15 = 7 then Blk-2 /It-228 = 1
8	1 2	15 202, 228	- -	For SSS-8, (i) If Blk-1/It-15 = 8 then Blk-2 /It-228 = 1 and Blk-2/It-202 (NIC) should be any one of 'codes under coverage other than above' (ii) If Blk-1/It-15 = 8 then Blk-2 /It-228 = 1
9	1 2	15 228	- -	If Blk-1/It-15 = (1/2/3/4/5) then Blk-2 /It-228 = 2
10	1 2	15 228	- -	If Blk-1/It-15 = (6/7/8) then Blk-2 /It-228 = 1

Note:

Block-1 / Item 15 SSS (1-5) - Establishment SSS (6-8) - OAE

Block-2 / Item 228 Enterprise type - Code '1': OAE Code '2' : Establishment

***