29th & 30th October, 2007
New Delhi

National Seminar On NSS 61st Round Survey Results

National Sample Survey Organisation
Ministry of Statistics & Programme Implementation
Government of India

Introduction

The National Sample Survey Organisation conducts nationwide sample surveys on various socio-economic issues. The results of these surveys are released in the form of various reports, which are mainly based on tabulation of data according to a preplanned scheme finalized by a team of experts. To facilitate further use of the data collected by NSSO by other experts or institutions, the unit level data is disseminated through the Computer Centre, New Delhi.

In 2003, Dr. Adarsh Kishore as Secretary, MOS&PI, initiated the concept of periodic National Seminars on various aspects of official statistics to provide a professional development opportunity to the Indian Statistical Service (ISS) Officers and to serve their academic interests. Such seminars would also provide 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 61st round held at New Delhi during 29-30 October 2007 was a part of this exercise.

Papers were invited from ISS officers and officers of State Statistical Bureaus for presentation in the seminar. In all 27 papers were selected for presentation but only 26 could be presented. The authors were asked to revise their papers, if they so desired, in view of the reactions of the audience. These papers are now being published in this volume. The papers are classified into the following three thematic groups:

1. Household Consumer Expenditure Survey,
2. Employment and Unemployment Survey, and
3. Methodological Issues.

In the first and second groups, there are ten papers each whereas in the third group there are six papers. 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. Even otherwise, publication will be worth the effort if it generates as many questions as it answers.

CONTENTS

Household Consumer Expenditure Survey

Employment and Unemployment Survey

CONTENTS

Methodological Issues

A Critical Review of NSS 61 Round Consumption Expenditure Survey

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[Abstract: The major objective of the survey has not been achieved. This is in a nutshell was the fate of NSS 55th round results of consumption expenditure survey. And the same may be said for NSS 61st round. It is a well-known fact that there are hardly two consecutive consumer expenditure surveys which are strictly comparable in survey design, that is, in respect of sample design and schedule design. In every quinquennial round efforts by NSSO to reduce the underestimation were intensified. But, 61st round is the first time that NSSO played against the tradition, and for this round made an effort to tackle the problem that many scholars claimed was overestimation in the 55th round results. This paper illustrates that the 61st round approach effectively has resulted in an underestimation, which is more pronounced for rural areas. In short, efforts by NSSO to reduce underestimation over successive rounds were undone in this round.]

Introduction: Household consumer expenditure survey (CES) is the most frequent survey of the National Sample Survey Organisation (NSSO) from its inception. The survey was taken up from the very first round and continued till 1973-74 but decided to carry out only once in five years starting from 27th round (1972-73). Later, the CES was again taken up at a smaller scale for the intervening rounds between two quinquennial rounds since 42nd round. These rounds are known as annual rounds. Thus the importance of the CES does not require any special mention.

Over the years guidelines for filling up the CES schedules have been standardised. So, it is natural that the need for training of field staff would gradually reduce. On the other hand, it is well-known that field conditions for data collection are deteriorating over time. There was also a growing concern over the disparity between NSS consumption estimates and CSO's private final consumption estimates for the national accounts. Therefore, in every round the need to reduce the degree of underestimation either by improving sample design and/or by revising the consumption schedule was felt.

On CES we can postulate the following three hypotheses:

1. Value of consumption depends on the degree of probing. Both short and long schedules produce the same figure if they are probed adequately.
2. Value of consumption does not depend on the reference period if actual value of consumption could be collected. (Closeness of the estimates depends on the depth of probing.)
3. Whatever sample design adopted for any NSS consumer expenditure survey, the sample size is so large at all-India level or major state level that the sampling error is too small. (This means deviation of the estimates from the true values is not significant.)

The above hypotheses can hardly be negated under ideal conditions. But, the results often do not corroborate these facts. And a major reason for the deviation of the estimates from the true values is response bias.

Given this background, in any survey there are two technical aspects, namely, sample design and schedule design, and we would now discuss some of their impacts in respect of the NSS rounds on CES.

Sample design: It is generally accepted that the sample design of NSS does not have much impact on consumption estimates at least for major States and all-India as the size of the sample is very large. Many scholars often attempt to justify the difference between consumption estimates of quinquennial rounds and annual rounds by referring them as thick sample and thin sample (as number of households surveyed per first stage unit is less in so called thin sample in annual rounds compared to quinquennial rounds). Some assume the estimates differ as the number of households selected per sample village/block is different, but sampling theory does not corroborate it. Reasons of variation between two sets of data – quinquennial rounds and annual rounds - might be systematic non-sampling error, but no study has been made so far for finding the causes behind the systematic differences between the two sets of data. Again, logically, the effect of sample design on the consumption estimates, at least at all-India level, should be negligible. However, there is a feeling among the NSSO data users/experts that affluent

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sections of the society are not netted in sufficient numbers. So, efforts were made since 43rd round (1987-88) to net them adequately by proper stratification at both first and second stages of sampling. From the theoretical perspective, this process is supposed to improve the precision of the estimates, but not necessarily increase the estimated value of consumption.

Questionnaire design: There is sufficient evidence that schedule design affects the results to a great extent. It may increase or decrease response bias. In consumption expenditure schedule there are two important aspects. One is itemisation, and the other is reference period of consumption data, both of which could have significant effects. However, instances are there that well planned studies do not always corroborate this fact. There is a third factor: how to arrive at the total consumption figures. Increasing complexities in field conditions the questions were made more and more simple over time. This change in approach over a long period should have an effect on the estimates. In the absence of study, one may logically argue that this has reduced respondent's burden to some extent but has increased under estimation.

Itemisation: Prior to 55th round efforts were made to add items in the item list in order that new items in the consumption basket are not missed. So the item list was appended over the rounds. But in the 55th round items with insignificant contribution in an item group were merged and put against an item called 'others'. This may not change the estimates of consumption as their share in total consumption is negligible, but, it is likely to affect the distribution of population by monthly per capita expenditure (MPCE) class.

On shortening of the CES schedule, the results of a field study undertaken by Prof Nikhilesh Bhattacharya in 1960s revealed the possibility of underestimation of about 8.5%. A pilot study taken up during 38th round has revealed no significant difference between short and long schedules. Again during 55th round, an abridged module of consumer expenditure was canvassed through employment-unemployment schedule which corroborates more or less the same finding, of course slightly higher, as found in Prof Bhattacharya's study.

Reference period: One of the important issues in CES is reference period for which consumption data are collected. There were some experiments in the last 57 years. But, a small experiment on four items of consumption in West Bengal along with NSS 4th and 5th round results in early 1950s played a major role in deciding the reference period. Accordingly, a reference period of 30 days was normally used uniformly for all the items of consumption. There were some aberrations, but 30 days' reference period was maintained till 54th round. It was the 55th round when for the first time a series of studies were undertaken for improving a design of CES schedule. But, the pressure for the comparability forced a compromise at the last moment and two reference periods – 7 days and 30 days – in place of one of the two reference periods for items of food, pan and tobacco was decided upon.

Background of NSS 61st Round: Probably, the methodology adopted in 55th round by adopting two reference periods for some item groups and one reference period for some other item groups contrary to the earlier practices had improved the results. But, it resulted in controversies. Several studies with poverty estimates based on these data were prepared. Many academicians studied the impact on changes in the methodology adopted by NSSO and some asserted that consumption data were contaminated. Planning Commission prepared the official poverty estimates based on these data, and it showed a substantial decline in poverty. A lot of debate was generated on the data quality, and resulted in pressure to carry out a CES at the earliest using the schedule and methodology of NSS 50th round. Thus, 61st round survey methodology became a repeat survey of 50th round.

Comparability of 61st Round with 50th Round results: NSS 50th round estimates were largely accepted. It would also be difficult to deny that there was a positive effect in the estimates for the changes incorporated in 50th round over 43rd round and 43rd round over 38th round and so on. However, we will not go through the changes made in consumption expenditure schedule over different rounds but restrict to changes made in 50th round for improvement of consumption estimates, especially to reduce the underestimation, and which were not incorporated in 61st round. These are listed below.

1. To reduce the response bias in the 50th round the following questions were asked at the beginning before collection of item-wise consumption data. These questions were ignored in the 61st round CES.

    a. Did any member of the household consume during the last 30 days … fruits …..

b. Did any member of the household make a journey during the last 30 days ……..

c. Information on consumption habits of tobacco in the block of "particulars of household members"

d. Ceremonies performed along with expenditure details in the sample households

e. For arriving at the total consumption expenditure after in-depth probing for items of food, pan, tobacco, intoxicants, fuel, clothing and footwear questions were put first on the cash purchase and consumption out of home grown/produced stock. Similarly, separate questions were asked for cash and kind expenditures for items of miscellaneous goods and services and rents and taxes and durable goods.

2. The itemisation in 50th round was as detail as possible to avoid recall errors. In 61st round the item list of 50th round was not followed. Instead the item list of 61st round was somewhat abridged.

3. During the 50th round some measures were taken for proper valuation of consumption figures. However, they have been ignored in the 61st round.

   a. The following questions were asked during 50th round:

      (i) During the last agricultural year did the household grow or cultivate ……. (cereals/gram)

      (ii) Does the household possess milch animals

   b. Separate consumption items were provided for all the items provided through public distribution system (while separate provision was made during 61st round for only main items, namely, rice, wheat/atta, sugar and kerosene).

   c. For consumption of clothing information was collected on type of clothes.

It may be seen that most of these measures are more effective for proper valuation of consumption for a rural household, but were not adopted in 61st round. This fact, while comparing with 50th round results, is expected to lead underestimation of consumption estimates, and some distortion of the population distribution by monthly per capita consumption expenditure (MPCE) towards left of the actual distribution.

Some observations on consumption expenditure estimates: Tables 1R and 1U give the average MPCE for major states and all-India separately for rural and urban areas. A careful examination of the tables will reveal that in spite of many factors associated with each round the outliers are in the results of 54th, 58th and 61st rounds in both rural and urban areas. Former two can be attributed to seasonality as they were conducted in the one-half of the calendar year. 60th round results are also expected to suffer similarly. But, that is not apparently observed from the figures. One of the reasons may be special focus on consumer expenditure survey in that round.

During 60th round two types of schedules were canvassed with the objective of finding conversion factors for making the data sets comparable with earlier rounds in order to adopt recommendation from the pilot study on suitability of different reference periods for measuring household consumption carried out during January – June 2000. The two types of schedule differ only in respect of reference period as indicated below:

Item groups, 60th Round	Schedule type 1	Schedule type 2
Cereals, pulses, milk, sugar and salt	30 days	30 days
Edible oil, egg, fish and meat, vegetables, spices, beverages, processed food and pan, tobacco and intoxicants	30 days	7 days
fuel & light, miscellaneous goods & services, and medical (non-institutional)	30 days	30 days
educational, medical (institutional), clothing, footwear and durable goods	365 days	365 days

As it was expected from the pilot study, estimates based on schedule type 2 are uniformly higher than schedule type 1.

Interestingly, average MPCE of many major states during 61st round was much lower than even schedule type 1 estimates. It is quite likely due to underestimation in the 61st round. Therefore more analytical studies are necessary to find the extent of underestimation due to not following 50th round survey methodology in full.

The charts Fig 1R and Fig 1U show the cumulative distribution of population by monthly per capita expenditure for rounds[1] 50, 55, 56, 57 and 61 at the constant prices[2] using CPI for agricultural labourers for rural areas and CPI for urban non-manual employees for urban areas. The figure shows that the distribution for rural areas in 61st round has marginally sifted towards left - indicating an underestimation. But in urban areas no effect is observed in any of the rounds presented in the figure. This may lead to a corollary that consumption expenditures are easily obtained in urban areas but not in rural areas[3]. One may rightly claim that ignoring the measures taken in 50th round for improving the estimates in 61st round resulted into a relatively biased distribution of population especially in rural areas.

Figures 2R and 2U show comparison between results of 60th and 61st round over distribution of population by MPCE. During 60th round two types of consumer expenditure schedules were canvassed (as mentioned above). Estimates based on Type 2 are uniformly higher than Type 1. Population distribution also shows the similar trend. For 61st round, the figures show distributions – one at current price and the other at prices[4] of 60th round. The charts clearly show that 61st round results are not in conformity with the results of 60th round.

Conclusions: While attempts were made to make NSS 61st round consumption expenditure survey comparable with its 50th round survey, many aspects of the methodology used in 50th round was not adopted. As a result, the estimates of 61st round are not strictly comparable with 50th round. There is evidence that the estimates of 61st round are grossly underestimated especially in rural areas. A rigorous analytical exercise is suggested to evaluate the comparability of the results from the 50th and 61st rounds.

References:

NSSO Expert Group. Suitability of different reference period for measuring household consumption – results of a pilot survey, Economic and Political Weekly, Vol. XXXVIII, No. 4

Sundaram K. and S. D. Tendulkar. *Poverty has declined in the 1990s – A resolution of comparability problems in NSS consumer expenditure data*, Economic and Political Weekly, Vol. XXXVIII, No. 4

Abhijit Sen, Himanshu. *Poverty and Inequality in India I & II*, Economic and Political Weekly, Sept 18, 2004 and Sept 25, 2004

Angus Deaton. *Adjusted Indian Poverty Estimates for 1999-2000*, Economic and Political weekly, Vol. XXXVIII, No. 4

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[1]

Survey period of NSS rounds

50th round - July 1993 to June 1994	56th round - July 2000 to June 2001	59th round - January to December 2003
54th round - January to June 1994	57th round - July 2001 to June 2002	60th round - January to June 2004
55th round - July 1999 to June 2000	58th round - July to December 2002	61st round - July 2004 to December 2005

[2] For obtaining values at constant prices, CPI for agricultural labourers for rural India and CPI for urban non-manual employees for urban India have been used. Figures were taken from NSS Report Nos. 508.

[3] This is one of the causes for which average monthly consumption expenditure is normally collected by NSSO at the listing stage for stratification of households in urban areas and never made any attempt to do so for rural areas.

[4] Same as footnote 2. Figures were taken from NSS Report Nos. 505 and 508.

NSSO. *Levels and Pattern of Consumer Expenditure, NSS 61st Round (July 2004- June 2005)*, Report No. 508

- *Levels and Pattern of Consumer Expenditure, NSS 55th Round (July 1999- June 2000)*, NSS Report No. 457

- *Levels and Pattern of Consumer Expenditure, NSS 50th Round (July 1993- June 1994)*, NSS Report No. 402

- *Household Consumer Expenditure in India, NSS 60th Round (January – June 2004)*, NSS Report No. 505

- *Household Consumer Expenditure and Employment-Unemployment Situation in India, NSS 59th Round (January – December 2003)*, NSS Report No. 495

- *Household Consumer Expenditure and Employment-Unemployment Situation in India, NSS 58th Round (July – December 2002)*, NSS Report No. 484

   - *Household Consumer Expenditure and Employment-Unemployment Situation in India, NSS 57th Round (July 2001– June 2002)*, NSS Report No. 481

   - *Household Consumer Expenditure and Employment-Unemployment Situation in India, NSS 56th Round (July 2000– June 2001)*, NSS Report No. 484

Table 1R: Average Monthly Per Capita Expenditure (MPCE) of major states over different NSS rounds

	average MPCE (in Rs)												
State	50th round	51st round	52nd round	53rd round	54th round	55th round	56th round	57th round	58th round	59th round	60th round (Sch. Type 1)	60th round (Sch. Type 2)	61st round
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Andhra Pradesh	289	294	325	421	386	454	490	538	575	567	557	589	586
Assam	258	305	316	360	338	426	457	537	532	520	532	643	543
Bihar	218	238	298	295	289	385	396	400	424	415	442	463	417
Gujarat	303	356	358	485	416	551	591	621	590	626	613	653	596
Haryana	385	397	491	536	546	714	682	706	703	781	879	791	863
Karnataka	269	286	346	344	364	500	531	525	513	556	502	587	508
Kerala	390	456	506	569	604	766	841	840	881	981	990	1059	1013
Madhya Pradesh	252	290	310	326	326	402	390	401	436	455	437	466	439
Maharashtra	273	307	351	386	384	497	507	589	545	584	569	672	568
Orissa	220	244	309	298	301	373	392	308	390	398	414	494	399
Punjab	433	424	493	670	614	743	771	761	788	886	947	1015	847
Rajasthan	322	312	364	452	452	549	538	578	574	570	580	604	591
Tamil Nadu	294	345	322	441	381	514	526	552	542	609	603	711	602
Uttar Pradesh	274	332	349	390	376	467	453	423	486	509	538	574	647
West Bengal	279	275	298	366	358	455	473	506	493	538	580	633	562
all-India	281	309	344	395	382	486	495	498	531	554	565	617	559

Source: NSS Reports

Table 1U: Average Monthly Per Capita Expenditure (MPCE) of major states over different NSS rounds

Urban

State	average MPCE (in Rs)												
	50th round	51st round	52nd round	53rd round	54th round	55th round	56th round	57th round	58th round	59th round	60th round (Sch. Type 1)	60th round (Sch. Type 2)	61st round
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Andhra Pradesh	409	517	553	624	624	774	928	859	989	1065	1102	1147	1019
Assam	459	464	537	585	580	814	789	883	947	875	1019	1108	1058
Bihar	353	411	442	492	515	602	595	625	692	674	784	723	595
Gujarat	454	479	500	687	594	892	953	954	1229	1046	1092	1130	1115
Haryana	474	489	647	655	591	912	898	1040	1123	1140	1050	1146	1142
Karnataka	423	478	537	670	677	911	900	973	969	960	937	1066	1033
Kerala	494	437	674	794	778	933	1204	1240	1267	1300	1372	1404	1291
Madhya Pradesh	408	359	486	546	571	694	727	737	709	1029	793	830	904
Maharashtra	530	682	720	773	889	973	1034	1209	1164	1166	1259	1369	1148
Orissa	403	439	569	562	641	618	773	736	869	832	872	907	757
Punjab	511	681	645	753	680	899	973	1009	1110	1250	1059	1183	1326
Rajasthan	425	457	509	608	746	796	793	805	830	912	995	947	964
Tamil Nadu	438	460	536	658	613	972	969	973	1072	1087	1131	1254	1080
Uttar Pradesh	389	407	537	547	577	690	738	729	879	786	827	918	978
West Bengal	474	427	521	560	684	867	902	967	1066	991	1133	1375	1124
all-India	458	508	599	645	684	855	915	933	1012	1022	1060	1150	1052

Source: NSS Reports

Fig 1R: Cumulative distribution of population by MPCE for Rounds 50, 55, 56, 57 and 61, Rural India
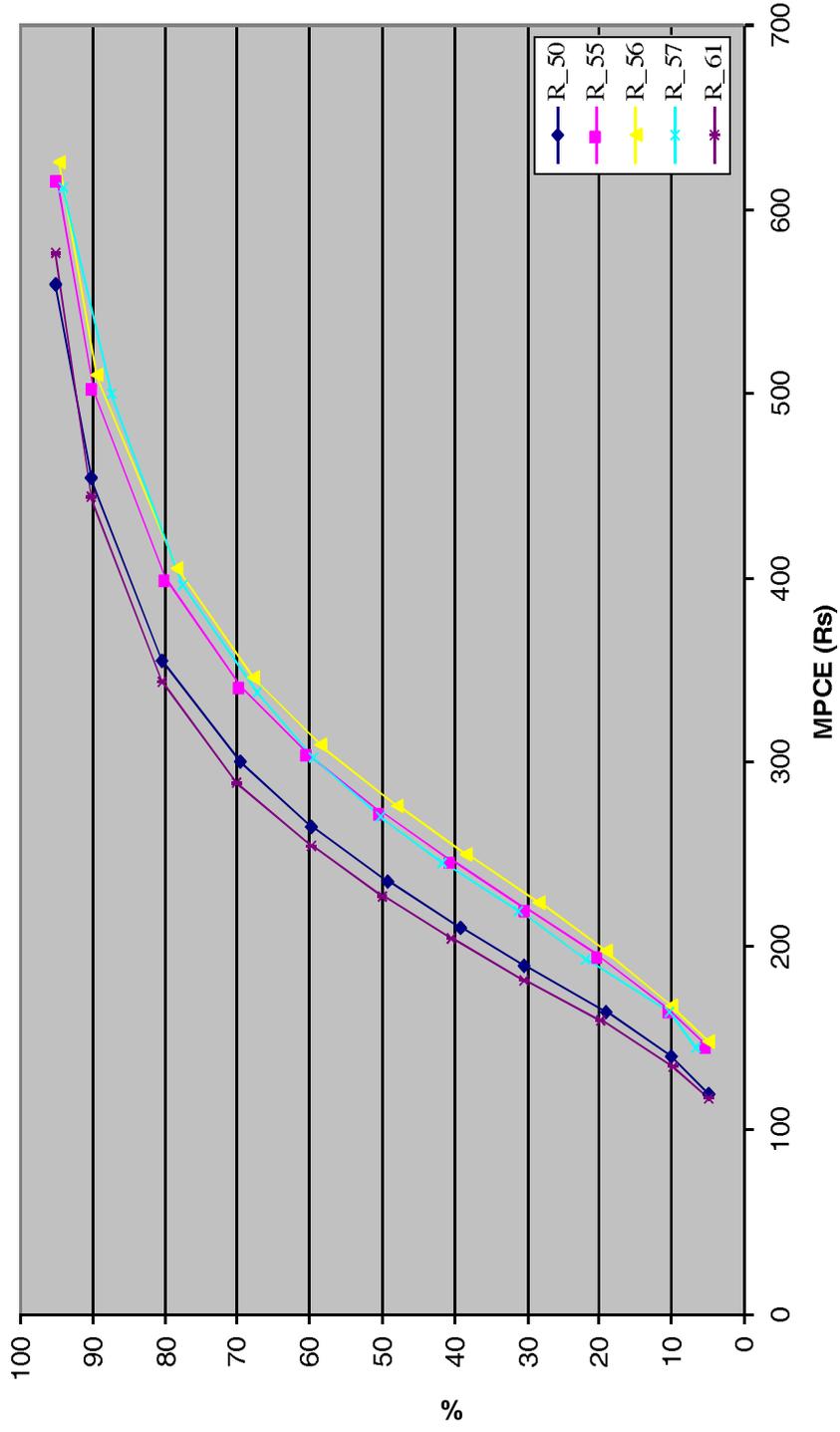
Fig 1U: Cumulative distribution of population by MPCE for Rounds 50, 55, 56, 57 and 61, Urban India

9
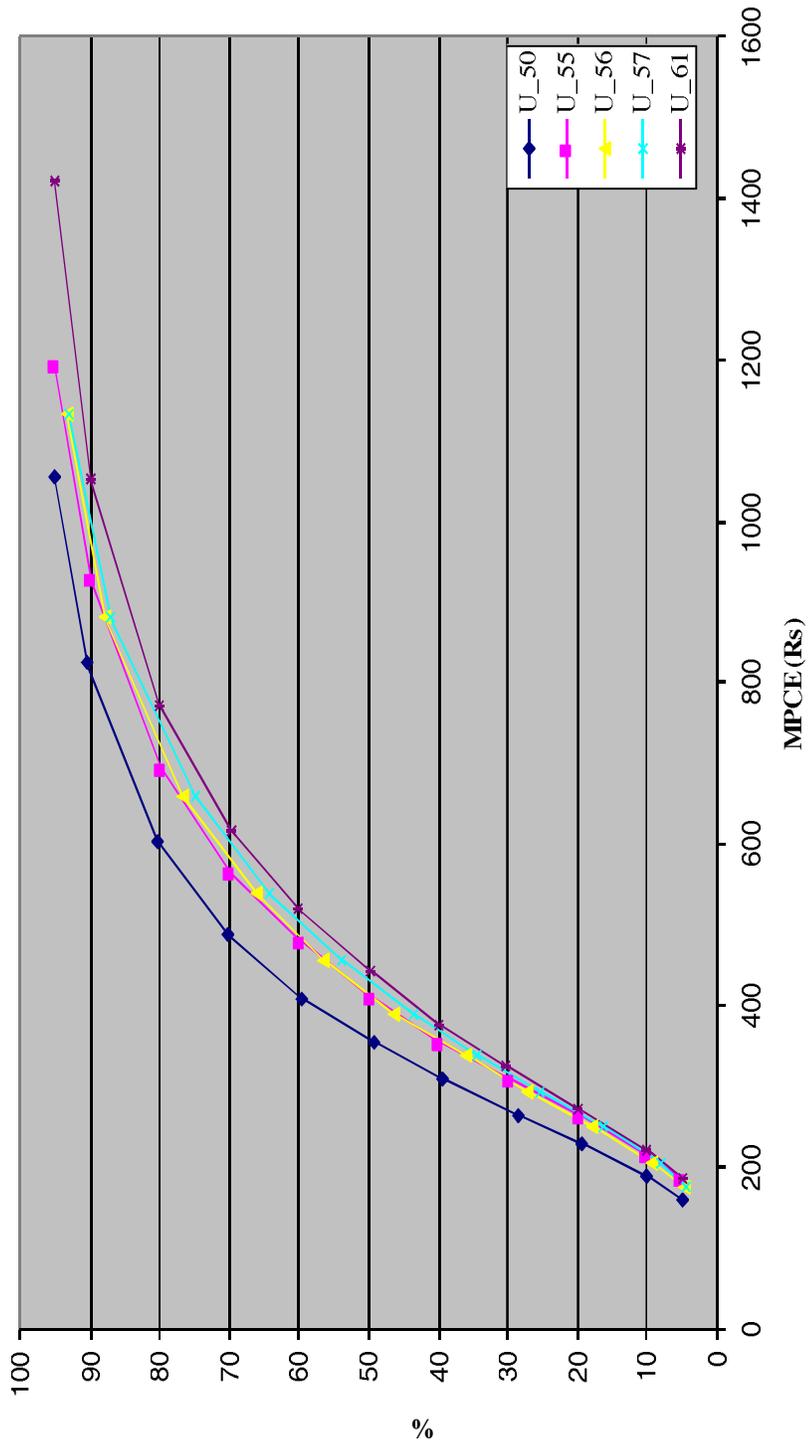
Fig 2R: Cumulative distribution of population by MPCE for Rounds 60 (type 1 and type 2) and 61, Rural India

Legend:
- R_60Type1
- R_60_Type2
- R_61(Current Price)
- R_61(Constant Price)

X-axis: MPCE (Rs)
Y-axis: %

10
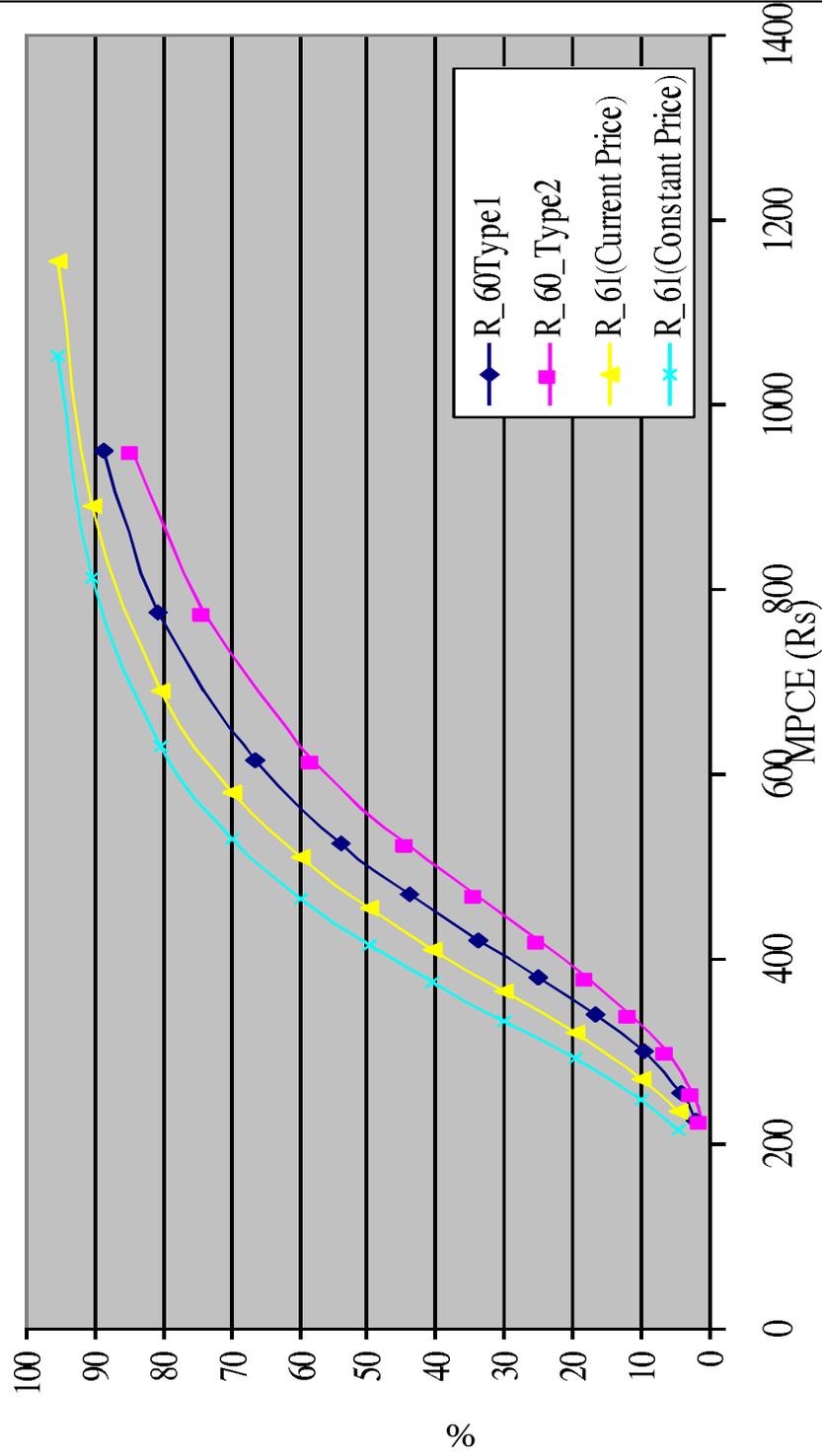
Fig 2U: Cumulative distribution of population by MPCE for rounds 50, 55, 56, 57, 61, Urban India
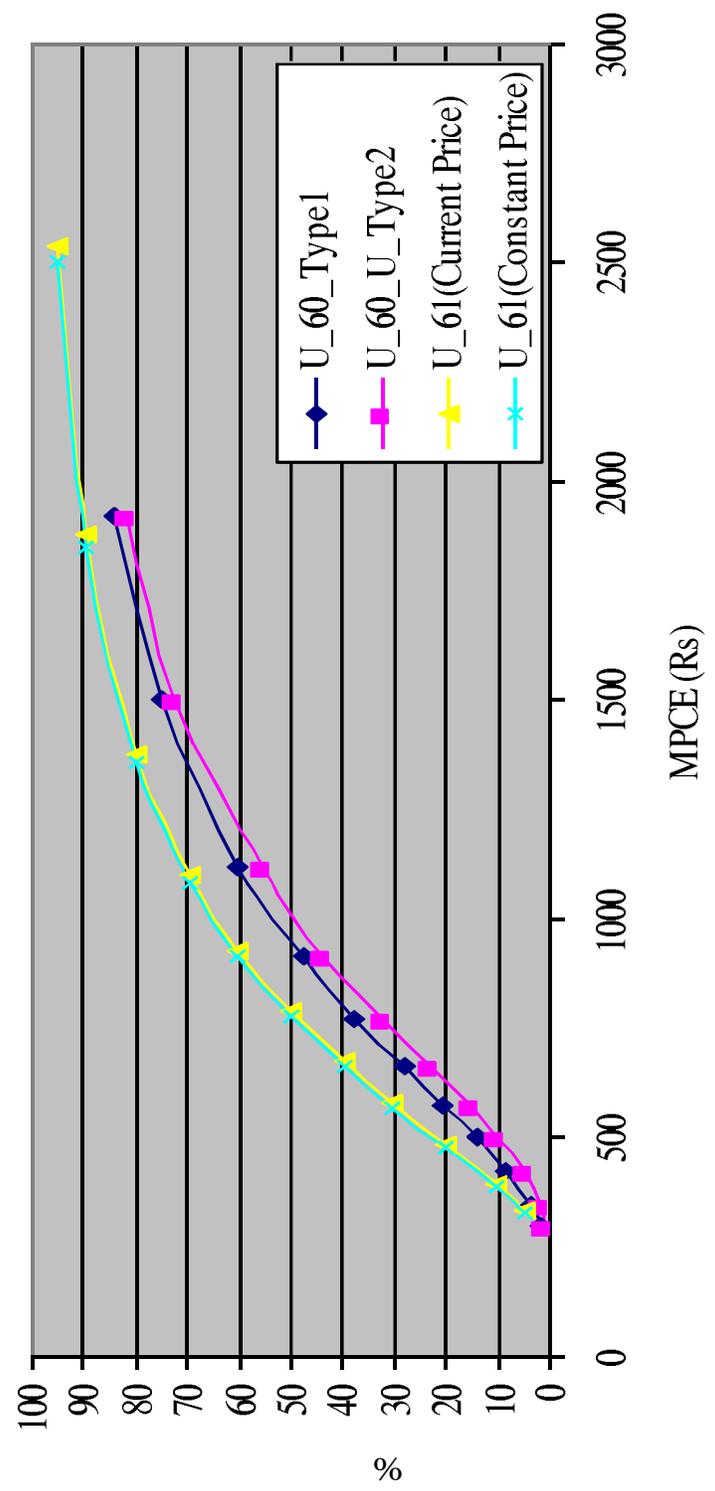
What explains the sluggish growth in consumer expenditure?

A. K. Tripathi[*]

Introduction: Indian economy has transformed rapidly over the past two one and a half decades. From being a supply driven and monsoon dependent economy it is now a demand driven economy. Liberalisation and globalisation have shaped the economy in the recent period. The latest Economic Survey (2006-07) states that growth in India in the post-reforms period was driven by private final consumption expenditure (PFCE) growth. PFCE contributed more than one half of the growth every year until 2001-02. After falling below one half in 2002-03, it had again dominated GDP growth in 2003-04. This has led to an understanding that Indian consumer has largely benefited from the reforms and has been able to increase the per capita consumption substantially in the recent period. The consumption expenditure data of the Indian households, as seen from the NSS Consumer Expenditure Surveys, are expected to provide further evidence on this issue.

A preliminary look at the aggregate consumption data, however, shows that the assumption of acceleration in consumption growth does not appear to be true. This article attempts to look at the growth patterns of MPCE of the rural and urban households according to different percentile groups and see the patterns in consumption growth rates and whether these match with the growth in Private Final Consumption Expenditure (PFCE)[1].

The Background: In the past many studies were carried out to examine the match between the two estimates of total consumption and its distribution over categories using National Sample Survey (NSS) and National Account Statistics (NAS) information. Finding that the estimates of total consumption expenditure based on the NSS data were found to be lower as compared to the CSO's PFCE by about 5 to 12 per cent in the 1970s and by more than 21 per cent in 1983-84 and 27 per cent in 1987-88, the Planning Commission has been making upward adjustment on a pro rata basis to the observed size distribution of consumption expenditure by the NSS.

Minhas (1988) argued that the survey results could stand on their own and laid out the case for the Planning Commission to abandon its previous practice of scaling up the survey results to match the national accounts. Minhas and Kansal (1989) pointed out that that even when adjustment is warranted, a case could be made for item-group specific adjustment rather than the pro rata, which would also, to an extent, take care of the differing consumption patterns by different size groups. Sundaram and Tendulkar (2003) examined the "fluidity" of the NAS estimates, and found that revisions for some categories were often so large as to cast serious doubt on the estimates in general. Finally, the Planning Commission has dispensed with the erstwhile system of pro rata adjustment officially (EPW Research Foundation 2004).

In the above respect, the National Statistical Commission (2001) refer to a joint study undertaken by the CSO and the NSSO on "Cross-Validation of Estimation of Private Consumption Expenditure Available from Household Survey and National Accounts" which brought out the series of differences as between the two sources. Based on this, the National Statistical Commission made a set of recommendations such as the conducting of type studies/case studies for continual updation, studies to correct item level weakness as brought out in cross-validation exercises and periodical surveys/type studies to be conducted to collect income and expenditure of NPISHs (NSC Report, Volume II).

Growth Trends in MPCE and PFCE: For the current study, the data reported in the NSS Report No. 508: Level and Pattern of Consumer Expenditure 2004-05 are used. Based on the table on comparison of average MPCE at constant prices over rounds (Table P7 of the Report, Chapter 3, page 19) the compounded annual average growth rates (CAGR) over the various survey periods are worked out. The comparative table in this regard is given below[2].

The growth rate during the first phase (that is during 1993-94 to 1999-2000) throws up some surprising results. The growth rates decline with the increase in percentile groups. In the rural sector, the

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MPCE of the lowest percentile group showed a growth of 3.2 per cent, the highest in any percentile group, whereas the top group (95% - 100%) showed a decline. In the urban sector too the lowest group showed the highest growth at 3.0 per cent, but the other groups also showed a uniform range of growth varying between 2.2 per cent to 2.7 per cent.

Table 1: Growth in MPCE based on NSS Surveys on Consumer Expenditure

(CAGR in per cent)

Percentile Group			Rural		Urban	
			1993-94 to 1999-2000	1999-2000 to 2004-05	1993-94 to 1999-2000	1999-2000 to 2004-05
0%	-	5%	3.2	2.5	3.0	0.6
5%	-	10%	2.6	2.0	2.4	0.7
10%	-	20%	2.4	1.9	2.3	0.5
20%	-	30%	2.2	1.6	2.5	0.4
30%	-	40%	2.2	1.4	2.6	0.5
40%	-	50%	2.1	1.5	2.5	0.6
50%	-	60%	2.0	1.2	2.7	0.6
60%	-	70%	1.8	1.2	2.6	0.8
70%	-	80%	1.6	1.2	2.5	0.9
80%	-	90%	1.4	1.0	2.3	1.3
90%	-	95%	1.2	1.2	2.2	1.7
95%	-	100%	-0.4	2.0	2.6	0.8
All			**1.5**	**1.5**	**2.5**	**0.9**

In the second phase (that is during 1999-2000 to 2004-05) too similar patterns are observed in the rural sector. However, the highest group, on this occasion, showed a comparable growth as that of the lowest group. In the urban sector the MPCEs appear to have stagnated as households reported less than 1 per cent CAGR in most of the groups.

The results of growth patterns in MPCE have to be viewed in relation to growth in Income and Consumption at the aggregate level.

Table 2: Growth trends in per capita NDP and PFCE

(per cent)

Year	NDP	PFCE	Year	NDP	PFCE	Year	NDP	PFCE	Year	NDP	PFCE
1993-94	**3.4**	**2.0**	1996-97	5.7	5.9	**1999-00**	**4.2**	**4.1**	2002-03	2.0	1.9
1994-95	5.0	2.6	1997-98	2.6	0.7	2000-01	2.5	0.9	2003-04	7.0	3.7
1995-96	5.0	4.2	1998-99	4.5	4.3	2001-02	4.0	3.8	**2004-05**	**6.0**	**4.6**

Source: National Accounts Statistics, CSO

The above table shows that per capita NDP grew at a more uniform rate during the first phase as compared to the second phase. The growth in per capita PFCE decelerated during the second phase. The growth in MPCE of rural and urban sectors between 1993-94 and 1999-2000 were 1.5 and 2.5 per cent respectively. In the second phase the growths in MPCE of these two sectors were merely 1.5 per cent and 0.9 per cent respectively. these growth rates were much less than the growths in per capita NDP or PFCE in any of the reference periods.

Concluding Observations: During the survey reference periods various components of GDP grew at variable rates. The table below gives the per capita growth rates in GDP at sectoral level. The agriculture sector during 1999-2000 and 2004-05 showed negative growth rates. This could be one of the reasons in explaining the suppressed consumption data. Such years distort the distributional aspects of consumption as a relatively bad year in agriculture has different impacts on different strata of the society. Normally, in such years the lower strata get affected the most. There was a corresponding rise in the community, social and personal services sector. In 1999-2000 the per capita rise in this sector was more than 10 per cent and in 2004-05 it was about 7.5 per cent.

Table 3: Growth in per capita GDP

(per cent)

Year	Agriculture	Industry	Services	CSPS	Year	Agriculture	Industry	Services	CSPS
1993-94	**1.8**	**4.0**	**4.5**	**1.1**	**1999-00**	**-1.5**	**2.2**	**7.9**	**10.2**
1994-95	2.9	9.1	4.8	1.2	2000-01	-1.8	4.5	3.8	2.9
1995-96	-2.8	10.7	7.9	5.8	2001-02	4.2	0.5	4.8	2.0
1996-97	7.5	6.1	4.6	4.3	2002-03	-8.4	5.1	5.6	2.1
1997-98	-4.3	1.1	7.8	9.6	2003-04	8.2	4.8	6.7	3.6
1998-99	4.2	1.2	6.1	8.2	**2004-05**	**-0.8**	**5.7**	**8.4**	**7.5**

Note: CSPS – Community, Social and Personal Services

The rise in this sector reflects support to the people in the lower strata, which perhaps explains the proportionately higher rise in consumption expenditure of this segment.

Deaton (2004) had reported that consumption estimated from the surveys is typically lower than consumption from the national accounts; the average ratio is 0.860 with a standard error of 0.029, or 0.779 (0.072) when weighted by population. Though this is a universal phenomenon, India has particularly low ratios.

Recent reports by ADB and some other studies, for example Gill and Kharas (2007), have shown that the inequality in India has increased during 1993-2004. In view of this, it is difficult to support the view that the households in the lowest percentile group could raise their per capita consumption while those in the top percentile group could not. The other issue that strikes is less than 1 per cent growth in the consumption during the period 1999 to 2005. This period is widely recognized as the one where the Indian economy showed a turn around and during 2004-05 (the reference period for the survey) the consumption growth was high (Economic Survey 2006-07). Apparently, the data suffers from under reporting, particularly by the rich households. Such reporting biases are also reported by Groves and Couper(1998). Groves and Couper report that better-off households are less likely to respond.

The analysis shows that the survey results need to be juxtaposed with other macro variables to understand the patterns properly. This indicates the pitfalls in inter-temporal comparisons of the survey data alone. The survey data need to be appropriately adjusted using the macro data so as to conform to the macro picture.

Endnotes

1. The author does not wish to compare the two figures and make suggestions on which one of these is right. The aim of the analysis is to identify the reasons for the sluggish growth in MPCE as observed in the survey data.

2. The comparison suffers from the limitation that the CAGR between 1993-94 and 1999-2000 are worked out using MPCE (U30) i.e. based on "last 30 days" reference period and those between 1999-2000 are worked out using MPCE(M) i.e. based on "last 365 days" reference period.

Table 1: Shares of Expenditures of GDP at Market Prices

(at current prices)

Industry	RATES OF GDP AT MARKET PRICES (%)									
	2005-06				2006-07				2007-08	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Private Final Consumption Expenditure (PFCE)	60.0	57.7	57.9	56.3	59.5	55.8	56.5	54.4	57.6	55.5
Government Final Consumption Expenditure	9.5	12.0	11.1	12.5	13.1	9.9	10.3	12.1	13.3	10.4

Source: CSO

Table 2: Change in Expenditures of GDP at Market Prices

(at 1999-00 prices)

Industry	RATES OF GDP AT MARKET PRICES (%)					
	2006-07				2007-08	
	Q1	Q2	Q3	Q4	Q1	Q2
Private Final Consumption Expenditure (PFCE)	6.5	**6.3**	6.0	6.0	5.6	**5.6**
Government Final Consumption Expenditure	47.6	**-9.7**	0.4	6.6	10.5	**12.0**

Source: CSO

References:

Deaton, A., 2004, "Measuring Poverty in a Growing World" Research Program in Development Studies, Woodrow Wilson School, Princeton University, February.

Economic Survey 2006-2007, Ministry of Finance, Government of India EPW Research Foundation. 2004. *National Accounts Statistics of India 1950-51 to 2002-03*.

Gill, I. and H. Kharas. 2007. *An East Asian Renaissance: Ideas for Economic Growth* Washington, DC: World Bank.

Groves, Robert M. and Mick P. Couper, 1998, *Nonresponse in household interview surveys*. New York, Wiley.

NSSO, 2006, NSS Report No. 508: *Level and Pattern of Consumer Expenditure* 2004-05, NSS 61st Round, December.

National Statistical Commission, 2001, Report, Vol. II (Chairman: Dr C Rangarajan), August, Vol. II

Minhas, B. S., 1988, "Validation of large-scale sample survey data: case of NSS household consumption expenditure." *Sankhya, Series B*, **50**(Supplement): 1-63.

Minhas, B. S. and S. M. Kansal, 1989, "Comparison of NSS and CSO estimates of private consumption: some observations based on 1983 data." *The Journal of Income and Wealth*, **11(1)**: 7-24, January

Sundaram, K. and S. Tendulkar, 2003, "NAS-NSS estimates of private consumption for poverty estimation: a further comparative estimation." *Economic and Political Weekly* (January 25): 376-84.

A PAPER ON NSS REPORT NO. 508: LEVEL AND PATTERN OF CONSUMER EXPENDITURE, 2004 – 2005

Mrinal Banerjee[*]

Introduction: National Sample Survey Organisation, Government of India has published a series of Reports on Household Consumer Expenditure and Employment & Unemployment based on the Central Sample data of 61st Round, the seventh quinquinnial round. The State of West Bengal participated in the 61st Round of NSS on an equal matching basis like many other States and Union Territories in India. The State Sample data of 61st round is now at data processing stage and therefore it is hardly possible to make a comparative study between the State Sample and the Central Sample estimates of different parameters related with the survey. However, some observations on some important characteristics as reflected from NSS Report No. 508: Level and Pattern of Consumer Expenditure, 2004 – 2005 are mentioned below.

Observations:

1. Average MPCE

Rural Sector: The NSS report shows that the average MPCE is the highest in Kerala (Rs. 1013) followed by the States of Haryana (Rs. 863) and Punjab (Rs. 847). Average MPCE in West Bengal (Rs. 562) is much less than the average MPCE of the above three States but it is very near to the all-India average MPCE (Rs. 559). It may be observed from the Central Sample Report that the average MPCE of West Bengal is higher than the average MPCE of the States of Assam, Karnataka, Madhya Pradesh, Jharkhand, Bihar and Orissa.

Urban Sector: Average MPCE is seen to be the highest in Punjab (Rs. 1326) followed by the States of Kerala (Rs. 1291) and Maharashtra (Rs. 1148). The average MPCE of West Bengal (Rs. 1124) is below the average MPCE of the above three States but is above the all-India average MPCE (Rs. 1052). The estimated average MPCE of West Bengal is higher than the average MPCE of the States of Gujarat, Assam, Karnataka, Andhra Pradesh, Chhattisgarh, Jharkhand, Uttar Pradesh, Rajasthan, Madhya Pradesh, Orissa and Bihar.

2. Percentage change in average MPCE of West Bengal and all-India over the last three quinquinnial rounds:

sector	State / all-India	Round	average MPCE (Rs.)	percentage change in average MPCE compared to previous quinquinnial round	sector	State / all-India	Round	average MPCE (Rs.)	percentage change in average MPCE compared to previous quinquinnial round
(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
rural	West Bengal	50	278.78		urban	West Bengal	50	474.19	
		55	454.80	+63.14			55	866.59	+82.75
		61	562.11	+23.59			61	1123.61	+29.66
	all-India	50	281.40			all-India	50	458.00	
		55	486.16	+72.76			55	854.92	+86.66
		61	558.78	+14.94			61	1052.36	+23.09

The above table depicts the percentage change in average MPCE in 55th & 61st rounds compared to their previous quinquinnial rounds. It may be seen that the growth of average MPCE in 55th round was 63.14% compared to the 50th round while the growth of average MPCE in the 61st round was only 23.59% as compared with the 55th round in the rural sector of West Bengal. In the urban sector of West Bengal, the average MPCE in the 55th round was increased by 82.75% in comparison with the average MPCE in the

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50th round while the percentage growth of average MPCE in the 61st round was 29.66 as compared to the 55th round. This shows that the rate of growth of average MPCE has been declining over the last three-quinquinnial rounds for both rural and urban sectors of the State. Similar type of picture is visible in both the rural & urban sectors at all-India level.

Average MPCE over the last three quinquinnial rounds in West Bengal and all-India rural

Average MPCE over the last three quinquinnial rounds in West Bengal and all-India urban
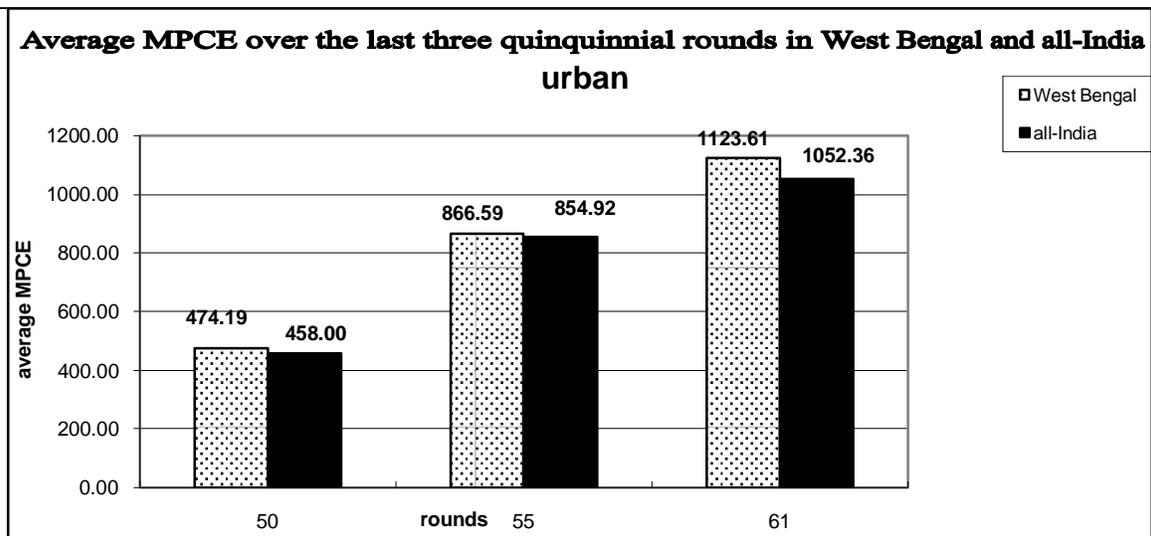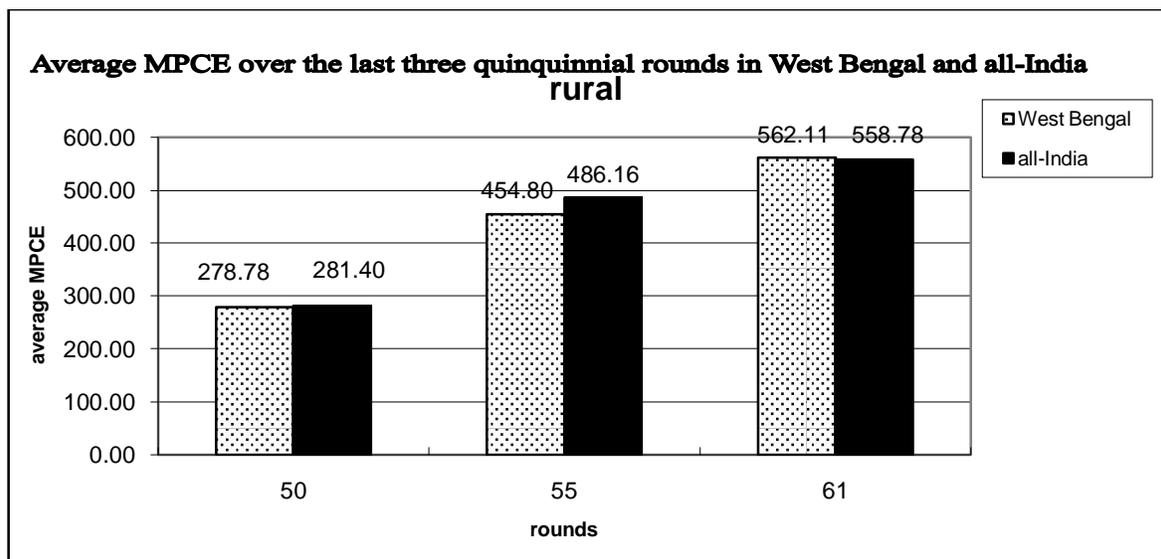
3a. Changes in average MPCE over the last three quinquinnial rounds for some important item groups in West Bengal

item group	sector	average MPCE (Rs.)		
		50th round	55th round	61st round
(1)	(2)	(3)	(4)	(5)
cereal	rural	94.44	142.76	131.81
	urban	80.94	135.69	126.60
education	rural	5.70	10.57	18.12
	urban	24.92	39.35	73.52
medical (both institutional & non-institutional)	rural	14.81	20.36	38.13
	urban	24.39	42.38	71.20
durable goods	rural	4.81	5.63	18.06
	urban	9.94	14.58	48.70

A study on the changes of pattern of consumption of some important item groups over the last three quinquinnial rounds shows that there is an increasing trend of average MPCE of cereal from 50th round to 55th round while a decreasing trend of average MPCE of cereal is seen to exist from 55th round to 61st round in both the rural and urban sectors of West Bengal. But in each case of education, medical and durable goods there is always an increasing trend of average MPCE over the 50th, 55th & 61st rounds in both rural and urban sectors of the State.

3b. Percentage shares of education, medical and durable goods in total MPCE for the last three quinquinnial rounds in West Bengal:

item group	sector	percentage share in total MPCE		
		50th round	55th round	61st round
(1)	(2)	(3)	(4)	(5)
education	rural	2.04	2.32	3.22
	urban	5.26	4.54	6.54
medical (both institutional & non-institutional)	rural	5.31	4.48	6.78
	urban	5.14	4.89	6.34
durable goods	rural	1.73	1.24	3.21
	urban	2.09	1.68	4.33

A brief study on the percentage shares of education, medical and durable goods in total MPCE for the last three quinquinnial rounds in West Bengal shows that the percentage share of education in total MPCE gradually increases over the said three rounds in the rural sector while in the urban sector it decreases in the 55th round compared to that in the 50th round and increases in the 61st round compared to that in 50th & 55th rounds. The percentage shares of medical and durable goods in total MPCE are seen to decrease in the 55th round compared to that in the 50th round and it increases in the 61st round compared to that in the last two rounds in both the rural and urban sectors of the State.

4. Percentage change in monthly per capita quantity of consumption of cereals in West Bengal and all-India over the last three quinquinnial rounds:

sector	State / all-India	Round	monthly per capita consumption of cereals (kg)	percentage change in monthly per capita consumption of cereals compared to previous quinquinnial round
(1)	(2)	(3)	(4)	(5)
rural	West Bengal	50	15.00	
		55	13.59	− 9.4
		61	13.18	− 3.0
	all-India	50	13.40	
		55	12.72	− 5.07
		61	12.12	− 4.72
urban	West Bengal	50	11.60	
		55	11.17	− 3.71
		61	10.39	− 6.98
	all-India	50	10.60	
		55	10.42	− 1.7
		61	9.94	− 4.61

It has been noticed from the above table that the monthly per capita consumption of cereals (in kg) of the population of West Bengal and also of the Indian population has been declining in both rural and urban areas over the past decade. In the rural areas of West Bengal, the monthly per capita consumption of cereals had declined by about 9% in 55th round compared to that in 50th round while the per capita consumption of cereals in 61st round had declined by only 3% compared to that in 55th round. The percentage change in monthly per capita consumption of cereals in 55th round in comparison with 50th round was seen to be about 4 in the urban areas of the State while the same in 61st round was seen to be about 7 compared to that in 55th round.

5. Comparative study between the per capita income and the average MPCE of the State of West Bengal at current prices for the last three quinquinnial rounds:

The magnitude of gross and net State domestic product at current prices serve as an indicator for the size of the State economy. The following table shows a comparative study between the monthly per capita income (rural and urban combined) and the average MPCE (rural and urban combined) of the State of West Bengal at current prices for years 1993 – 94, 1999 – 2000 and 2004 – 05. The estimates of per capita income at current prices have been extracted from the Report 'State Domestic Product & District Domestic Product of West Bengal, 1993 – 94 to 2004 – 05' published by Bureau of Applied Economics & Statistics, Government of West Bengal in the year 2006 and the said estimates of per capita income (annual) have been converted into the monthly per capita income by dividing the annual estimates by 12. As the estimates of per capita income of West Bengal has been shown for rural and urban areas combined, the estimated average MPCE has also been derived for the rural and urban areas combined taking population sizes of the rural and urban sectors as weights.

year	estimates of monthly per capita income (Rs) of West Bengal at current prices (rural and urban combined)	average MPCE of West Bengal (rural and urban combined)
(1)	(2)	(3)
1993 – 1994	562.99	332.48
1999 – 2000	1234.75	567.96
2004 – 2005	1874.72	719.20

The above table shows that the average MPCE of West Bengal is always less than the estimates of monthly per capita income at current prices for each of the years mentioned in the table. It may further be noted that there is an upward trend among the estimates of monthly per capita income over the years 1993 – 94, 1999 – 2000 and 2004 – 05 and similarly an upward trend is visible among the average MPCEs of West Bengal of the said years. In other words there is a positive correlation between the estimates of monthly per capita income and average MPCEs of the State.

6. A study on the percentage of population below the poverty line in West Bengal and all-India for the last three quinquinnial rounds, i.e., 50th 55th & 61st rounds:

A study on the percentage of population below the poverty line in West Bengal and all-India has been made in the following table for the last three quinquinnial rounds for the years 1993 – 94, 1999 – 2000 and 20004 – 05. The estimates of percentage of population below the poverty line are the Planning Commission Estimates available in 'Compendium of Environment Statistics (Central Statistical Organisation)' and 'Planning Commission: News and Events'.

State/ all-India	sector	percentage of population below the poverty line for the year			
		1993 – 94	1999 – 2000	2004 – 05	2004 – 05 (MRP consumption)
(1)	(2)	(3)	(4)	(5)	(6)
West Bengal	rural	40.80	31.85	28.6	24.2
	urban	22.41	14.86	14.8	11.2
	combined	35.66	27.02	24.7	20.6
all-India	rural	37.27	27.09	28.3	21.8
	urban	32.36	23.62	25.7	21.7
	combined	35.97	26.10	27.5	21.8

Notes: 1. Figures are estimated on the basis of NSS consumption survey by the URP Consumption method, i.e., the Uniform Recall Period Consumption in which the consumer expenditure data for all the items are collected from 30-day recall period.

2. MRP consumption means Mixed Recall Period Consumption in which the consumer expenditure data for five, non-food items, namely, clothing, footwear, durable goods, education and institutional medical expenses are collected from 365-day recall period and the consumption data for the remaining items are collected from 30-day recall period.

It may be observed from the above table that the percentage population below the poverty line gradually decreases over the years 1993 – 94, 1999 – 2000 and 2004 – 05 in both the rural and urban areas of West

Bengal. By URP consumption method about 29% of the rural population and nearly 15% of the urban population of West Bengal were below the poverty line in 2004 – 05 while the MRP consumption method shows relatively better estimates, i.e., the percentages of population below poverty line were about 24 and 11 respectively in the rural and urban areas of the State.

At all-India level, by URP Consumption method the percentage of population below the poverty line for the year 1999 – 2000 is less than that for the year 1993 – 94 but it increases by about 1 – 2% in the year 2004 – 05 compared to 1999 – 2000 in both the rural and urban sectors. The MRP consumption method providing better estimates of poverty shows that about 22% of the population was below the poverty line in the year 2004 – 05 for both rural and urban areas of the country.

Percentage of population below the poverty line
rural

Legend: ☐ West Bengal ■ all-India

year	West Bengal	all-India
1993-94	40.80	37.27
1999-2000	31.85	27.09
2004-05	28.60	28.30

(y-axis: percentage of population below poverty line, scale 0.00 to 45.00)

Percentage of population below the poverty line
urban

Legend: ☐ West Bengal ■ all-India

year	West Bengal	all-India
1993-94	22.41	32.36
1999-2000	14.86	23.62
2004-05	14.80	25.70

(y-axis: percentage of population below poverty line, scale 0.00 to 35.00)

Inequality in Consumption Expenditure in Indian States 1973- 2005

Rattan Chand[*]

1. Introduction: The Indian National Sample Survey (NSS) has been conducting Household Consumption Expenditure surveys regularly since its inception in 1950. It used to be an annual feature till the NSS 26th round (1971-72). From the NSS 27th round (1972-73), it became a quinquennial survey integrated with employment and unemployment surveys. The results of the quinquennial surveys with large sample sizes are used for the estimation of poverty and for evolving various policy interventions. Seven quinquennial surveys on household consumption expenditure have been conducted so far during 27th, 32nd, 38th, 43rd, 50th, 55th and 61st rounds of NSS in the years 1972-73, 1977-78, 1983, 1987-88, 1993-94, 1999-2000 and 2004-05 respectively.

Of late, there has been a lot of discussion about the relative performance of states in India. It is well known that regional disparities are large in India, and there is widespread perception that these have increased in the recent past (Nirvikar Singh et al 2002). In these studies of inter-state disparities, growth rate of per capita income or state domestic product has been used. However, for a population with low per capita income levels, Monthly Per Capita Consumption Expenditure (MPCE) is perhaps a better indicator of the economic well being of people than per capita income estimates (Planning Commission, 2002). The MPCE is considered to be a fair indicator of human living standards, since it aggregates the monetary value of all goods and services actually consumed during a particular reference period. This includes consumption out of purchase, home produce, free collection, gifts etc.

The objective of this paper is to study intra-state and inter-state consumption expenditure inequality, rural-urban disparity in consumption expenditure and relationship between consumption expenditure and inequality, using NSS data from the seven quinquennial rounds of survey. The analysis has been restricted to 15 major states where sample sizes are large enough to provide reliable estimates of parameters.

2. Data and Methods: he use of the Lorenz curve is an effective way of showing inequality of income or consumption within and between regions. The cumulative percentage of population is plotted along the horizontal axis while the cumulative percentage of income (consumption in our case) is plotted along the vertical axis (Figure 1). The curve shows the actual relationship between the percentage of income (consumption) recipients and the percentage of income (consumption) they in fact actually receive. For most people, however, a curve may be less descriptive than a score or value. Therefore, for better understanding, economists have popularised a measure known as the 'Gini Coefficient' named after Corrado Gini, an Italian statistician and demographer. Gini Coefficient is obtained by dividing the area between the Lorenz Curve and the 45-degree equality line by the entire area below the 45-degree line. A Gini coefficient of '0' indicates perfect consumption or income equality, while a '1' would imply that a single person incurs all consumption expenditure or possesses all income.
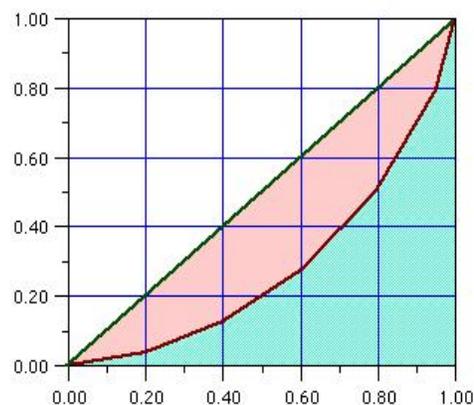
For studying the intra-state inequality, Monthly Per Capita Consumption Expenditure (MPCE) data by household expenditure classes and the distribution of population in each MPCE class has been used (for calculation of Gini Coefficients). Inter-state inequality and rural-urban disparity in household consumption have been studied using state-wise MPCE data at constant prices from the seven quinquennial rounds of NSS. To study the relationship between consumption and inequality, use of correlation coefficient has been made.   ***Figure1: Lorenz Curve***

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3. Consumption Inequality at all India and State level

3.1 All India inequality in consumption: One can begin by examining the inequality (Gini Coefficient) at the all India level. During 1973-2005, the inequality (Gini Coefficient) in rural India has marginally declined from 0.302 in 1973 to 0.297 in 2005 (Statement 1 and Chart 1). Over a period, if the share of bottom 30% population in expenditure classes registers a decline and top 30% register an increase, then this will mean that the poor are getting poorer and the rich are getting richer. In rural India, there has been an increase of 0.5 percentage points in the share of consumption expenditure of the bottom 30% population and an increase of 0.7 percentage points in the share of consumption expenditure of the top 30% population during 1973-2005. However, in urban India, the consumption inequality and the share of consumption expenditure of the bottom and top 30% population indicates that poor are getting poorer and rich are becoming richer during the period 1973-2005 (Charts 1- 3).

Statement 1: Household consumption inequality trends in India

	Rural			urban		
Year	Gini Coefficient	share in consumption expenditure (%)		Gini Coefficient	share in consumption expenditure (%)	
		Bottom 30% population	Top 30% population		Bottom 30% population	Top 30% population
1972-73	0.302	15.0	50.9	0.341	13.9	54.3
1977-78	0.337	14.3	53.9	0.345	13.5	54.9
1983	0.298	15.2	50.9	0.330	13.9	53.7
1987-88	0.291	15.8	50.4	0.352	13.4	55.3
1993-94	0.281	16.0	49.9	0.340	13.6	54.7
1999-00	0.260	16.7	48.3	0.343	13.4	54.7
2004-05	0.297	15.5	51.6	0.373	12.4	56.9

Chart-1: Gini Coefficients for differrent NSS rounds-all India
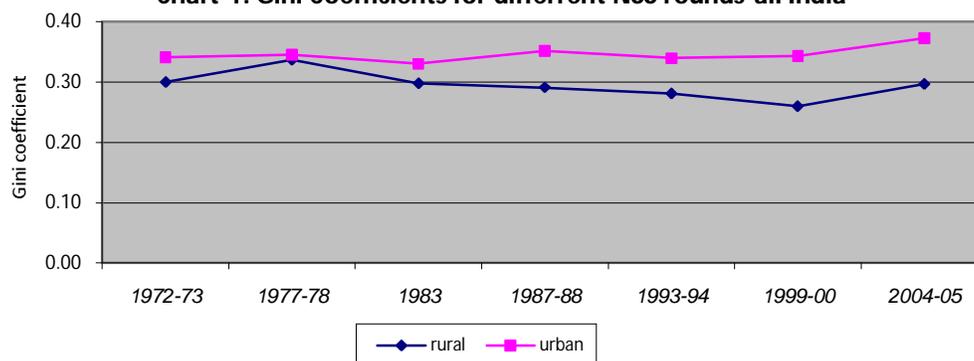
Chart-2: Share of bottom 30% population in consumption expenditure for differrent NSS rounds-all India

22
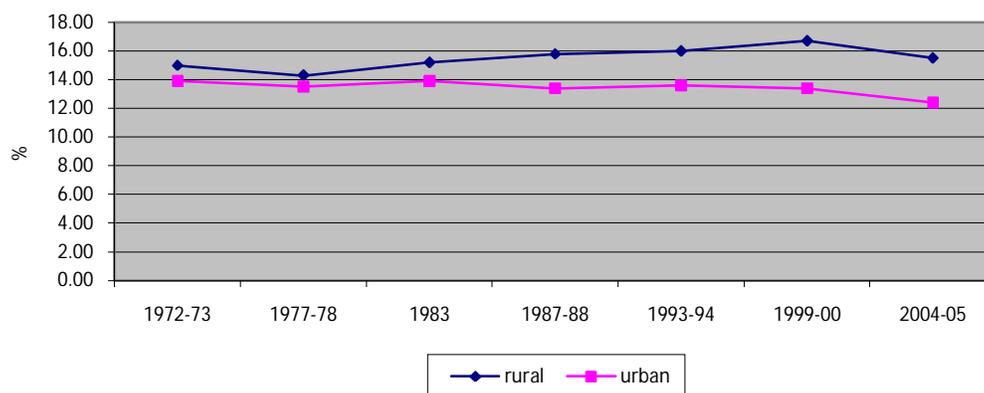
Chart-3: Share of top 30% population in consumption expenditure for differrent NSS rounds-all India
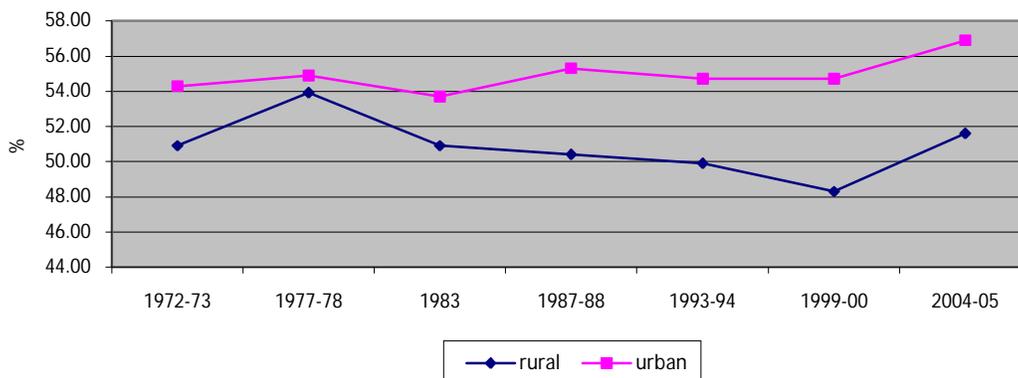
3.2 State level inequality in consumption: A close examination of the values of the Gini Coefficients of MPCE for all the seven quinquennial NSS rounds (1973-2005) for the rural and urban sectors of the 15 major states (Tables 1R and 1U) reveals as follows. In the rural areas, the inequality has declined in 8 states during 1973 - 2005 whereas it has increased in other states. Maximum decline in the value of Gini coefficient has been observed for the state of Bihar followed by Rajasthan. Other States that have registered a decline are Gujarat, Karnataka, Madhya Pradesh, Orissa, Punjab and West Bengal. Interestingly, the share in consumption expenditure of the bottom 30% population has remained at the same level or gone up in the rural areas of 10 states (Table 2R). The States where the share has declined are Assam, Haryana, Kerala, Tamil Nadu and Uttar Pradesh. The percentage share of the top 30% population has declined in the States of Bihar, Gujarat, Orissa, Punjab, Rajasthan and west Bengal (Table 3R).

In the urban areas, the inequality (Gini Coefficient) has not declined in any state during 1973-2005. The states where the Gini Coefficient has increased most are Punjab, Andhra Pradesh, Gujarat and Uttar Pradesh. The share in consumer expenditure of bottom 30% population (Table 2U) also declined or remained at the same level in these states and the share of top 30% (Table 3U) increased in all the states. This indicates that the gap between rich and poor is increasing in urban areas.

4. Monthly Per Capita Consumption Expenditure: State-wise MPCE (Rs) figures at current prices for the six quinquennial NSS rounds conducted during 1973-2000 have been converted to constant prices (Tables 4R and 4U). The conversion has been done using deflators derived from state specific poverty lines for the respective years.

Chart-4: Monthly Per Capita Consumption Expenditure-all India (Constant Prices)
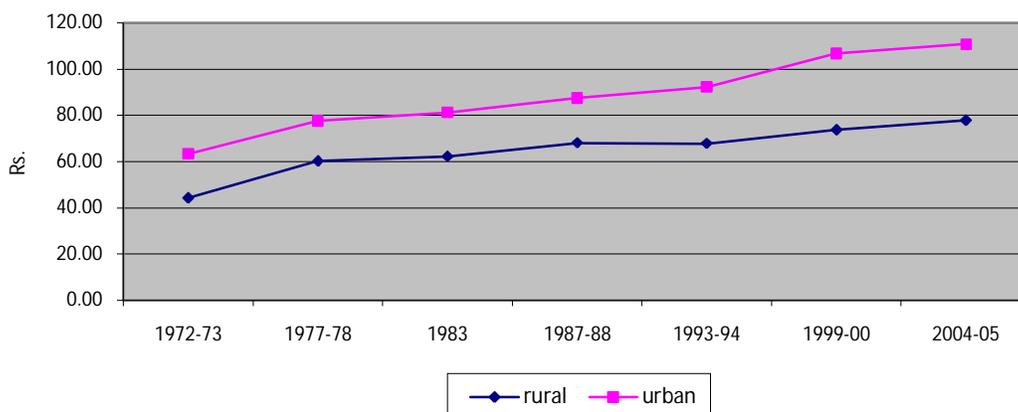
The MPCE has increased in real terms at all India and in all the states during the period 1973 – 2005. In the year 2005, the state of Orissa had the lowest MPCE both in rural and urban areas. In the rural areas, Orissa had the lowest MPCE in all the seven quinquennial rounds whereas in the urban areas, its position was relatively better before 2000. The state of Punjab, which had the highest rural MPCE in 1972-73, has moved to 3rd position with Haryana occupying the 2nd position in 2005. In urban areas, Punjab still has the highest MPCE. During the period 1973-2005, the state of Kerala has registered the highest growth in MPCE both in rural and urban areas (Tables 4R & 4U). In the rural areas, the states which have registered more than 80% growth in MPCE during 1973-2005 are Andhra Pradesh, Kerala, Maharashtra, Tamil Nadu and West Bengal. In the urban areas, such states are Assam, Gujarat, Kerala, Punjab, Tamil Nadu, Uttar Pradesh and West Bengal. A look at the coefficient of variation (CV) calculated from state-wise rural MPCE (last line in Table 4R) indicates that the inter-state disparity among states showed a declining trend during 1973-1994 but it again increased in later periods. However, in the urban areas the inter-state disparity has increased substantially in 2005.

5. Share of Food in Total Consumption Expenditure: The composition of consumption expenditure between food and non-food items also reflects the economic well being of the population. Generally, poor households are expected to spend substantially more on food items as against the non-food. One expects the proportion of expenditure on food to decline with development and economic prosperity. The percentage of expenditure on food to total consumption expenditure has declined in rural and urban areas of all the states during 1973 – 2005 (Tables 5R & 5U). At the national level, the share of expenditure on food declined from 72.9% in 1973 to 55.0% in 2005 (in rural areas) implying a corresponding increase in the expenditure on the non-food items. In 1973, the state with lowest share of expenditure on food items was Punjab with 63% share. In 2005, 13 states have share of expenditure on food lower than 63% and only two states have more than 63% share of expenditure on food items. These two states are Assam and Bihar.

In 1973, the share of expenditure on food items in the urban areas was the lowest in Maharashtra and Punjab, each having 61% share. In 2005, all states have share of expenditure on food lower than 61%. In 1978, the lowest share of expenditure on food was for Punjab (55%) whereas in 2005, none of the States have share on food expenditure more than 51% (Table 5U).

In rural and urban areas of all the states, the share of expenditure on cereals has declined (Tables 6R and 6U) during 1973-2005 implying switch over to better quality food such as milk, vegetables, meat, fish, eggs etc. However, in the rural areas of Assam, Bihar, Orissa and West Bengal it still continues to be 38% or more as against the share of about 18% in Punjab and Haryana. In the urban areas, Bihar and Orissa have 34% or more share as against 17% in Haryana and Punjab.

6. Rural-Urban Disparity in Consumption Expenditure: The rural-urban disparity in consumption can be studied by using the ratio of rural to urban MPCE (Table 7). An increasing ratio (towards 100) indicates a reduction in rural-urban disparity whereas a declining ratio indicates an increase in rural-urban disparity. At the national level, the ratio of rural to urban MPCE increased from 70% in 1973 to 78% in 1988 but thereafter it again declined to 70% in 2005 (Chart 5).

Chart-5: Ratio (%) of Rural to Urban MPCE-all India
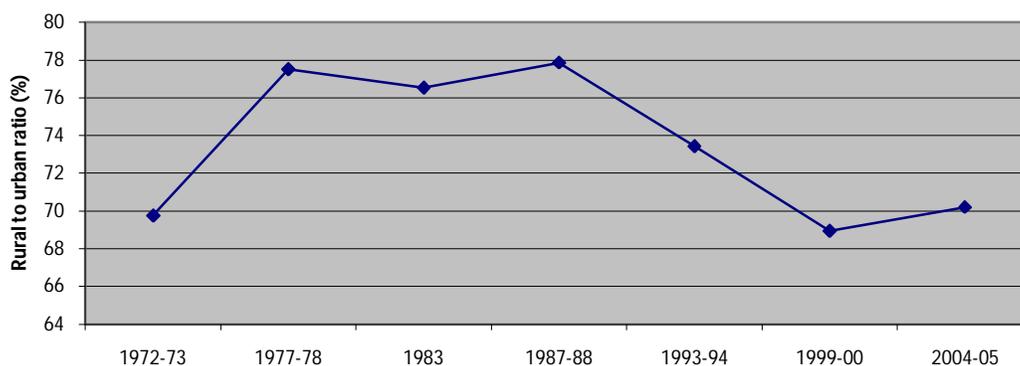
The ratio has increased in eight states during 1973-2005 indicating reduction in rural-urban disparity. Maximum increase in the ratio is observed in the state of Maharashtra (21.6 points) followed by Andhra Pradesh (11.8 points), Kerala (11.6 points) and Orissa (11.4 points). On the other hand, the ratio has declined in seven states during 1973-2005. It declined by over 10 percentage points in Assam, Gujarat, Haryana and Punjab and by less than 10 points in Rajasthan, Karnataka and Uttar Pradesh. In Bihar it has remained almost at the same level.

In 2005, the states with the lowest to the highest rural-urban disparity (in that order) were Haryana, Kerala, Andhra Pradesh, Rajasthan, Maharashtra, Tamil Nadu, Karnataka, Uttar Pradesh, Punjab, Bihar, Orissa, Madhya Pradesh, Gujarat, West Bengal and Assam.

7. Relationship between Gini Coefficient and MPCE: The relationship between inequality and MPCE has been studied with the help of correlation coefficient between the values of these variables for the seven quinquennial rounds. As there are only seven pairs of values for each state, the correlation coefficients presented here are purely indicative. A negative correlation indicates that the inequality decreases with increase in MPCE and vice versa. On the other hand a positive correlation indicates increase in inequality with increase in MPCE and vice versa.

Statement 2: Correlation Coefficient between Gini Coefficient and MPCE

State	Rural	Urban	State	Rural	Urban
1. Andhra Pradesh	0.03	0.71	9. Maharashtra	-0.10	-0.09
2. Assam	0.56	0.50	10. Orissa	-0.72	-0.12
3. Bihar	-0.78	0.34	11. Punjab	-0.53	0.42
4. Gujarat	-0.68	0.73	12. Rajasthan	0.36	-0.04
5. Haryana	0.08	0.19	13. Tamil Nadu	0.11	0.93
6. Karnataka	-0.39	0.37	14. Uttar Pradesh	-0.13	-0.75
7. Kerala	-0.13	-0.29	15. West Bengal	-0.72	0.71
8. Madhya Pradesh	-0.63	0.28	**All India**	-0.45	0.57

In the rural areas, negative correlation is observed between Gini Coefficient and MPCE in 10 states as well as for all India level (Statement 2). The correlation is, however, statistically significant (at 5% level of significance) only for the state of Bihar (-0.78). In the urban areas, the correlation coefficient is negative in five states and positive in nine states as well as for all India. However, the correlation is statistically significant only for Uttar Pradesh (-0.75).

8. Conclusion: The analysis using data from the NSSO's seven quinquennial surveys conducted during the period 1973-2005 indicates that the inequality for consumption expenditure has declined in the rural areas of eight major states. This decline is generally accompanied by an increase in the consumption share of the bottom 30% population and a decline in the consumption share of the top 30% population. In the urban areas, the situation is mixed as the inequality in consumption expenditure has increased or remained at the same level in all the states. The MPCE has increased in real terms in rural as well as in urban areas of all the states. The state of Orissa continues to have the lowest rural MPCE during 1973-2005. The highest rural MPCE position has now been achieved by Kerala followed by Haryana and Punjab. In the rural areas, the interstate disparity in consumption expenditure has declined during 1973 – 1994 but has increased since 2000. In the case of urban areas, the inter-state disparity did not show any trend up to 1999-00 but it has now substantially increased in 2004-05. Rural to urban disparity has remained almost same at the national level during 1973-2005. The rural-urban disparity has worsened in seven states and improved in eight states. In 2005, the rural-urban disparity was the lowest in Haryana and the highest in Assam. During 1973-2005, the rural-urban disparity has worsened most in Gujarat followed by Punjab, Assam, Haryana, Uttar Pradesh, Rajasthan and Karnataka while it has improved most in Maharashtra followed by Andhra Pradesh, Kerala, Orissa, Tamil Nadu, West Bengal and Madhya Pradesh. The correlation between MPCE and Gini coefficient has been found to be negative in 10 states in rural areas and in five states in urban areas. In rural areas, the correlation is negative and statistically significant in Bihar only. In the urban areas, the correlation is negative and statistically significant only in Uttar Pradesh.

References

1. Sarvekshana Issue No. 7: First Quinquennial Survey on Consumer Expenditure: 27th Round, 1972-73.
2. Sarvekshana Issue No. 26: Second Quinquennial Survey on Consumer Expenditure: 27th Round, 1977-78.
3. NSS Report No. 332: Pattern of Consumer Expenditure of Schedule Caste and Schedule Tribe Households, 1983.
4. Sarvekshana Issue No. 48: The Fourth Quinquennial Survey on Consumer Expenditure: 43rd Round, 1987-88.
5. NSS Report No. 402: Level and Pattern of Consumer Expenditure in India, 1993-94.
6. NSS Report No. 457: Level and Pattern of Consumer Expenditure in India, 1999-2000.
7. NSS Report No. 508: Level and Pattern of Consumer Expenditure in India, 2004-05.
8. National Human Development Report, 2001, Planning Commission, March 2002, New Delhi.
9. Nirvikar Singh, Laveesh Bhandari, Aoyu Chen and Arti Khare, 'Regional Inequality in India: A Fresh look' Santa Cruz Centre for International Economics, University of California, Santa Cruz, December, 2002.
10. P.D.Joshi, Sarvekshana, Analytical Report No. 2: Changing Pattern of Consumption Expenditure in India and Some Selected States, 1998.

Table 1R: Gini Coefficient for Monthly Per Capita Consumer Expenditure (MPCE) - Rural

State	1972-73	1977-78	1983	1987-88	1993-94	1999-00	2004-05	Col. (8) -col. (2)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. Andhra Pradesh	0.273	0.298	0.294	0.301	0.284	0.233	0.288	0.015
2. Assam	0.180	0.179	0.192	0.222	0.176	0.200	0.197	0.017
3. Bihar	0.288	0.259	0.256	0.264	0.223	0.206	0.208	-0.080
4. Gujarat	0.302	0.285	0.257	0.233	0.236	0.234	0.268	-0.034
5. Haryana	0.277	0.288	0.272	0.281	0.301	0.238	0.323	0.046
6. Karnataka	0.273	0.321	0.303	0.292	0.265	0.241	0.264	-0.009
7. Kerala	0.310	0.353	0.330	0.323	0.287	0.270	0.341	0.031
8. Madhya Pradesh	0.306	0.331	0.295	0.290	0.277	0.243	0.269	-0.037
9. Maharashtra	0.310	0.462	0.285	0.331	0.303	0.258	0.310	
10. Orissa	0.312	0.301	0.267	0.267	0.243	0.244	0.282	-0.030
11. Punjab	0.307	0.303	0.279	0.295	0.265	0.239	0.278	-0.029
12. Rajasthan	0.316	0.464	0.343	0.303	0.260	0.208	0.248	-0.068
13. Tamil Nadu	0.272	0.319	0.325	0.323	0.306	0.279	0.315	0.043
14. Uttar Pradesh	0.277	0.299	0.290	0.279	0.278	0.245	0.287	0.010
15. West Bengal	0.305	0.292	0.286	0.252	0.252	0.225	0.273	-0.032
All India	**0.302**	**0.337**	**0.298**	**0.291**	**0.281**	**0.260**	**0.297**	**-0.005**

Table 1U: Gini Coefficient for Monthly Per Capita Consumer Expenditure (MPCE) -Urban

State	1972-73	1977-78	1983	1987-88	1993-94	1999-00	2004-05	Col. (8) -col. (2)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. Andhra Pradesh	0.297	0.319	0.327	0.361	0.320	0.313	0.370	0.073
2. Assam	0.267	0.324	0.276	0.337	0.287	0.310	0.314	0.047
3. Bihar	0.323	0.304	0.301	0.297	0.306	0.323	0.330	0.007
4. Gujarat	0.242	0.308	0.264	0.285	0.287	0.287	0.304	0.062
5. Haryana	0.315	0.317	0.313	0.297	0.280	0.287	0.361	0.046
6. Karnataka	0.323	0.342	0.334	0.334	0.315	0.323	0.365	0.042
7. Kerala	0.390	0.395	0.374	0.387	0.337	0.321	0.400	0.010
8. Madhya Pradesh	0.348	0.377	0.306	0.331	0.327	0.315	0.393	0.045
9. Maharashtra	0.367	0.362	0.337	0.352	0.352	0.348	0.371	0.004
10. Orissa	0.347	0.323	0.296	0.324	0.304	0.292	0.348	0.001
11. Punjab	0.313	0.380	0.319	0.278	0.276	0.290	0.393	0.080
12. Rajasthan	0.333	0.301	0.304	0.346	0.290	0.280	0.367	0.034
13. Tamil Nadu	0.315	0.333	0.348	0.348	0.344	0.381	0.358	0.043
14. Uttar Pradesh	0.312	0.327	0.319	0.329	0.322	0.329	0.370	0.058
15. West Bengal	0.338	0.317	0.327	0.353	0.333	0.342	0.376	0.038
All India	**0.341**	**0.345**	**0.330**	**0.352**	**0.340**	**0.343**	**0.373**	**0.032**

Table 2R: Percentage Share of the bottom 30% population in Total Monthly Per Capita Consumer Expenditure (MPCE)

Rural

State	1972-73	1977-78	1983	1987-88	1993-94	1999-00	2004-05
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Andhra Pradesh	15.9	15.3	15.6	15.5	16.1	18.0	15.9
2. Assam	19.8	21.6	19.9	18.9	20.4	18.9	19.2
3. Bihar	15.1	16.6	16.7	17.1	18.2	19.2	19.1
4. Gujarat	15.2	15.8	17.2	18.3	17.6	17.6	16.4
5. Haryana	15.7	15.4	16.3	15.9	14.8	17.0	14.6
6. Karnataka	15.9	14.1	14.8	15.5	16.5	17.7	17.7
7. Kerala	14.7	13.2	14.4	14.6	14.6	16.0	12.8
8. Madhya Pradesh	15.1	14.8	15.5	15.7	16.3	17.7	16.7
9. Maharashtra	15.0	11.6	15.9	14.9	15.3	16.7	15.1
10. Orissa	14.5	14.9	17.4	16.7	17.3	17.4	15.9
11. Punjab	14.7	14.6	18.9	15.3	16.6	17.1	15.8
12. Rajasthan	14.3	10.8	16.7	14.2	16.7	18.7	17.8
13. Tamil Nadu	16.1	14.6	16.2	14.4	15.2	16.1	15.6
14. Uttar Pradesh	16.5	16.9	15.4	16.2	16.0	17.6	16.4
15. West Bengal	15.0	15.2	15.3	17.4	17.9	18.2	17.0
All India	**15.0**	**14.3**	**15.2**	**15.8**	**16.0**	**16.7**	**15.5**

Table 2U: Percentage Share of the bottom 30% population in Total Monthly Per Capita Consumer Expenditure (MPCE)

Urban

State	1972-73	1977-78	1983	1987-88	1993-94	1999-00	2004-05
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Andhra Pradesh	16.8	14.5	14.8	13.2	14.5	14.6	13.0
2. Assam	16.8	15.0	18.0	14.9	15.8	14.5	14.1
3. Bihar	14.3	15.1	15.2	16.2	15.1	14.9	14.3
4. Gujarat	17.6	15.4	17.2	15.8	15.6	15.6	14.6
5. Haryana	14.3	14.9	15.0	15.6	15.6	15.1	13.0
6. Karnataka	15.0	13.6	13.3	13.8	14.0	13.9	12.4
7. Kerala	17.0	11.5	12.6	12.4	14.1	13.8	11.5
8. Madhya Pradesh	14.5	13.1	15.7	14.0	14.6	14.6	12.1
9. Maharashtra	12.2	12.2	13.2	12.7	12.5	13.0	12.2
10. Orissa	13.5	13.9	19.3	14.0	14.5	15.5	12.9
11. Punjab	15.0	12.8	14.9	15.9	15.8	15.6	12.5
12. Rajasthan	14.9	15.2	14.8	14.4	15.3	16.1	13.4
13. Tamil Nadu	14.7	13.9	13.4	15.3	13.8	12.7	13.2
14. Uttar Pradesh	14.9	14.4	14.7	14.1	14.1	14.3	13.0
15. West Bengal	13.3	14.0	13.9	14.4	13.6	13.9	12.0
All India	**13.9**	**13.5**	**13.9**	**13.4**	**13.6**	**13.4**	**12.4**

Table 3R: Percentage Share of top 30% population in Total Monthly Per Capita Consumer Expenditure (MPCE) - Rural

State	1972-73	1977-78	1983	1987-88	1993-94	1999-00	2004-05
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Andhra Pradesh	48.9	50.9	50.9	51.6	50.6	53.6	50.0
2. Assam	42.3	42.0	43.2	45.6	41.8	43.6	42.7
3. Bihar	49.8	47.3	47.5	48.6	45.7	44.3	44.1
4. Gujarat	51.6	49.1	47.6	46.6	46.1	46.1	48.9
5. Haryana	49.3	50.4	49.0	49.6	51.6	47.1	53.8
6. Karnataka	48.5	52.8	50.9	50.6	48.8	46.7	48.5
7. Kerala	52.0	55.4	53.8	53.6	50.6	50.0	56.9
8. Madhya Pradesh	51.9	51.8	50.5	50.2	49.6	46.7	48.8
9. Maharashtra	51.4	62.7	50.0	53.7	51.2	48.1	51.9
10. Orissa	51.7	51.0	48.0	48.7	48.3	46.9	50.0
11. Punjab	51.5	50.7	50.7	51.0	49.6	47.3	50.7
12. Rajasthan	52.5	63.4	54.4	51.6	48.2	44.4	46.9
13. Tamil Nadu	48.9	52.6	52.8	53.1	52.1	49.7	52.7
14. Uttar Pradesh	49.3	48.0	50.1	49.8	49.7	47.3	50.4
15. West Bengal	49.8	50.4	49.5	47.6	47.8	45.2	48.7
All India	**50.9**	**53.9**	**50.9**	**50.4**	**49.9**	**48.3**	**51.6**

Table 3U: Percentage Share of top 30% population in Total Monthly Per Capita Consumer Expenditure (MPCE) - Urban

State	1972-73	1977-78	1983	1987-88	1993-94	1999-00	2004-05
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Andhra Pradesh	47.9	53.0	53.3	56.0	53.1	52.4	57.0
2. Assam	48.5	52.8	48.5	54.2	55.8	52.1	52.7
3. Bihar	52.7	51.4	51.8	51.3	52.3	53.3	53.9
4. Gujarat	41.9	52.1	48.6	50.2	50.4	50.4	51.6
5. Haryana	52.9	52.5	53.5	51.0	49.6	49.6	55.6
6. Karnataka	50.8	54.5	54.0	53.7	52.4	52.9	56.6
7. Kerala	51.1	58.5	57.6	59.0	54.4	53.0	59.3
8. Madhya Pradesh	54.8	57.2	52.1	53.9	53.3	52.4	58.7
9. Maharashtra	53.6	55.0	54.8	55.0	55.3	54.9	56.7
10. Orissa	54.3	52.8	51.9	53.0	51.6	50.9	55.3
11. Punjab	52.2	56.2	53.7	49.8	49.4	50.6	58.6
12. Rajasthan	53.8	51.4	51.3	54.8	50.5	50.0	56.6
13. Tamil Nadu	52.5	53.8	55.0	49.1	54.6	57.3	55.7
14. Uttar Pradesh	52.4	53.6	53.1	53.3	53.4	53.7	56.3
15. West Bengal	54.4	52.0	53.5	53.7	54.3	54.8	57.4
All India	**54.3**	**54.9**	**53.7**	**55.3**	**54.7**	**54.7**	**56.9**

Table 4R: Monthly Per Capita Consumer Expenditure (MPCE) (Rs) at constant* prices Rural

State	1972-73	1977-78	1983	1987-88	1993-94	1999-00	2004-05	% Growth 1973-2005
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. Andhra Pradesh	39.79	57.11	66.24	72.65	73.87	71.96	83.37	109.53
2. Assam	41.67	48.71	57.27	60.05	55.41	58.10	69.81	67.53
3. Bihar	41.20	56.23	55.48	65.45	59.35	66.69	67.89	64.78
4. Gujarat	51.70	60.53	69.40	66.02	70.68	81.42	79.33	53.44
5. Haryana	70.07	77.77	85.60	87.24	82.26	98.35	103.92	48.31
6. Karnataka	44.53	59.05	66.25	67.44	68.19	76.26	74.10	66.40
7. Kerala	42.19	65.14	75.53	83.67	82.74	105.58	121.73	188.53
8. Madhya Pradesh	40.72	53.47	60.37	66.61	65.51	64.74	67.24	65.13
9. Maharashtra	41.55	66.81	63.17	70.18	70.60	78.69	79.10	90.37
10. Orissa	34.96	41.76	43.55	49.22	53.10	54.00	57.39	64.16
11. Punjab	74.62	96.24	96.05	99.25	92.51	102.30	103.06	38.11
12. Rajasthan	51.98	96.31	80.66	77.12	76.10	81.30	80.38	54.64
13. Tamil Nadu	37.70	50.43	52.63	58.84	67.36	75.35	77.17	104.69
14. Uttar Pradesh	42.12	60.77	60.82	63.48	62.88	67.76	71.22	69.09
15. West Bengal	38.45	50.99	53.99	64.05	68.82	70.77	80.01	108.09
All India	44.17	60.15	62.28	68.11	67.85	73.66	77.83	76.21
CV	**25.03**	**25.57**	**21.04**	**17.83**	**15.12**	**19.82**	**20.80**	

* adjusted for inflation using deflators derived from state specific poverty lines for each of the years.

Table 4U: Monthly Per Capita Consumer Expenditure (MPCE) (Rs) at constant* prices (Urban)

State	1972-73	1977-78	1983	1987-88	1993-94	1999-00	2004-05	% Growth 1973-2005
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. Andhra Pradesh	56.32	72.85	77.81	81.81	79.27	91.25	101.24	79.76
2. Assam	60.75	77.32	79.38	107.17	108.51	118.95	140.36	131.05
3. Bihar	59.91	75.72	75.92	76.04	90.69	97.10	98.07	63.70
4. Gujarat	57.58	86.67	82.55	86.39	95.01	116.85	128.12	122.51
5. Haryana	69.88	78.59	94.66	92.15	96.20	113.78	118.7	69.86
6. Karnataka	57.89	77.44	80.57	75.77	81.33	103.70	100.31	73.28
7. Kerala	58.27	77.46	90.28	102.35	110.50	122.73	144.88	148.64
8. Madhya Pradesh	61.88	77.00	74.33	83.38	81.09	90.75	99.89	61.43
9. Maharashtra	74.84	88.69	86.70	87.89	95.91	107.27	102.57	37.05
10. Orissa	62.35	71.29	71.99	80.79	80.09	77.57	85.03	36.38
11. Punjab	77.88	96.16	94.68	96.69	104.57	120.25	147.73	89.69
12. Rajasthan	63.87	79.72	84.49	86.29	90.72	102.47	103.34	61.80
13. Tamil Nadu	54.02	66.24	70.15	77.33	76.16	105.29	101.65	88.17
14. Uttar Pradesh	53.55	67.94	70.51	80.66	86.28	95.14	101.74	89.99
15. West Bengal	68.23	78.87	87.95	90.81	105.22	116.07	137.06	100.88
All India	63.33	77.60	81.37	87.48	92.40	106.86	110.90	75.11
CV	**11.65**	**9.92**	**10.08**	**10.80**	**12.36**	**12.43**	**17.74**	

Table 5R: Percentage Expenditure on Food to Total Consumption Expenditure (Rural)

State	1972-73	1977-78	1983	1987-88	1993-94	1999-00	2004-05
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Andhra Pradesh	73.4	64.6	60.3	59.3	59.6	60.5	55.2
2. Assam	77.5	75.0	73.4	70.2	72.3	67.6	66.0
3. Bihar	78.1	75.5	73.6	69.7	71.0	66.5	64.8
4. Gujarat	73.4	68.6	66.1	69.1	67.1	59.8	58.0
5. Haryana	67.3	62.3	63.6	60.8	60.1	55.5	48.6
6. Karnataka	73.5	63.3	63.5	63.6	62.0	59.1	55.7
7. Kerala	70.4	61.2	61.7	59.9	60.5	53.7	45.0
8. Madhya Pradesh	72.2	65.7	66.5	64.3	61.2	58.1	52.9
9. Maharashtra	67.6	49.8	61.5	58.2	59.5	54.7	51.7
10. Orissa	75.1	71.4	73.6	68.9	68.1	64.1	61.6
11. Punjab	62.6	59.7	58.7	57.6	57.9	52.3	49.2
12. Rajasthan	73.9	48.9	60.7	62.0	62.3	59.5	54.8
13. Tamil Nadu	72.0	65.7	65.1	64.1	62.8	58.7	52.4
14. Uttar Pradesh	70.1	65.8	63.3	62.2	61.5	57.4	53.5
15. West Bengal	77.4	72.7	74.0	71.0	66.8	65.9	58.7
All India	**72.9**	**64.3**	**65.6**	**64.0**	**63.2**	**59.4**	**55.0**

Table 5U: Percentage Expenditure on Food to Total Consumption Expenditure - Urban

State	1972-73	1977-78	1983	1987-88	1993-94	1999-00	2004-05
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Andhra Pradesh	67.7	59.2	79.2	52.8	53.8	47.4	41.6
2. Assam	68.4	62.0	66.4	57.6	59.7	55.3	49.5
3. Bihar	70.4	69.4	66.5	63.9	62.9	57.2	51.1
4. Gujarat	72.9	59.4	61.7	60.3	58.4	49.6	44.9
5. Haryana	63.2	59.7	57.7	57.9	53.9	45.9	41.4
6. Karnataka	67.2	61.5	58.1	56.8	55.7	46.3	43.2
7. Kerala	64.8	61.6	59.4	57.1	53.9	49.0	40.0
8. Madhya Pradesh	62.6	58.3	60.4	56.6	52.9	47.6	38.9
9. Maharashtra	61.1	56.1	58.2	55.9	53.0	45.3	40.4
10. Orissa	65.4	66.0	65.3	60.7	57.8	57.0	49.9
11. Punjab	60.6	54.5	55.8	55.2	53.0	47.1	37.6
12. Rajasthan	66.1	60.9	57.6	56.8	56.7	50.8	41.6
13. Tamil Nadu	64.1	60.8	58.4	54.8	54.6	45.6	42.7
14. Uttar Pradesh	66.2	62.3	59.7	57.2	56.0	50.5	47.1
15. West Bengal	64.2	63.4	60.8	57.6	55.9	52.3	43.4
All India	**64.5**	**60.0**	**59.1**	**56.4**	**54.7**	**48.1**	**42.5**

Table 6R: Percentage Expenditure on Cereals to Total expenditure on Food - Rural

State	1972-73	1977-78	1983	1987-88	1993-94	1999-00	2004-05
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Andhra Pradesh	62.8	55.9	49.8	41.8	41.2	40.7	35.2
2. Assam	58.2	55.8	56.0	48.9	48.6	47.8	37.6
3. Bihar	65.7	62.8	64.8	54.8	52.0	48.9	41.8
4. Gujarat	45.6	39.4	33.7	28.1	24.9	24.5	23.0
5. Haryana	36.8	34.2	28.6	25.5	21.2	19.9	17.8
6. Karnataka	63.1	52.8	47.9	38.3	36.8	34.8	29.6
7. Kerala	45.4	38.7	38.9	29.8	29.0	26.9	24.5
8. Madhya Pradesh	60.7	57.0	53.4	43.9	42.9	43.0	34.2
9. Maharashtra	57.6	46.5	41.5	32.6	30.0	32.3	28.1
10. Orissa	69.7	69.3	68.0	60.1	57.3	56.2	45.9
11. Punjab	26.8	26.7	25.2	19.1	18.2	19.0	17.9
12. Rajasthan	50.3	41.5	39.8	35.0	28.9	30.1	26.4
13. Tamil Nadu	57.8	54.8	53.8	43.8	39.3	30.7	29.6
14. Uttar Pradesh	57.6	47.7	46.5	38.9	35.2	36.6	28.5
15. West Bengal	65.3	58.2	60.7	52.5	50.7	47.7	40.0
All India	**55.7**	**51.0**	**49.2**	**41.0**	**38.3**	**37.3**	**32.7**

Table 6U: Percentage Expenditure on Cereals to Total expenditure on Food - Urban

State	1972-73	1977-78	1983	1987-88	1993-94	1999-00	2004-05
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Andhra Pradesh	47.4	42.7	26.3	44.4	33.3	32.8	29.4
2. Assam	41.8	42.3	45.3	33.3	33.7	34.1	27.5
3. Bihar	48.2	45.2	48.2	40.7	36.4	37.2	33.6
4. Gujarat	36.3	28.9	25.1	20.6	19.4	18.7	17.9
5. Haryana	29.0	27.1	23.4	20.4	19.2	18.7	16.7
6. Karnataka	44.8	39.7	34.9	28.8	29.4	28.0	25.7
7. Kerala	37.5	32.8	33.6	22.5	24.1	23.1	21.0
8. Madhya Pradesh	39.0	38.2	35.1	26.0	27.8	29.4	25.2
9. Maharashtra	26.6	26.6	25.9	21.1	21.4	22.8	20.8
10. Orissa	44.7	44.1	48.5	36.3	34.4	39.9	33.6
11. Punjab	22.4	23.4	21.3	17.5	17.0	17.8	16.9
12. Rajasthan	35.6	31.7	29.7	24.7	22.4	22.9	23.0
13. Tamil Nadu	40.9	40.6	40.5	31.1	29.9	23.8	24.2
14. Uttar Pradesh	39.1	35.1	33.1	26.4	25.3	26.4	24.4
15. West Bengal	34.2	35.6	36.3	31.2	30.5	30.0	26.0
All India	**36.2**	**34.1**	**33.0**	**26.5**	**25.7**	**25.7**	**23.7**

Table 7: Rural to Urban MPCE Ratio (%) - Constant prices

State	1972-73	1977-78	1983	1987-88	1993-94	1999-00	2004-05	Change 1973-2005
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. Andhra Pradesh	70.7	78.4	85.1	88.8	93.2	78.9	82.4	11.8
2. Assam	68.6	63.0	72.2	56.0	51.1	48.8	49.7	-18.9
3. Bihar	68.8	74.3	73.1	86.1	65.4	68.7	69.2	0.4
4. Gujarat	89.8	69.8	84.1	76.4	74.4	69.7	61.9	-27.9
5. Haryana	100.3	99.0	90.4	94.7	85.5	86.4	87.6	-12.7
6. Karnataka	76.9	76.3	82.2	89.0	83.9	73.5	73.9	-3.0
7. Kerala	72.4	84.1	83.7	81.8	74.9	86.0	84.0	11.6
8. Madhya Pradesh	65.8	69.4	81.2	79.9	80.8	71.3	67.3	1.5
9. Maharashtra	55.5	75.3	72.9	79.9	73.6	73.4	77.1	21.6
10. Orissa	56.1	58.6	60.5	60.9	66.3	69.6	67.5	11.4
11. Punjab	95.8	100.1	101.5	102.6	88.5	85.1	69.8	-26.0
12. Rajasthan	81.4	120.8	95.5	89.4	83.9	79.4	77.8	-3.6
13. Tamil Nadu	69.8	76.1	75.0	76.1	88.5	71.6	75.9	6.1
14. Uttar Pradesh	78.7	89.4	86.3	78.7	72.9	71.2	70.0	-8.7
15. West Bengal	56.4	64.7	61.4	70.5	65.4	61.0	58.4	2.1
All India	**69.8**	**77.5**	**76.5**	**77.9**	**73.4**	**68.9**	**70.2**	**0.5**

Divergence in the Level of Living in Indian Districts - A Profile

Siladitya Chaudhuri & Nivedita Gupta*

[**Abstract:** *In recent times, many analyses have indicated that there is a strong tendency towards polarization in economic performances of the states in India especially in the post-reform era. The already better-off states in Southern and Western parts of India are growing rapidly whereas some of the extremely poor states in Eastern region are not experiencing any real growth in per capita consumer expenditure. Similar phenomenon is also apparent at sub-state level. Further, there is intense rural-urban divide, which again is widening over time. All these indicate that more micro level studies beyond state level is necessary to diagnose the malaise.*

In this paper an attempt is being made to examine the spatial disparity at sub-state level i.e. among Indian districts, both within and across the states in terms of average level of living (represented by monthly per capita consumer expenditure), poverty (Head Count Ratio) and inequality (Lorenz Ratio) as revealed by the NSS large sample consumer expenditure survey held in 2004-05.

The sample design adopted in the survey had stratification at the district level within each state. This made it possible to get estimates of population, monthly per capita expenditure, poverty, inequality etc. separately for rural and urban parts within each district. The reliability concern often voiced against such sub-state level estimates from NSS, has been dealt with by providing the Relative Standard Errors of the estimates.

We start with the Ogive analysis of the distribution of state population over broad all India expenditure classes and examine their extent of divergence. This suggests the appropriateness of using state level expenditure classes instead of all India expenditure classes for studying the inequality at state or sub-state level. We obtain estimates of major parameters of MPCE, poverty and inequality for all the districts of India but analyse the same for only a few cases of strategic importance. We find that even in a state like Gujarat with commendable growth performance in terms of level of living, poverty or inequality, there are pockets which are among the most impoverished regions of India today. Thus it takes us closer to the identification of critical areas which deserve more focussed attention and policy intervention. Such incidences would have escaped our attention had we restricted ourselves to state level analysis only.]

1. Introduction: Numerous studies have been made in recent years on the trends of poverty, inequality and level of living in Indian states during the nineties. Some have highlighted the reduction in poverty while some others have expressed anguish over the rising inequality. But there is a common consensus that there has been increasing disparity in the level of living of people across the states. Marginal reduction in HCR (Head Count Ratio) has come along with unprecedented prosperity for a fortunate few. The states which were already in a better footing could reap the advantages of the economic reform in the nineties and experienced fast growth, while there has been no significant improvement in the poorest few. Also the rural urban gap needs meticulous scrutiny as maintaining balance between rural and urban growth is a necessary precondition for overall development. There is a feeling that dealing merely with state level aggregates can not reveal the true extent of divergence prevailing. However, there is serious dearth of studies on these issues at sub-state level.

For quite some time the country planners experienced this data gap at the sub state level or for that matter for lower administrative boundaries such as districts. The main bottleneck that refrained statisticians from generating sub state or District level estimates from NSS data was the nature of sampling design. The sampling design followed earlier allowed generation of unbiased estimates of population parameters at most at NSS region level. It is only in the 61st round of large sample survey of NSS that the sampling design defines rural and urban parts of districts as stratum for selection of sample villages or urban blocks. This has paved the way for generating unbiased estimates of important socio-economic parameters at the district level.

The main focus of this study, therefore, is on generation and analysis of district level estimates of major parameters. To start with we would examine the average level of living across Indian states and from there we move on to study the disparity, both inter and intra-state. This paper also attempts to generate alternative estimates of state Lorenz ratio using state level percentile classes of expenditure. Finally we would discuss about the salient features of the district level estimates in 2004-05 and methodological changes needed to improve upon the estimates to make them more meaningful. The paper is divided into five parts. In section-2 inter-state disparity has been studied through 'Ogive analysis' of per

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thousand distribution of state population over the broad all-India expenditure classes. We try to find if there is any justification for using state level percentile classes for analysis at state level and beyond. Section 3 deals with estimates of the major parameters like population, average MPCE, poverty rates using state specific poverty lines, inequality in terms of Lorenz ratio using state level percentile classes. The RSEs(Relative Standard errors) of population estimates and average MPCE (Monthly per capita consumption expenditure) are also given to indicate their robustness. In Section 4 the methodology followed for obtaining district level estimates and the RSE has been discussed first. Besides, estimates of average MPCE, district wise percentage of poor is calculated using state specific poverty lines and within district inequality is indicated by Lorenz Ratio using state level MPCE percentile classes. This is because state specific poverty lines and MPCE percentile classes would be more appropriate for them than the national one. Finally, in section 5, we summarise the findings, discuss about the limitations of the present exercise and explore ways of improving upon the estimates.

2. **Distribution of population in states over expenditure classes -Ogive Analysis:** In the NSS survey reports, detail analysis is carried out by classifying the population into 12 percentile classes (5%, 10%, 20%...80%, 90%, 95%) of per capita monthly expenditure at all-India level, separately for rural and urban sector. This is perfectly adequate for analysis of survey results at the country level or at the state level to the extent that it highlights the inter-state disparity in distribution of population over the same set of MPCE classes. Here an Ogive analysis has been attempted to study this disparity and the observations are the following.

Fig.2 R: Ogive Analysis-Rural
per 1000 distribution of population over different expenditure class
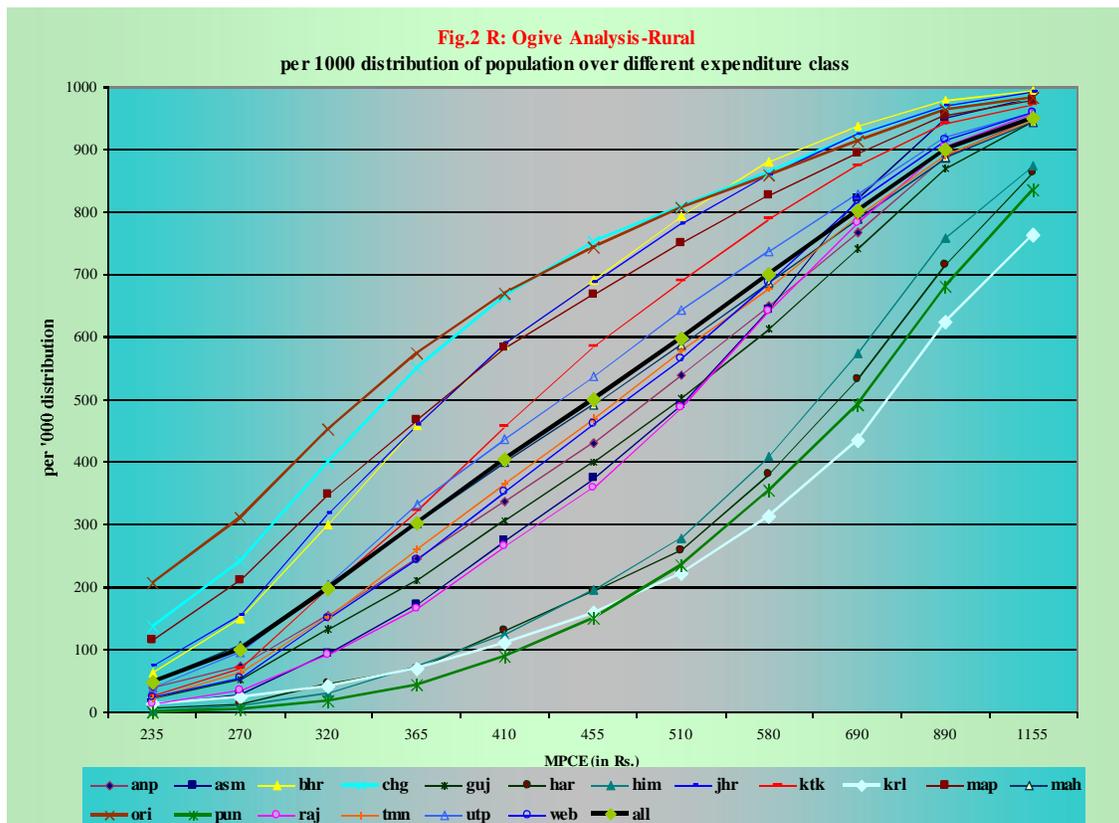
If we categorise the bottom 30% population of the country with MPCE Rs. 365 or less, as 'poor' and the bottom 10% (having average expenditure less than or equal to Rs.270) the 'poorest of the poor', their shares of population vary widely from state to state, as evident from the following table. While in most impoverished states like Orissa and Chattisgarh more than 55% population have an MPCE less than Rs.365, in best two MPCE states of Kerala and Punjab only 7% and 4.3% population have the same level of MPCE.

States	Population in Bottom Percentile Classes		Population in Top Percentile Classes	
	MPCE <= Rs 270 (10 percentile)	MPCE <= Rs 365 (30 percentile)	MPCE >= Rs 690 (20 percentile)	MPCE >= Rs 890 (10 percentile)
Orissa	31.1%	57.3%	8.6%	3.7%
Chhattisgarh	24.1%	55%	7.6%	3.3%
Kerala	2.3%	7%	56.6%	37.5%
Punjab	0.5%	4.3%	50.9%	31.9%

At the other end of the spectrum is the top 20 percentile population of the country (with MPCE more than Rs. 690) whom we can designate as the rural 'rich'. In states like Kerala and Punjab more than half of village population was enjoying such an affluent level of living. As against this rural Bihar has got merely 6% 'rich' population while urban Orissa and Chattisgarh there were only 8.6% and 7.6% people in this affluent class.

Fig. 2U: Ogive Analysis-Urban
per 1000 distribution of population over different expenditure class
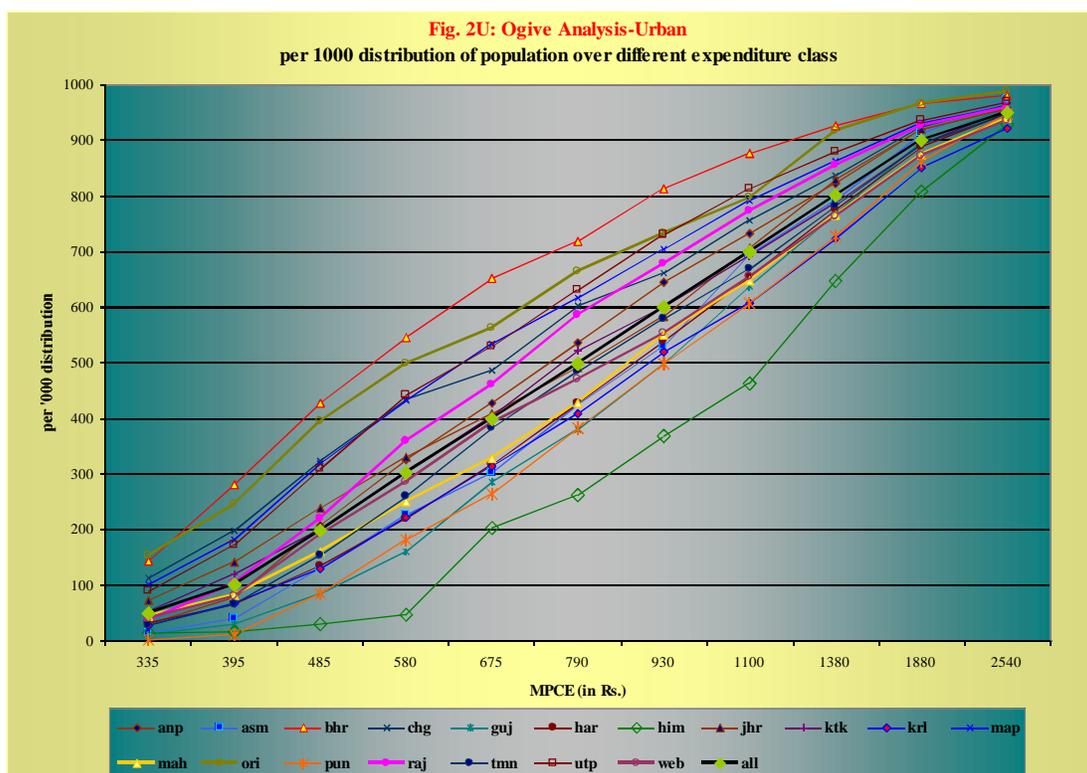
In urban India, the situation is no better either. Bihar and Orissa appear to be the two most impoverished states in this sector also with more than 50% population in the 'poor' category, (the bottom 30 percentile MPCE class of the country with MPCE below Rs. 580). U.P., Chattisgarh & M.P. are the other three states with a substantial 43-44% population in the class. Himachal Pr. features as the state with least proportion of poor people in urban areas (5%).

The share of richest 20% population (MPCE more than Rs. 1380) again varied widely with state from Himachal Pr. having more than 35% population to Bihar with less than 8% in this class. The other better-off states being Punjab and Kerala are with more than 25% urban population in this category.

Population In Poorest And Richest Two States In The All India Percentile Classes (Urban)

States	Population in Bottom Percentile Classes		Population in Top Percentile Classes	
	MPCE <= Rs 395 (10 percentile)	MPCE <= Rs 580 (30 percentile)	MPCE >= Rs 1380 (20 percentile)	MPCE >= Rs 1880 (10 percentile)
Bihar	28.2%	54.6%	7.4%	3.4%
Orissa	24.6%	50.0%	8.3%	3.2%
Punjab	1.3%	18.1%	27.1%	13.6%
Himachal Pr.	1.7%	4.8%	35.3%	19.1%

Thus the observed phenomenon raises great doubt about the efficacy of using country level percentile classes for examining state level inequality or for studying sub state level consumption behaviour. The district level distributions are expected to be far away from the national percentile classes. **Therefore it appears appropriate that state level percentile classes be used for more realistic pattern of concentration for studying inequality at state or sub-state level. The lower and upper limits of the state level percentile classes of expenditure for 2004-05 have been obtained for the twenty major states of the country and are given in table 2 at *Annex-I*.** Also in view of inter-state differences in prices, composition of commodity baskets etc., state wise poverty lines[1] given by Planning Commission would be more useful for obtaining comparable district level poverty estimates within each state.

3. State Level Estimates Of Major Parameters: Here we will have a quick glance over the estimates of major parameters like population, average level of living, poverty and inequality in 2004-05 for the twenty major states of India including the three newly created states of Jharkhand, Chattisgarh and Uttaranchal. Proportion of population in each of the states can be taken as the weighting factor for emphasising the gravity of their position. We have dealt with two separate sets of estimates for the rural and urban parts of the states as there are significant differences in their prevailing prices, patterns of level of living, poverty or inequality.

The proportion of poor in each state has been obtained using Head Count Ratio (HCR) of population living below the state specific poverty lines given separately for the rural and urban sector. Similarly intra-state inequality has been measured by Lorenz ratio (LR-S) using state level MPCE percentile classes. We have also estimated RSE for the state level population and MPCE estimates to take care of the reliability consideration. But finally we would move on to intra-state variability in the average level of living among constituent regions, i.e. districts.

A summary of state level estimates of some of these major parameters is given below. The states are arranged in the order of their LR-S values separately for rural and urban. Hereafter whenever we refer to Lorenz Ratio at state or sub-state level in the subsequent sections, we would talk of LR-S only.

Table 3R: State Level Estimates of Major Parameters (Rural)

State Name	Proportion of Population	RSE of Popln. Est.	Average MPCE	RSE of MPCE Est.	Percent Poor	Lorenz Ratio-S
Assam	3.1	0.88	543	1.36	22.1	0.1964
Bihar	9.1	0.57	417	0.95	42.6	0.2054
Jharkhand	2.8	0.81	425	1.61	46.2	0.2247
Jammu & Kashmir	0.7	0.78	793	1.57	4.3	0.2442
Rajasthan	5.9	0.51	591	1.36	18.3	0.2461
Karnataka	4.7	0.61	508	2.89	20.7	0.2619
Madhya Pradesh	6.3	0.64	439	1.51	36.8	0.2643
Gujarat	4.2	0.81	596	2.03	18.9	0.2696
West Bengal	8.1	0.45	562	2.02	28.4	0.2696
Uttar Pradesh	18.1	0.43	533	1.23	33.3	0.2807
Orissa	4.4	0.54	399	1.68	46.9	0.2816
Uttaranchal	0.9	0.93	647	4.49	40.7	0.2859
Andhra Pradesh	7.4	0.44	586	1.50	10.5	0.2896
Punjab	2.1	0.73	847	1.90	9.0	0.2903
Chhattisgarh	2.5	0.91	425	2.98	40.8	0.2927
Himachal Pradesh	0.8	0.66	798	2.69	10.5	0.3050
Maharashtra	7.5	0.50	568	1.75	29.6	0.3078
Tamil Nadu	4.7	0.62	602	3.36	23.0	0.3163
Haryana	2.2	1.28	863	9.23	13.3	0.3347
Kerala	3.2	0.54	1013	2.30	13.2	0.3748
All India	**100.0**	**0.15**	**559**	**0.54**	**28.3**	

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[1] State wise poverty lines in 2004-05 as given in the press note of Planning Commission released in March'07

From the table we observe that in rural India Assam and Bihar have the lowest inequalities. Rural Assam could strike a good balance with low LR (0.1964) together with moderately high MPCE and low poverty. The low value of LR (0.2054) in Bihar does not convey much in view of its poor average MPCE and high incidence of poverty (42.6%). However it is far more disturbing to note that in the states of Orissa and Chattisgarh, intra state inequality is almost as high as LR at **national level (0.2970)** besides their very low average per capita expenditure and critical poverty scenario. This means that some parts of population in these states are experiencing precarious levels of living.

On the other hand, we find that the two best average MPCE states in rural part i.e. Kerala (Rs.1013) and Haryana (Rs.863) are also the most unequal states with Lorenz ratio of 0.3748 and 0.3347 respectively. The RSEs of both the population estimate and the average MPCE at state level, have been usually low except for the standard error of MPCE for rural Haryana. The level of inequality for most of the states is quite high and calls for more detailed study at sub-state level for a better understanding of the problem. But before that let us have a quick look at the urban scenario.

Table 3U: State Level Estimates of Major Parameters (Urban)

State Name	Proportion of Population	RSE of Popln. Est.	Average MPCE	RSE of MPCE Est.	Percent Poor	Lorenz Ratio-S
Jammu & Kashmir	0.7	2.07	1070	1.81	7.4	0.2465
Gujarat	6.6	3.25	1115	2.85	13.3	0.3059
Assam	0.9	4.03	1058	6.20	3.6	0.3154
Himachal Pradesh	0.2	7.49	1390	9.65	3.2	0.3217
Uttar Pradesh	13.0	1.91	857	4.96	30.1	0.3230
Bihar	2.7	4.34	696	5.76	36.1	0.3289
Orissa	2.0	3.17	757	5.60	44.7	0.3489
Jharkhand	1.6	4.18	985	5.58	20.3	0.3510
Tamil Nadu	8.7	1.40	1080	2.33	22.5	0.3562
Haryana	2.3	2.54	1142	5.15	14.5	0.3603
Karnataka	6.1	1.72	1033	3.28	32.6	0.3638
Uttaranchal	0.8	4.07	978	6.00	36.5	0.3640
Rajasthan	5.0	2.31	964	10.33	32.3	0.3658
Andhra Pradesh	7.5	1.64	1019	3.72	27.4	0.3693
Maharashtra	15.0	1.43	1148	2.41	32.1	0.3723
West Bengal	7.8	1.91	1124	3.10	13.5	0.3786
Madhya Pradesh	5.7	2.00	904	5.62	42.7	0.3921
Punjab	3.0	2.22	1326	10.20	6.3	0.3936
Kerala	2.9	2.05	1291	4.73	20.0	0.4037
Chhattisgarh	1.3	2.96	990	11.28	42.2	0.4308
All India	**100.0**	**0.55**	**1052**	**1.14**	**25.6**	

For almost all the states urban level of inequality is much higher than that in their rural part. **For the country as a whole the value of urban Lorenz Ratio is as high as 0.3730. The average urban MPCE for the country (Rs. 1052) is almost double that of rural India. Only the HCR (25.6%) is marginally less in the urban part.** The RSEs of the estimates, especially those of state level average MPCE are however much higher in urban India leaving scope for discomfort on the reliability aspect.

Although urban J & K has the lowest value of LR, it is urban Gujarat that draws our attention among the major states with low inequality (0.3059), high average MPCE (Rs.1115) and low poverty (13.3%). However, Himachal Pradesh emerges as the new leader in terms of low inequality coupled with best urban MPCE (Rs.1390) and least urban HCR(3.2%).

Again in the urban part, Bihar has got the lowest average MPCE (Rs.696) and Orissa has the highest poverty (44.7%) among states. But the most critical position is that of Chattisgarh which has the highest inequality (0.4308), high poverty (42.2%) and low average MPCE. The condition of its parent state M.P. is no better either. High level of urban inequality is also found in Kerala (0.4307) and Punjab (0.3936) but they have the third (Rs.1291) and second (Rs.1326) highest average per capita expenditure respectively. On the whole, the high inequality in the better-off states as well as in poor states in both rural and urban areas prompt us to pursue the analysis further to sub-state (i.e. district) level and examine how far the assumption of state as a homogeneous unit is tenable in view of the divergence in their poverty, inequality and average expenditure scenario.

4. Levels of Living in Indian Districts: As already indicated NSS 61st round survey (2004-05) enables district level estimation mainly through its stratification scheme. The 61st round survey design was as usual a stratified multi-stage scheme where first stage units (FSU) were the latest census villages in the rural sector and Urban Frame Survey (UFS) blocks in the urban sector. The ultimate stage units (USU) are households in both the sectors. But in this round within each district of a State/UT, two basic strata was formed: (i) rural stratum comprising all rural areas of the district and (ii) urban stratum comprising all the urban areas of the district. However, for towns with population 10 lakhs or more in a district, each of them formed a separate basic stratum and the remaining urban areas of the district considered as another basic stratum.

The estimates of the parameters are usually built up at the stratum level first. Then the state level or country level estimates are constructed by combining them suitably. Thus district level unbiased estimates of population parameters and ratios (MPCE) could be built up in this round with the theoretical support of the sample design.

Here we may note that because of resource constraints in some cases, e.g. Arunachal Pradesh (urban), Delhi (rural) etc., two or more sparsely populated districts have been clubbed together to form a stratum in the NSS survey. Therefore in such cases estimates generated at stratum level are not the true estimates for the actual administrative districts. However, since for the time being we are concentrating on the districts in the twenty major states only, such limitations are not of much relevance here.

RSE estimation: The relative standard error of any estimate of parameter ($\hat{Y}$) or ratio ($\hat{R}$) is calculated at state and district level using the following formula:

$$R\hat{S}E\left(\hat{Y}\right) = \frac{\sqrt{V\hat{a}r\left(\hat{Y}\right)}}{\hat{Y}} \times 100 ; \qquad R\hat{S}E\left(\hat{R}\right) = \frac{\sqrt{M\hat{S}E\left(\hat{R}\right)}}{\hat{R}} \times 100$$

where variance(Var) of $\hat{Y}$ or Mean Square Error (MSE) of estimated ratio $\hat{R}$ is estimated in the usual way.

b) State wise Best & Worst Districts

Although estimates of population, average MPCE, poverty and inequality have been obtained for almost all the districts of each major state separately for rural and urban part, we will first concentrate on the state level summary of best and worst districts within state in terms of average MPCE or poverty (HCR).

Table 4R: Statewise Best and Worst Districts in terms of average MPCE and HCR in Rural India

State	Avrg. MPCE (Rs.)	Best MPCE District	Avrg. MPCE (Rs.)	Worst MPCE District	Avrg. MPCE (Rs.)	Least Poor District	% Poor	Most Poor District	% Poor
Andhra Pr.	586	Warangal	752	Adilabad	400	Warangal	0.9	Adilabad	26.1
Assam	543	Sibsagar	650	Karimganj	444	Dhemaji	0.0	Dhubri	42.4
Bihar	417	Saharsa	586	WestChamparan	320	Madhepura	7.7	West Champaran	76.9
Chhattisgarh	425	Korba	627	Dantewada	218	Kawardha	16.9	Dantewada	88.2
Gujarat	596	Gandhinagar	1012	Dangs	349	Junagadh	0.0	Dangs	88.4
Haryana	863	Gurgaon	1559	Faridabad	634	Kurukshetra	2.4	Faridabad	37.6
Himachal Pr.	798	Lahul & Spiti	1076	Chamba	646	Lahul & Spiti	0.0	Chamba	20.7
J & K	793	Pulwama	1008	Udhampur	542	Pulwama	0.0	Kupwara	13.1
Jharkhand	425	Dhanbad	540	Lohardaga	310	Dhanbad	19.3	Lohardaga	81.6
Karnataka	508	Udupi	966	Raichur	339	Udupi	0.0	Raichur	59.2
Kerala	1013	Tiruvananthpuram	1442	Kannur	656	Idukki	3.4	Kannur	35.4
Madhya Pr.	439	Dewas	749	Dindori	278	Neemuch	0.2	Umaria	76.4
Maharashtra	568	Pune	871	Gadchiroli	352	Sindhudurg	2.3	Gadchiroli	65.0
Orissa	399	Cuttak	578	Nowarangpur	255	Jajpur	4.9	Nowarangpur	80.6
Punjab	847	Fatehgarh Sahib	1136	Muktsar	571	Jalandhar	0.9	Muktsar	28.3
Rajasthan	591	Jhunjjuna	756	Banswara	423	Jaisalmer	3.3	Banswara	50.1
Tamil Nadu	602	Nilgiri	864	Salem	460	Nilgiri	4.0	Thiruvannamalai	43.2
Uttaranchal	533	Nainital	919	Champawat	494	Rudraprayag	8.7	Champawat	72.1
Uttar Pr.	647	Faizabad	917	Chitrakoot	348	G.Buddha Nagar	2.6	Chitrakoot	81.5
West Bengal	562	Hooghly	664	Murshidabad	428	Kochbihar	11.2	Murshidabad	55.9
All India	**559**	**Gurgaon, Haryana**	**1559**	**Dantewada, Chattisgarh**	**218**		**0.0**	Dangs, Gujarat	**88.42**

From the table above we observe the following:

a) While **in rural India** at state level we have seen that the average MPCE of the best state (Kerala) is 2.5 times that of the worst (Orissa), within state divergence in MPCE is no less alarming. In five of the states i.e. Chattisgarh, Gujarat, Karnataka, M.P. and U.P., the ratio of average MPCE for the best and worst district is more than 2.5. In another five states (Maharashtra, Haryana, Orissa, Kerala & Punjab) it is double. The gap in MPCE of best and worst districts becomes narrowest in case of two eastern states, i.e. Assam and West Bengal.

b) Among all the rural districts in these twenty major states of the country, Gurgaon, Haryana (Rs.1559) has the highest level of living while Dantewada, Chattisgarh (Rs. 218) has the lowest, the average MPCE of the former being more than seven times that of the latter. In spite of inter-state price differences, the gap between the best and worst district MPCE is found to be too wide.

c)   In Chattisgarh, Orissa, M.P., Jharkhand and Bihar there are districts many of which have average MPCE around Rs. 300 or less (Rs.10 or less per day per capita). Barring M.P. in all these states even in the best districts the level of living is still poor with average expenditure not more than Rs. 600 per capita per month. This is a matter of grave concern and demand more focussed attention.

d) In contrast, in rich states like Kerala and Haryana the average MPCE in any district is invariably more than Rs. 600. Moreover, there are districts with average MPCE over Rs.1400 - more than 2.5 times the national average (Rs.558).

e)   In terms of rural poverty, the scenario is more intriguing. In states like Assam, Gujarat, Himachal Pr., J&K and Karnataka, in one or more districts there is no poverty. On the other hand, in the states of Bihar, Chattisgarh, Gujarat, Jharkhand, M.P., Orissa and U.P., there are many districts with HCR 75% or more.

f) In Gujarat we find the district Dangs, which is the poorest rural district of the country with 88% poor while Junagadh district in the same state has 'zero poverty'.

g) We find that in Andhra Pradesh even in the poorest rural district of the state, the HCR is much lower than the national average. This is quite contrary to the recent media reports on A.P. farmers and their poor conditions.

In urban India (**Table 4U**) also the intra-state divergence between the districts is of much higher dimension as compared to disparity between the states.

a) While the best state average MPCE (H.P., Rs. 1390) is just about double that of the worst (Bihar, Rs.696), the within state divergences among the districts are glaring. In at least four states, i.e. Haryana, Chattisgarh, Karnataka and Gujarat the average MPCE for the best district is more than four times that of the worst within the state. In four other states (M.P., Maharashtra, U.P. and A.P.) the ratio of best and worst is still more than 3. It is only in Himachal Pr. and J & K , we find the ratio to be less than 2.

b) Considering the twenty major states we find Kurukshetra, Haryana is the best MPCE district (Rs. 2851) followed by Gandhinagar, Gujarat (Rs.2422). At the other extreme is Banka, Bihar with lowest average MPCE of Rs. 355 followed by Raichur, Karnataka (Rs.407). Also, we find here that the best district level average MPCE in the country is eight times that of the worst.

c) In Himachal Pr. even the worst MPCE district of the state has an average expenditure of more than Rs.1000, while in urban Bihar, in none of the districts, average MPCE could reach that expenditure level

d) The urban poverty scenario however appears to be more grim. Most abject poverty we can find in Gajapati, Orissa with more than 90% people below the state poverty line. Quite unexpectedly, we find the second poorest urban district (Raichur, 88.6%) in the state of Karnataka, one of the fast growing states of the country. In four other states, i.e. Bihar, Chattisgarh, Maharashtra and Madhya Pradesh there are districts with head-count ratio more than 75%.

e) At the other extreme are the districts with 'zero' or 'near-zero' HCR in the states of Assam, Haryana, Himachal Pr., J & K and Punjab. Assam and J & K put up the best performance with less than 15% poverty even in the most poor districts of the state.

f) From the discussion above, one thing is quite clear. Not only the assumption of 'state' as a homogeneous unit of study loses its ground, but also looking at the far extremes of best and worst districts within states, one feels tempted to study the estimates of these parameters for all the districts within each of the states.

State	Avrg MPCE (Rs.)	Best MPCE District	Avrg MPCE (Rs.)	Worst MPCE District	Avrg. MPCE (Rs.)	Least Poor District	% Poor	Most Poor District	% Poor
					Table 4U: Statewise Best and Worst Districts in terms of average MPCE and HCR in Urban India				
Andhra Pr.	1019	Vishakhapatnam	1734	Medak	568	Prakasam	15.6	Medak	54.5
Assam	1058	Dibrugarh	1608	North Cachar Hill	656	Morigaon	0.0	Karimganj	14.3
Bihar	696	Saharsa	939	Banka	355	Saharsa	1.4	Banka	88.4
Chhattisgarh	990	Rajnandgaon	1934	Dantewada	418	Surguja	15.7	Dantewada	84.0
Gujarat	1115	Gandhinagar	2422	Kheda	604	Gandhinagar	0.6	Kachchh	52.9
Haryana	1142	Kurukshetra	2851	Sonipat	615	Ambala	0.0	Sonipat	56.3
Himachal Pr.	1390	Mandi	1612	Hamirpur	1020	Shimla	0.0	Hamirpur	27.7
J & K	1070	Jammu	1330	Badgam	844	Doda	0.0	Barmula	11.4
Jharkhand	985	Hazaribagh	1286	Paschim Singhbhum	555	Giridihi	1.9	Paschim Singhbhum	51.3
Karnataka	1033	Dakshin Kannad	1761	Raichur	407	Bangalore Urban	7.9	Raichur	88.6
Kerala	1291	Triruvanan-thapuram	1867	Kannur	824	Triruvana-thapuram	6.0	Kannur	39.4
Madhya Pr.	904	Indore	1648	Shivpuri	479	Shahdol	12.6	Shivpuri	77.4
Maharashtra	1148	Greater Mumbai	1570	Bid	474	Greater Mumbai	11.7	Bid	80.4
Orissa	757	Jajpur	1048	Boudh	490	Rayagada	21.8	Gajapati	91.2
Punjab	1326	Ludhiana	1835	Faridkot	887	Kapurthala	0.2	Muktsar	22.8
Rajasthan	964	Kota	1477	Hanuman Garh	501	Dungarpur	3.0	Hanuman Garh	68.3
Tamil Nadu	1080	Chennai	1596	Ramnathapuram	618	Chennai	8.7	Perambalur	57.3
Uttaranchal	857	Almora	1455	Champawat	706	TehriGarhwal	1.4	Champawat	64.4
Uttar Pr.	978	Agra	1393	Banda	436	Shahjahanpur	3.3	Chaundli	74.5
West Bengal	1124	Calcutta	1520	Birbhum	591	Calcutta	2.3	Puruliya	36.9
All India	**1052**	**Kurukshetra, Haryana**	2851	**Banka, Bihar**	**355**		**0.0**	**Gajapati, Orissa**	**91.2**

c) Estimates for All Districts within a State

In order to get a better understanding of the level of living prevailing in the districts, we have to study the estimates for all the major socio-economic parameters, viz. average MPCE, poverty ratio and inequality, together and not in isolation from one another. To indicate the magnitude of the rural-urban divide at the sub-state (i.e. district) level we have placed the estimates for rural and urban sectors side by side. The proportion of population in the districts within a state indicates their relative strength in the respective part of the state. The no. of sample observations has also been indicated for each district separately for rural and urban parts.

In this paper the discussion would however be restricted to all the districts of only a few states which are of critical interest in terms of extreme high or low levels of either MPCE or poverty or inequality. These states, from different regions of the country, are:

Haryana in the north, having high average expenditure together with high inequality especially in the rural part

Assam from the north east, with low inequality in general and low poverty in the urban sector

Orissa in the east, the most impoverished state of India today, with quite high inequality and high poverty alongwith very low average MPCE in both the sectors.

Kerala in the South, the most prosperous yet the most unequal state of India today as revealed by the LR

Gujarat in the Western part, which has good state level averages, although district wise performances have not been always satisfactory.

Chattisgarh in the middle part of the country which is also a very critical state in terms of either average MPCE or poverty or inequality.

The district level estimates of average MPCE, poverty ratio (HCR) and inequality (LR) are presented along with the district wise proportion of population and no. of samples, for the abovementioned six states in table-5 in Annexure-II. Also given are the RSEs of the MPCE estimates to indicate their robustness. For head-count ratio at district level we have used state specific poverty line separately for rural and urban sectors. In view of their relative closeness with the district level distribution the state level percentile classes have been obtained and used instead of country level classes for calculating Lorenz ratio in the districts.

We would not make any attempt to analyse in detail the pattern of the parameters in each of these districts and rather allow the figures to speak for themselves. Nevertheless, certain phenomena which attract our attention and demand mention are listed below.

1. There are perceptible differences between the average MPCE in rural and urban part of a district. But many a time these are associated with high level of RSE and/or small no. of observations and therefore do not remain conclusive. Similar rural-urban disparity is however observed in the Head Count Ratio as well.

2. Majority of the districts in a state have level of living much below the state average and only a few very high MPCE districts are responsible for pulling up the state level estimates.

3. Both poverty and affluence are often found to be concentrated in certain districts of a state.

4. The no. of sample observations is too low for many of the districts in the urban sector. This is particularly true for Orissa and Cahattisgarh.

5. The RSEs of the district level estimates of MPCE are very high (more than 10%) in a good number of cases. In general these are found to be higher in the urban part

6. Within district inequality in any sector in terms of Lorenz ratio are usually but not always lower than that at state level.

7. In a some of the cases low sample size together with high RSE prohibit us from arriving at specific conclusions based on these district level estimates.

5. Conclusion, Limitations and Scope for Future Development

This paper attempts to cater to the long felt need for generation of district level estimates of major socio-economic parameters to facilitate more focussed socio-economic analysis. **The results obtained strongly indicate the serious limitations of assuming 'state' as a homogeneous socio-economic unit for poverty or inequality analysis.** In fact, state level aggregates may often mislead us and draw away our attention from some imminent areas of concern. We find that even in a state like Gujarat with commendable growth performance in terms of level of living, poverty or inequality, there is a district like Dangs, which is among the most impoverished regions of India today. Such incidences would have escaped our attention had we restricted ourselves to state level analysis only.

Also **sub-state level estimates are found to be very revealing and therefore absolutely necessary for a complete understanding of the level of living prevailing in any part of the country**. The other major observations are mentioned below.

I. The Ogive analysis shows that **MPCE percentile distribution vary so much from state to state that use of the national percentile classes results in highly skewed distribution in a good number of states**. More so, in states with extreme high or low levels of average MPCE. For sub-state level the problem is expected to be aggravated with the district level distributions being farther away from the central one. **This paper tries to overcome the difficulty by obtaining state level percentile classes** (see Annexure-I) **and reclassifying the population independently in different states on the basis of these classes.** But still intercepting curves of concentration can not be avoided for measurement of inequality at the district level. This calls for building up of Generalized Lorenz ratios for measurement of inequality at the district level for better comparability.

II. When we arrive at the district level estimates of average level of living (monthly per capita consumer expenditure), poverty (HCR) and inequality (Lorenz Ratio) etc. we find that **the range of disparity at sub-state level within a state is often more serious than between states differences**. There is wide spatial disparity among Indian districts, both within and across the states.

III. There is adequate evidence of **concentration of affluence or poverty in certain pockets of the country**. So much so that **it gives strong hint of polarization in economic performances across the states as also over districts within the states.**

IV. We also observe that there is intense rural-urban divide not only in the states but also at sub-state level but the pattern is not very predictable in either the rural or in the urban sector. A district with very high (or very low) level of living in the rural sector may not have similar affluence (or impoverishment) in its urban part. In future we would like to test the significance of the rank correlation between rural and urban average MPCE of the districts within each state to comment more on the same.

V. In future surveys the number of sample observations needs to be suitably augmented to arrive at more reliable district level estimates.

From the relative standard error (RSE) of district level estimates given in table 5 we find that in some cases their magnitude is very high and therefore can not be used as reliable basis for policy decisions. One of the main reasons for this is that fewer than the desired number of samples was available for estimation at the district level. Still, using these initial NSS district level estimates and variance estimates one can make effective improvements by employing 'model assisted' as well as 'model independent' procedures. A **generalized regression estimate (greg)** for each of the districts may be one of the simplest ways of improving these initial estimates.

References:

Ahluwalia, Montek S. (2000): "Economic Performance of States in Post-Reform Period," Economic and Political Weekly, May 6.

Bhanumurthy, N.R. and Mitra, A. (2004): "Economic Growth, Poverty and Reforms in Indian States", DEG, Working Paper Series No. E/247/2004.

Deaton, A. and Dreze, J. (2002): "Poverty and Inequality in India: A Re-examination", Economic and Political Weekly, September 3.

Ghosh, B., Marjit, S. and Neogi, C. (1998): "Economic Growth and Regional Divergence in India, 1960 to 1995," Economic and Political Weekly, vol.33, No.26.

Himanshu (2007): "Recent Trends in Poverty and Inequality: Some Preliminary Results", Economic and Political Weekly, February 10.

Krishna, K.L. (2004): "Patterns and Determinants of Economic Growth in Indian States", ICRIER, Discussion Paper No. 144, New Delhi.

Sen, A. and Himanshu (2004): "Poverty and Inequality –I and II, Widening Disparities during the 1990s" Economic and Political Weekly, September 18, 25, 2004.

Sundaram, K. and Tendulkar, S. D. (2003a): "Poverty in India in the 1990s – An Analysis of changes in 15 major states", Economic and Political Weekly, April 5.

Annexure-I

Table 2R: The Lower and Upper Limits of the State Level MPCE Percentile classes for the Rural Sector

State	MPCE Percentile classes in the state (lower and upper limits in Rs.)									Rural		
	0-5%	(5-10)%	(10-20)%	(20-30)%	(30-40)%	(40-50)%	(50-60)%	(60-70)%	(70-80)%	(80-90)%	(90-95)%	(95-100)%
Andhra Pr.	0-249	249-289	289-342	342-389	389-441	441-488	488-546	546-621	621-726	726-921	921-1151	≥1151
Assam	0-291	291-325	325-376	376-420	420-467	467-514	514-559	559-606	606-668	668-769	769-894	≥894
Bihar	0-228	228-251	251-286	286-319	319-345	345-379	379-415	415-458	458-513	513-608	608-729	≥729
Chhattisgarh	0-179	179-215	215-257	257-290	290-320	320-345	345-381	381-423	423-498	498-625	625-771	≥771
Gujrat	0-268	268-304	304-359	359-408	408-455	455-508	508-572	572-644	644-758	758-970	970-1195	≥1195
Haryana	0-328	328-386	386-461	461-536	536-592	592-674	674-757	757-870	870-1020	1020-1291	1291-1889	≥1889
Himachal Pr.	0-338	338-388	388-459	459-521	521-571	571-631	631-714	714-816	816-973	973-1243	1243-1600	≥1600
J & K	0-400	400-457	457-516	516-561	561-607	607-666	666-751	751-861	861-1034	1034-1272	1272-1469	≥1469
Jharkhand	0-222	222-250	250-282	282-314	314-343	343-378	378-412	412-464	464-526	526-640	640-774	≥774
Karnataka	0-257	257-287	287-321	321-357	357-391	391-426	426-464	464-516	516-592	592-747	747-937	≥937
Kerala	0-336	336-398	398-487	487-569	569-656	656-744	744-852	852-1012	1012-1253	1253-1716	1716-2265	≥2265
Madhya Pr.	0-200	200-227	227-265	265-303	303-339	339-377	377-420	420-474	474-551	551-713	713-876	≥876
Maharashtra	0-235	235-266	266-319	319-364	364-409	409-459	459-519	519-594	594-701	701-934	934-1226	≥1226
Orissa	0-171	171-197	197-233	233-265	265-301	301-335	335-377	377-423	423-502	502-666	666-809	≥809
Punjab	0-372	372-420	420-484	484-548	548-612	612-693	693-805	805-910	910-1084	1084-1382	1382-1804	≥1804
Rajasthan	0-290	290-330	330-381	381-429	429-471	471-515	515-558	558-622	622-707	707-881	881-1107	≥1107
Tamilnadu	0-259	259-292	292-340	340-382	382-425	425-469	469-526	526-597	597-699	699-920	920-1181	≥1181
Uttaranchal	0-309	309-340	340-394	394-430	430-474	474-522	522-590	590-667	667-763	763-980	980-1312	≥1312
Uttar Pr.	0-242	242-274	274-318	318-354	354-394	394-437	437-486	486-550	550-648	648-834	834-1069	≥1069
West Bengal	0-267	267-297	297-344	344-389	389-429	429-474	474-528	528-591	591-673	673-841	841-1069	≥1069

44

Table 2U: The Lower and Upper Limits of the State Level MPCE Percentile classes for the Urban Sector

State	MPCE Percentile classes in the state (lower and upper limits in Rs.)									Urban		
	0-5%	(5-10)%	(10-20)%	(20-30)%	(30-40)%	(40-50)%	(50-60)%	(60-70)%	(70-80)%	(80-90)%	(90-95)%	(95-100)%
Andhra Pr.	0-363	363-418	418-481	481-564	564-645	645-748	748-864	864-1032	1032-1280	1280-1728	1728-2314	≥ 2314
Assam	0-410	410-456	456-521	521-668	668-748	748-899	899-974	974-1116	1116-1435	1435-1807	1807-2278	≥ 2278
Bihar	0-269	269-308	308-368	368-402	402-459	459-542	542-643	643-753	753-895	895-1217	1217-1558	≥ 1558
Chhattis-garh	0-286	286-319	319-395	395-471	471-532	532-698	698-787	787-1018	1018-1189	1189-1723	1723-2144	≥ 2144
Gujarat	0-438	438-497	497-609	609-685	685-804	804-933	933-104	1041-1218	1218-1519	1519-1887	1887-2323	≥ 2323
Haryana	0-376	376-438	438-564	564-665	665-757	757-871	871-101	1014-1186	1186-1447	1447-1987	1987-2580	≥ 2580
Himachal Pr.	0-584	584-632	632-668	668-846	846-984	984-1139	1139-1311	1311-1520	1520-1832	1832-2317	2317-2817	≥ 2817
J & K	0-476	476-607	607-670	670-751	751-853	853-949	949-1059	1059-1197	1197-1435	1435-1695	1695-2019	≥ 2019
Jharkhand	0-312	312-363	363-448	448-557	557-662	662-807	807-942	942-1097	1097-1331	1331-1773	1773-2204	≥ 2204
Karnataka	0-331	331-378	378-483	483-573	573-670	670-764	764-933	933-1104	1104-1417	1417-1937	1937-2453	≥ 2453
Kerala	0-368	368-442	442-561	561-664	664-768	768-903	903-1092	1092-1320	1320-1626	1626-2267	2267-3118	≥ 3118
Madhya Pr.	0-286	286-333	333-406	406-471	471-551	551-641	641-759	759-920	920-1130	1130-1552	1552-2244	≥ 2244
Maharash-tra	0-349	349-416	416-528	528-637	637-753	753-863	863-1019	1019-1211	1211-1475	1475-2074	2074-2671	≥ 2671
Orissa	0-238	238-294	294-358	358-426	426-491	491-580	580-725	725-857	857-1106	1106-1354	1354-1664	≥ 1664
Punjab	0-446	446-499	499-604	604-706	706-808	808-932	932-1081	1081-1305	1305-1582	1582-2027	2027-2653	≥ 2653
Rajasthan	0-361	361-395	395-472	472-545	545-612	612-708	708-820	820-965	965-1167	1167-1615	1615-2200	≥ 2200
Tamilnadu	0-372	372-428	428-529	529-606	606-690	690-819	819-954	954-1152	1152-1435	1435-1965	1965-2557	≥ 2557
Uttar-anchal	0-400	400-448	448-505	505-580	580-669	669-794	794-929	929-1034	1034-1244	1244-1559	1559-2063	≥ 2063
Uttar Pr.	0-294	294-345	345-409	409-482	482-552	552-636	636-749	749-899	899-1077	1077-1516	1516-1993	≥ 1993
West Bengal	0-355	355-415	415-493	493-591	591-686	686-833	833-1017	1017-1195	1195-1513	1513-2063	2063-2831	≥ 2831

45

Table 5: Districtwise Population Proportion, MPCE, HCR & LR for Rural & Urban sector Within State

District name	Rural						Urban					
	Popln. Prop.	No. of Samp.	MPCE	RSE_ MPCE	HCR	LR_S	Popln. Prop.	No. of Samp.	MPCE	RSE_ MPCE	HCR	LR_S
Haryana												
Faridabad	6.7	120	634	9.17	37.6	0.291	21.6	160	1042	10.05	7.5	0.281
Bhilwani	7.3	120	670	3.93	18.3	0.264	5.2	40	822	7.06	35.5	0.327
Hisar	7.0	120	702	6.27	15.2	0.221	6.8	80	894	12.37	17.7	0.275
Sirsa	5.2	80	712	4.82	9.4	0.248	5.0	40	1050	7.75	19.5	0.343
Sonipat	6.2	120	718	8.29	24.5	0.312	4.9	40	615	16.10	56.3	0.412
Mahendragarh	4.0	80	719	8.11	8.4	0.209	1.5	40	886	9.76	25.8	0.246
Kaithal	5.4	80	768	8.46	12.4	0.224	2.5	40	1052	17.35	8.3	0.244
Rewari	4.0	80	790	12.19	16.8	0.339	2.0	40	1591	60.31	26.7	0.648
Jhajjar	4.1	80	791	9.95	6.6	0.217	3.2	40	832	5.67	11.1	0.231
Fatehabad	4.2	80	795	13.87	13.2	0.286	2.4	40	958	14.26	26.8	0.357
Karnal	6.1	80	798	12.07	5.9	0.263	4.1	40	1894	8.21	1.8	0.267
Rohtak	3.9	80	803	6.80	6.0	0.204	5.9	40	855	14.63	25.1	0.319
Ambala	5.1	80	836	7.18	3.1	0.218	5.2	40	1156	13.15	0.0	0.234
Panipat	4.2	80	839	14.03	22.7	0.359	4.1	80	1399	25.45	6.5	0.290
Jind	6.8	80	869	3.98	14.6	0.366	4.1	40	1163	23.14	17.3	0.399
Panchkula	1.5	40	950	17.60	4.3	0.261	4.1	40	1328	19.02	5.7	0.363
Yamuna Nagar	4.6	80	1011	23.59	7.6	0.324	8.7	80	1208	9.69	0.6	0.250
Kurukshetra	3.6	80	1039	4.26	2.4	0.253	2.9	40	2851	42.85	5.7	0.416
Gurgaon	10.2	120	1559	39.90	6.2	0.459	5.9	80	1292	17.60	16.8	0.350
Haryana	**100.0**	1680	**863**	**9.23**	**13.3**	**0.330**	**100.0**	1040	**1142**	**5.15**	**14.5**	**0.357**

46

Table 5: Districtwise Population Proportion, MPCE, HCR & LR for Rural & Urban sector Within State											
	Rural						Urban				
District name	Popln. Prop.	No. of Samp.	MPCE	RSE_ MPCE	HCR	LR_S	Popln. Prop.	No. of Samp.	MPCE	RSE_ MPCE	HCR	LR_S
Assam												
Karimganj	4.0	160	444	5.47	40.9	0.159	3.0	40	758	10.17	14.3	0.282
Karbiaglong	3.2	120	448	5.16	26.5	0.121	2.0	40	815	14.70	0.0	0.204
Bongaigaon	3.3	120	448	5.77	33.0	0.182	3.2	40	838	18.30	0.9	0.221
Dhubri	5.9	190	455	5.47	42.4	0.198	4.9	30	701	9.92	4.2	0.199
Kokrajhar	3.0	110	479	6.30	35.7	0.216	1.5	40	854	11.98	3.0	0.240
Cachar	5.0	200	481	6.48	33.5	0.187	7.2	40	748	15.44	0.7	0.212
North Cachar Hills	0.6	40	484	1.94	6.1	0.096	1.7	40	656	5.44	3.1	0.187
Barpeta	6.8	190	492	5.84	39.9	0.212	3.2	40	713	3.57	6.0	0.182
Goalpara	2.7	120	495	7.87	33.9	0.189	1.8	40	808	8.13	6.8	0.242
Hailakandi	1.7	80	512	5.16	7.0	0.117	1.5	20	671	5.24	2.6	0.216
Morigaon	3.5	120	529	10.52	21.5	0.204	2.2	20	1580	20.32	0.0	0.157
Kamrup	6.8	180	531	5.40	22.3	0.206	24.3	110	1272	8.78	2.9	0.269
Golaghat	4.0	120	539	6.04	25.5	0.218	1.5	40	896	9.46	8.1	0.268
Nalbari	4.8	160	542	5.00	15.0	0.156	0.9	20	897	20.97	0.8	0.258
Nowgong	8.1	240	557	5.38	25.3	0.210	7.5	40	787	2.80	9.1	0.224
Dibrugarh	4.9	160	576	8.51	19.2	0.191	9.9	40	1608	26.06	3.9	0.437
Jorhat	3.1	120	593	7.77	27.5	0.240	5.7	40	1184	21.39	3.8	0.310
Sonitpur	7.8	200	601	5.26	3.6	0.148	5.8	40	851	6.82	0.7	0.307
Darrang	6.7	200	620	2.69	0.1	0.094	2.5	40	925	10.51	0.0	0.155
Tinsukia	4.2	160	628	7.29	14.4	0.203	6.0	40	1209	10.49	2.6	0.254
Lakhimpur	3.9	120	636	3.04	1.4	0.116	1.2	40	832	3.60	1.2	0.201
Dhemaji	2.3	80	640	8.09	0.0	0.143	0.6	20	758	8.99	0.0	0.272
Sibsagar	3.8	160	650	6.85	20.3	0.258	1.9	40	1167	10.16	7.1	0.231
Karimganj	4.0	160	444	5.47	40.9	0.159	3.0	40	758	10.17	14.3	0.282
Karbiaglong	3.2	120	448	5.16	26.5	0.121	2.0	40	815	14.70	0.0	0.204
Bongaigaon	3.3	120	448	5.77	33.0	0.182	3.2	40	838	18.30	0.9	0.221
Dhubri	5.9	190	455	5.47	42.4	0.198	4.9	30	701	9.92	4.2	0.199
Kokrajhar	3.0	110	479	6.30	35.7	0.216	1.5	40	854	11.98	3.0	0.240
Cachar	5.0	200	481	6.48	33.5	0.187	7.2	40	748	15.44	0.7	0.212
North Cachar Hills	0.6	40	484	1.94	6.1	0.096	1.7	40	656	5.44	3.1	0.187
Barpeta	6.8	190	492	5.84	39.9	0.212	3.2	40	713	3.57	6.0	0.182
Goalpara	2.7	120	495	7.87	33.9	0.189	1.8	40	808	8.13	6.8	0.242
Hailakandi	1.7	80	512	5.16	7.0	0.117	1.5	20	671	5.24	2.6	0.216
Morigaon	3.5	120	529	10.52	21.5	0.204	2.2	20	1580	20.32	0.0	0.157
Kamrup	6.8	180	531	5.40	22.3	0.206	24.3	110	1272	8.78	2.9	0.269
Golaghat	4.0	120	539	6.04	25.5	0.218	1.5	40	896	9.46	8.1	0.268
Nalbari	4.8	160	542	5.00	15.0	0.156	0.9	20	897	20.97	0.8	0.258
Nowgong	8.1	240	557	5.38	25.3	0.210	7.5	40	787	2.80	9.1	0.224
Dibrugarh	4.9	160	576	8.51	19.2	0.191	9.9	40	1608	26.06	3.9	0.437
Jorhat	3.1	120	593	7.77	27.5	0.240	5.7	40	1184	21.39	3.8	0.310
Sonitpur	7.8	200	601	5.26	3.6	0.148	5.8	40	851	6.82	0.7	0.307
Darrang	6.7	200	620	2.69	0.1	0.094	2.5	40	925	10.51	0.0	0.155
Tinsukia	4.2	160	628	7.29	14.4	0.203	6.0	40	1209	10.49	2.6	0.254
Lakhimpur	3.9	120	636	3.04	1.4	0.116	1.2	40	832	3.60	1.2	0.201
Dhemaji	2.3	80	640	8.09	0.0	0.143	0.6	20	758	8.99	0.0	0.272
Sibsagar	3.8	160	650	6.85	20.3	0.258	1.9	40	1167	10.16	7.1	0.231
Assam	**100.0**	**3350**	**543**	**1.36**	**22.1**	**0.192**	**100.0**	**900**	**1058**	**6.20**	**3.6**	**0.312**

Table 5: Districtwise Population Proportion, MPCE, HCR & LR for Rural & Urban sector Within State

Orissa					Rural						Urban
District name	Popln. Prop.	No. of Samp.	MPCE	RSE_ MPCE	HCR	LR_S	Popln. Prop.	No. of Samp.	MPCE	RSE_ MPCE	HCR	LR_S
Nowarangpur	3.1	120	255	7.73	80.6	0.220	0.8	40	563	29.09	87.7	0.432
Sambalpur	2.3	80	275	6.41	79.5	0.231	4.6	39	652	4.89	46.9	0.322
Koraput	2.7	120	277	13.34	74.2	0.278	2.6	40	971	55.53	61.0	0.526
Deogarh	0.9	40	285	7.25	73.4	0.231	0.3	20	697	4.24	35.3	0.231
Phulbani	1.9	80	295	17.45	76.6	0.271	1.0	20	784	50.61	39.0	0.421
Boudh	1.1	40	303	9.70	70.5	0.188	0.5	20	490	0.33	85.6	0.309
Kalahandi	4.0	160	304	6.17	70.5	0.223	1.9	40	741	40.42	60.3	0.562
Malkangiri	1.5	80	307	22.01	67.9	0.335	0.6	20	593	21.35	70.8	0.357
Rayagada	2.4	80	307	11.30	67.1	0.322	1.9	40	918	15.97	21.8	0.278
Sundargarh	3.6	160	308	7.22	69.9	0.224	13.0	80	768	8.83	28.7	0.297
Nuapara	1.8	80	315	9.96	70.1	0.228	0.7	20	527	30.24	62.3	0.234
Bolangir	4.0	160	341	6.56	66.3	0.247	2.2	40	704	15.46	48.3	0.312
Gajapati	1.5	78	347	16.03	61.4	0.324	1.1	20	503	40.63	91.2	0.268
Sonepur	1.5	80	350	10.29	51.3	0.233	0.7	20	529	15.06	63.8	0.293
Baragarh	4.2	159	351	5.95	61.7	0.216	1.2	40	891	33.29	44.7	0.427
Dhenkanal	3.0	119	356	11.27	57.1	0.219	2.3	40	650	11.87	54.5	0.274
Angul	3.2	120	358	6.27	53.0	0.199	3.9	39	647	23.63	49.6	0.303
Nayagarh	2.5	120	364	7.06	47.0	0.206	1.0	20	661	10.67	35.3	0.167
Kendrapara	3.8	160	404	3.17	31.5	0.193	1.2	40	517	7.11	69.4	0.276
Jagatsinghpura	2.9	120	412	7.92	37.3	0.224	1.3	40	762	14.70	41.6	0.284
Puri	4.4	160	417	5.82	27.0	0.193	4.9	40	616	18.69	51.3	0.242
Mayurbhanj	6.6	200	428	5.61	52.5	0.324	3.3	40	915	17.45	30.4	0.346
Keonjhar	4.4	160	430	8.98	46.1	0.305	4.8	40	648	4.65	58.5	0.303
Ganjam	7.9	240	435	4.96	33.6	0.221	5.6	80	758	15.20	45.3	0.313
Jharsuguda	1.2	40	441	39.52	58.7	0.418	3.9	39	756	33.44	57.5	0.394
Khurda	3.3	160	470	7.54	27.8	0.237	13.8	80	809	23.94	50.2	0.397
Baleshwar	5.9	200	491	5.30	28.3	0.280	4.4	40	620	13.72	67.0	0.344
Jajpur	4.8	200	513	5.20	4.9	0.175	1.1	40	1048	8.33	25.2	0.297
Bhadrak	4.1	160	534	8.65	22.9	0.288	3.5	40	993	27.44	27.3	0.317
Cuttak	5.3	160	578	10.58	14.0	0.281	11.9	70	832	17.07	25.9	0.268
Orissa	**100.0**	**3836**	**399**	**1.68**	**46.9**	**0.282**	**100.0**	**1187**	**757**	**5.60**	**44.7**	**0.349**

Kerala					Rural						Urban
District name	Popln. Prop.	No. of Samp.	MPCE	RSE_ MPCE	HCR	LR_S	Popln. Prop.	No. of Samp.	MPCE	RSE_ MPCE	HCR	LR_S
Kannur	4.7	120	656	8.21	35.4	0.332	9.1	280	824	4.65	39.4	0.334
Kozhikode	7.5	220	715	6.53	25.3	0.311	13.0	240	918	9.07	36.2	0.360
Kasargod	4.1	150	725	10.77	22.6	0.307	2.2	80	874	9.61	34.2	0.315
Wayanand	3.3	120	790	7.81	22.2	0.340	0.3	40	1153	19.69	10.6	0.362
Palakkad	8.2	320	868	4.77	11.2	0.311	5.6	80	1762	43.85	20.5	0.544
Malapuram	14.1	470	901	8.74	19.3	0.398	5.4	80	938	20.10	31.6	0.398
Kollam	8.9	320	1014	4.95	7.0	0.318	5.7	120	1270	7.75	12.2	0.308
Ernakulam	8.2	200	1018	6.27	12.5	0.361	21.9	280	1419	6.83	16.3	0.392
Trichur	9.3	280	1049	6.82	13.1	0.386	9.7	200	1112	6.09	15.3	0.318
Idukki	4.5	160	1156	6.35	3.4	0.335	0.5	40	1557	10.96	14.2	0.327
Pathanamthitta	4.7	160	1165	8.19	5.2	0.356	2.2	30	1243	1.49	6.1	0.278
Kottayam	7.3	270	1218	7.21	6.9	0.352	3.4	80	1774	11.91	6.0	0.354
Alappuzm	6.4	210	1259	15.08	4.4	0.443	8.0	160	1200	10.37	14.1	0.388
Triruvananth puram	8.8	300	1442	6.12	3.7	0.331	12.9	240	1867	10.59	6.0	0.377
Kerala	**100.0**	**3300**	**1013**	**2.30**	**13.2**	**0.371**	**100.0**	**1950**	**1291**	**4.73**	**20.0**	**0.392**

Table 5: Districtwise Population Proportion, MPCE, HCR & LR for Rural & Urban sector Within State											
Gujarat			**Rural**						**Urban**		
District name	**Popln. Prop.**	**No. of Samp.**	**MPCE**	**RSE_ MPCE**	**HCR**	**LR_S**	**Popln. Prop.**	**No. of Samp.**	**MPCE**	**RSE_ MPCE**	**HCR**	**LR_S**
Dangs	0.7	40	349	12.32	88.4	0.385						
Dohad	5.4	120	416	6.61	41.4	0.230	1.5	40	714	15.23	33.8	0.268
Patan	3.3	80	424	8.44	42.4	0.217	0.9	40	805	6.70	22.8	0.210
Kheda	5.0	120	446	6.33	42.4	0.198	1.6	40	604	9.75	50.8	0.247
Bans Kantha	7.4	120	448	7.93	26.0	0.188	1.1	40	893	5.51	5.2	0.187
Godhara (PanchMahal)	5.3	120	489	13.54	38.3	0.265	2.2	40	861	19.74	25.2	0.263
Sabar Kantha	6.1	120	497	6.04	20.2	0.190	0.6	40	770	2.98	20.5	0.238
Mahesana	4.2	120	516	7.02	27.3	0.233	3.4	40	804	14.72	26.3	0.220
Anand	4.2	80	517	7.63	13.6	0.205	2.4	40	692	4.06	43.6	0.202
Kachchh	3.9	80	520	7.34	20.0	0.214	1.2	30	812	23.12	52.9	0.333
Surendranagar	3.6	80	530	12.96	20.5	0.231	1.8	40	758	20.14	26.4	0.224
Vadodara	6.4	120	602	4.40	5.6	0.214	11.0	190	1519	6.98	8.1	0.329
Narmada	1.4	40	624	18.16	24.5	0.298	0.1	40	1030	25.97	18.7	0.312
Bhavnagar	4.7	120	632	4.98	1.2	0.159	5.4	111	927	6.50	18.6	0.251
Bharuch	3.1	80	676	11.21	17.1	0.328	1.0	40	1144	11.31	13.1	0.248
Jamnagar	2.3	80	690	9.78	0.0	0.163	2.4	80	756	2.26	11.9	0.144
Surat	5.7	120	693	8.64	23.1	0.222	17.4	318	1121	7.52	7.6	0.244
Porbandar	0.6	40	709	12.78	0.0	0.149	1.1	40	712	4.57	17.8	0.160
Rajkot	4.6	120	715	2.92	10.4	0.211	10.5	160	1058	6.58	8.6	0.237
Amreli	3.1	80	719	5.40	0.5	0.213	1.8	40	716	13.41	12.6	0.192
Ahmedabad	4.5	80	726	6.99	11.3	0.266	22.3	349	1203	4.97	11.2	0.302
Valsad	3.0	80	745	10.04	3.4	0.207	4.2	40	1307	13.08	2.1	0.211
Junagadh	5.5	120	749	9.56	0.0	0.262	2.5	80	890	8.40	13.4	0.230
Navasari	2.9	80	793	13.44	6.5	0.262	1.6	40	1036	13.06	3.1	0.235
Gandhinagar	3.0	80	1012	17.20	5.2	0.271	2.2	37	2422	20.53	0.6	0.339
Gujarat	**100.0**	**2320**	**596**	**2.03**	**18.9**	**0.262**	**100.0**	**1955**	**1115**	**2.85**	**13.3**	**0.307**

Chhattisgarh			**Rural**						**Urban**		
District name	**Popln. Prop.**	**No. of Samp.**	**MPCE**	**RSE_ MPCE**	**HCR**	**LR_S**	**Popln. Prop.**	**No. of Samp.**	**MPCE**	**RSE_ MPCE**	**HCR**	**LR_S**
Dantewada	4.0	80	218	12.16	88.2	0.352	1.2	39	418	13.34	84.0	0.538
Bastar	6.5	160	316	16.98	80.6	0.227	4.7	40	845	42.64	57.1	0.257
Rajnandgaon	6.1	120	322	2.62	58.6	0.169	5.8	40	1934	60.64	36.3	0.524
Surguja	10.1	200	334	3.67	49.7	0.160	3.2	40	965	13.61	15.7	0.208
Kanker	3.7	80	358	8.92	53.1	0.188	1.1	40	629	18.57	57.0	0.371
Jashpur	4.0	80	373	7.31	35.0	0.154	1.3	40	897	19.12	33.8	0.263
Koriya	2.4	40	384	14.37	49.7	0.334	1.7	40	1036	29.88	46.8	0.448
Durg	9.4	200	414	5.25	35.5	0.239	20.2	80	1310	32.52	35.6	0.484
Raigarh	6.3	120	431	5.53	23.6	0.179	3.4	40	654	12.53	61.8	0.291
Bilaspur	10.5	200	434	6.37	34.8	0.254	20.7	80	802	2.95	42.5	0.332
Dhamtari	3.2	80	451	15.00	38.5	0.264	3.2	40	613	4.58	70.8	0.259
Kawardha	3.6	80	465	10.10	16.9	0.256	1.4	40	699	16.49	39.6	0.269
Janjgir-Champa	7.4	157	486	8.74	29.8	0.286	4.3	40	638	5.83	50.4	0.262
Raipur	14.3	240	520	8.72	31.2	0.342	19.9	80	835	11.92	41.1	0.372
Mahasamund	4.9	80	602	24.32	21.4	0.359	2.5	40	1057	9.72	39.9	0.465
Korba	3.6	80	627	20.00	22.7	0.382	5.6	80	1179	17.32	32.8	0.363
Chhattisgarh	**100.0**	**1997**	**425**	**2.98**	**40.8**	**0.277**	**100.0**	**799**	**990**	**11.28**	**42.2**	**0.429**

External Validation of NSS Consumer Expenditure Survey

Siladitya Choudhury & S. Mukherjee[*]

Introduction : A statement on reliability of its results should always follow the complex socio-economic surveys like the ones undertaken by National Sample Survey. The NSS surveys are Multi-subjects and follow a multistage design. The reliability measures therefore, should be devised taking into consideration its complexity. There could be various measures of reliability of survey data such as measurement of relative standard error- to study the sampling fluctuations, various heuristic reliability measures- to check on non-sampling errors etc. Permissible limits of such measures indicate the degree of reliability of any survey results. The survey results could finally pass the test of reliability if and only if, its results are realistic. The results of socio-economic survey should be comparable with similar data generated from independent surveys or census results. Thus an **External Validation** of the survey results is perhaps the most important reliability measure.

This paper is a stepping-stone to set rules for validation of socio-economic survey estimates from independent data sources. The External Validation could be either from two completely independent sources of data or similar data generated from different subject-schedule canvassed in the same survey. A comparison with different subject-schedules canvassed in the same survey not only cross-validates the results but also can be used as a yardstick of proper implementation of the sampling design.

In this paper the consumer expenditure survey (CES) data of NSS 61st Round (July 2004 to June 2005) has been taken up for External Validation. The CES among many other things collects data on household size, age, sex and the educational status of members of the households, the quantity and value of different items consumed by the household in the reference month. These data in turn generate estimated number of households, population, estimated price for different items consumed, estimated literacy rate and various other rates and ratios. These estimates of population parameters, prices of the items consumed and various rates and ratios, especially the data relate to educational status are used for External validation. It is important to note that the other subject-schedule canvassed in NSS 61st was Employment and Unemployment survey (EUS). The EUS *inter alia,* collected more detail information on educational status for different class of population and for different age groups.

The population parameters like total population, sex ratio and age specific distribution of population have been validated against projected census population. The derived price of the items consumed, estimated from CES have been crosschecked with the Rural Retail Price (RPC) data for similar periods. The information on education status of Indian households obtained from CES has been cross-validated with similar but more detailed information obtained from EUS of 61st round of NSS.

The paper has 5 sections. In section II a cross-validation with the projected census figure has been carried out. In section III, the derived price of selected commodity consumed by Indian households have been statistically tested against similar commodities of RPC collected through an independent survey. In section IV the two different subject schedules namely CES and EUS surveyed in 61st round has been cross validated against each other using Kolmogrov-Smirnov (K-S) non-parametric technique.

Section-II: External Validation of estimated population with Census data: The CES of 61st round of NSS collected data on various aspects of household consumption through household enquiries. Household size was therefore, available from the CES schedule. Household size was also collected for each household while listing of households is done in sample FSU/ selected hamlet-group / sub-block in listing schedule. Although rates and ratios generated from CES were found to be reliable by the users, the same cannot be said about the aggregates. Usually this estimated population is found to be smaller compared to census or projected population for the corresponding survey period. In the next few paragraphs we will work out how the different population parameters compare with the corresponding data obtained from census operation.

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[*] The authors are working as Directors in NSSO. The views expressed in this paper are those of the authors and not of the institution to which they belong.

Historically NSS estimates of population from CES were always lower than the census or projected population. It was found that for all the quinquennial rounds starting from NSS 27th round (1972-73) estimates were always on the lower side. No matter whether it was a quinquennial or annual round of schedule 1.0, population estimates at all-India level never surpassed the census/projected population. State level estimates had shown both upward and downward occurrences although mostly on the lower side. Given below are the population estimates for several past rounds.

Table-1: Population Estimates in NSS rounds

round	period	estimated pop (000)			Census
		rural	urban	total	Population(000)
47	July '91-Dec '91	588622	186342	774964	**Census 1991**
48	Jan '92-Dec '92	608923	200892	809815	838015
49	Jan '93-June '93	582899	192737	775636	
50	July '93-June '94	584889	192737	777626	
51	July '94-June '95	598194	224636	822830	
52	July '95-June '96	594449	204776	799225	
53	Jan '97-Dec '97	599427	205853	805280	
54	Jan '98-June '98	682373	218600	900973	
55	July '99-June '00	691784	232393	924177	
56	July '00-June '01	689988	231772	921760	
57	July '01-June '02	769194	236810	1006004	**Census 2001**
58	July '02-Dec '02	733920	259114	993034	1025891
59	Jan '03-Dec '03	745037	250756	995793	
60	Jan '04-June '04	728605	246594	975199	
61	July '04-June '05	733103	248505	981608	

It may be noticed that besides being on the lower side, the estimates have not necessarily increased over the immediately preceding round. However, sampling fluctuations may have contributed to lower or upper value of estimates in short run.

Based on the population estimates of schedule 1.0 of 61st round (July 2004 – June 2005), comparison was made with census population and projected population[1] for January 2005. For comparability, census population of the area not covered in NSS was adjusted.

Table-2: Comparison with projected population

Rural+Urban	**1082307**	**981608**	**-10**
All- India population (000)			**% difference to Projected pop**
sector	**projected**	**NSS 61st round**	
Rural	**769610**	**733103**	**-6**
Urban	**312697**	**248505**	**-21**

Table-3: Comparison with census 2001 population

Rural+Urban	**1025891**	**981608**	**-4.3**
All- India population (000)			**% difference to census pop**
sector	**census**	**NSS 61st round**	
Rural	**739842**	**733103**	**-0.9**
Urban	**286049**	**248505**	**-13.1**

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[1] Projection figures are based on the document "Population Projections for India and States, 2001-2006", Report of the Technical Group on Population Projection constituted by National Commission on Population (May 2006) and published by the Office of the Registrar General of India. However, since the figures for January 2005 are not available in the document, average of projected figures for Oct '04 and Mar '05 has been taken.

At **all-India** level, NSS estimate is found to be lower by 10% to the projected population of January 2005 and lower by 4% even to the census 2001 population.

Rural population was underestimated by 6% at all-India level compared to projected rural population. There was no underestimation for Haryana, Tripura, Chattisgarh, Dadra & Nagar Haveli and Tamilnadu. The estimated all-India population was lower by about 1% from census 2001 population.

Urban population estimate was smaller by 21% compared to all-India level projected urban population. Further, all the State/UT estimates, except Lakshadweep, were lower than projected population. The estimate was found to be lower by 13% from census 2001 population and lower for almost all the States/UTs.

The sample design followed in NSS rounds are based on sampling schemes and practices, which have sound theoretical basis. The estimators used are theoretically known to be unbiased estimators. However, the sample designs of NSS are primarily meant for socio-economic indicators like MPCE, Employment-unemployment ratios, GVA per worker, etc. as well as distributions of population over different classes and categories. The design is not oriented towards providing a very good estimate of total population. Therefore, estimates of total population are not expected to be too robust, especially for smaller States/UTs. Even then, RSEs of the population estimates are quite low for all-India and reasonably low for most of the States/UTs in the rural sector. The pattern of RSEs does not reveal any inconsistency.

State-wise RSEs of population estimates based on NSS 61st round are given in Statement-1. All-India RSEs of population estimates are as below.

Table-4: 61st round

RSEs of population estimates

sector	% RSE	Sample FSUs	Sample households
Rural	0.15	7944	79298
Urban	0.55	4558	45346

Census enumerates three types of households, viz., *normal* households, *institutional* households and *houseless* households. Institutional households may be residential educational institutions like school, college, medical institutions like hospitals, sanatorium, religious institutions like ashrams and social security institutions like orphanages, elderly homes, punitive institutions like jails, juvenile homes etc. Houseless households are those who do not live in a building or census house but live in the open or road sides, pavements, pipes, fly over etc. The households that are neither institutional nor houseless are normal households. As per census 2001, there are 460595 institutional households having a population of 7800984. The number of houseless households is 447552 having a population of 1943476.

NSS household concept in case of normal households is similar to that of census, being consisted of normally residing members of households including temporary stay-aways but excluding guests and temporary stay-ins. But there is a difference in case of institutional households. Some of the houseless households and institutional households are outside the coverage of NSS. In case of other residential institutions, NSS treats institutional household as comprising of single member households i.e. each residing member is considered as a household.

Therefore, number of households in NSS estimates happens to be on the upper side compared to census. Further, the estimated household size tends to be lower than the household size provided by census. This is true even after adjustments for institutional households are done.

Table-5: No. of households in census and NSS for 61st

Category of households	Households ('000)	Population ('000)	household size
Census 2001			
All hhd	193580	1028610	5.3
Adjusted hhd: Normal + institutional hhds (treating each member of institutional hhd as a single member household)	200456	1026667	5.1
61st Round of NSS	207114	981608	4.7

The number of households in NSS survey compares with Adjusted household from the census. Estimated number of households of NSS appears to be consistent with the census households when adjusted for institutional households.

Percent distribution of households in census and CES of 61st of NSS by household sizes revealed that the household size in former was higher than that of CES. The following table shows the broad observation.

Table-6: Percentage dist. of households by size in census and NSS 61st

	Population ('000)	Households ('000)	household size	% distribution of households by hhd sizes				
				1	2	3-4	5-6	7+
Census 2001 *								
Total	1026667	200456	5.1	7.6	7.9	29.7	30.9	23.8
61st round								
Total	981608	207114	4.7	6.5	9.7	34.1	31.4	18.1

* Normal + Institutional households (Considering each Institutional household as a number of single member households in conformity with NSS practices)

It is evident that percentage of large sized households (7+) is consistently lower in NSS compared to census. Perhaps larger sized households are being missed or under-listing of household members is happening during survey operations.

Comparison of distribution of population by sector x age-group x sex of census2001 and CES of 61st round does not really indicate wide divergence between CES and Census. A close look at the percentage distribution shows that the CES accounted for more percentage of population in the age group 20-59. the census on the other hand found the lower age group (0-19) bulging.

Table-7: Census 2001 Vs. NSS 61st round

Comparison of percentage distribution of population by Sector x Age-group x Sex

Age Group	persons		Male		female		Sex ratio	
	census	est61	census	est61	Census	est61	Census	est61
0-4	10.7	10.3	10.7	10.3	10.7	10.2	934	928
5-9	12.5	11.7	12.5	12.1	12.4	11.3	923	877
10-14	12.1	11.8	12.3	12.2	11.9	11.4	902	883
15-19	9.7	9.7	10.1	10.3	9.3	9.2	858	839
20-24	8.7	8.9	8.7	8.6	8.8	9.2	938	1013
25-29	8.1	7.9	7.8	7.7	8.4	8.2	1007	1006
30-34	7.2	7.3	7.0	6.9	7.4	7.8	988	1062
35-39	6.9	7.1	6.8	6.9	7.0	7.2	958	994
40-44	5.4	5.8	5.6	5.8	5.2	5.9	865	957
45-49	4.6	5.1	4.7	5.3	4.5	5.0	906	882
50-54	3.6	3.9	3.7	3.9	3.4	3.9	843	928
55-59	2.7	3.2	2.6	3.1	2.8	3.3	1036	993
60 +	7.7	7.3	7.4	7.0	8.1	7.6	1021	1022
All ages	100.0	100.0	100.0	100.0	100.0	100.0		

Differences between census and CES of 61st round could be accounted for by taking into consideration of the difference in geographical coverage and coverage of population. Census generally covers the entire geographical area of the country. However, in NSS some areas are usually not covered because of the operational difficulties. These are (i) Leh (Ladakh) and Kargil districts of Jammu & Kashmir, (ii) Villages in Nagaland which are situated beyond 5 Kms of bus route and (iii) Villages in Andaman & Nicober Islands that are inaccessible throughout the year. However, the area excluded has a contribution of about 0.25% of total population.

NSS also excludes the following categories of persons from its coverage:

(i) Persons residing in barracks of military and para-military forces.
(ii) Orphanages, rescue homes, ashrams, vagrant houses
(iii) Floating population having no normal residences
(iv) Convicted prisoners undergoing sentence.

The magnitude of this category of population is difficult to estimate but to a small extent, they contribute to underestimation.

Section-III: External validation of price of the selected consumed items by Indian households, derived from the quantity consumed and their value, with the Rural Retail Price data.

A section of the Indian households similar to the ones who visit markets from where the Rural Retail Price (RPC) data are collected, have been taken up for this study. Before analyzing the test results it is important that the mechanism of collection of RPC data and the type of households of CES visits those markets are discussed in brief.

The present set of rural retail prices data are collected through schedule 3.01from a fixed set of 603 village markets where rural agricultural labourers visit. The commodity basket consists of 260 items and the data are collected from 21 major states. The sample villages are selected circular systematically with equal probability. 600 villages were selected in the form of 3 batches (each batch with 200 villages) having the batch nos. 1, 2 & 3 number of villages selected in some of the major states are given below.

Table-8: Allocation of villages for RPC

Srl.no.	S t a t e	Allocation of 603 selected villages.
1.	Andhra Pradesh	54
2.	Assam	27
4.	Gujarat	30
5.	Haryana	12
6.	Karnataka	36
7.	Kerala	21
8.	Maharashtra	54
9.	Orissa	33
10.	Pubjab	15
11.	Rajasthan	21
12.	Tamil Nadu	33
13.	West Bengal	39

The 3.01 schedule is filled once a month with data collected from the relevant markets. This enquiry is conducted on the first market day of every month in place where the selected market is a non-daily market (hat), Part of the data may be collected from shops outside the selected markets on the same day or the day following. However, most of the data are reported from sources other than the non-daily market, e.g. shops of markets which are normally kept open on all days of the week. The enquiry is conducted on the first Saturday of each month. Since the market day of a non-daily market is generally a fixed day of the week, the first market day of the month will also be a fixed day of the week but is not likely to fail on the same date of every month. Accordingly, the data are collected either on the first market day of the month (in the case of non-daily market) or on the first Saturday of the month (in the case of a daily market). This data is taken as the price prevailing in the village on the date of the survey.

The section of households of CES used for this study is **those who are self employed in agriculture, agricultural labour and other labour**. If we go by the definition followed in CES, the household type codes are based on the means of livelihood of a household. This is decided on the basis of the sources of the household's income during the 365 days preceding the date of survey. For this purpose, only the household's income (net income and not gross income) from economic activities will be considered; but the incomes of servants and paying guests will not be taken into account.

Procedure for assigning household type[2] codes in rural sector: For a rural household, if a single source contributes 50% or more of the household's income from economic activities during the last 365 days, it will be assigned the type code (1, 2, 3, 4 or 9) corresponding to that source.

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[2] self-employed in non-agriculture-1, agricultural labour –2, other labour-3, self-employed in agriculture- 4 others- 9

For a household to be classified as 'agricultural labour' or 'self-employed in agriculture' (code 2 or 4) its income from that source must be 50% or more of its total income. If there is no such source yielding 50% or more of the household's total income, it will be given code 1, 3 or 9 according to the following procedure.

To be classified as self-employed in non-agriculture (code 1), the household's income from that source must be greater than its income from rural labour (all wage-paid manual labour) as well as that from all other economic activities put together (a three-way division is to be considered here).

A household not getting code 1, 2 or 4 will be classified as other labour (code 3) if its income from rural labour (all wage-paid manual labour) is greater than that from self-employment as well as that from other economic activities (again a three-way division). All other households will get type code 9.

Thus from CES data, due to difficulty in finding the agriculture labour household all the household engaged in agricultural activity are considered.

Price of any commodity is subjected to fluctuations, mainly due to its quality and due to seasonal effects. Any comparison of price of commodities appeared in CES with RPC must consider these essential causes of variations. Formally, the price of ith commodity in the market (RPC), say y_i, can compare with the price of same commodity consumed by the households, say x_i, through the following equation

$$y_i = x_i + \textbf{\textit{function of}}(set\ of\ dummy\ variables) + e_i \quad i = 1,2,\ldots\ldots.$$

The set of dummy variables may be the quality difference of the commodity sold (RPC) and commodity consumed(CES) , the seasonality factors, bargaining factor, under reporting by the consumer household in CES. All these points have been kept in mind while validating CES against RPC. A set of 65 commodities has been taken up for validation study. These commodities are, more or less, matching with the commodities consumed by Indian households covered in CES. Most of the items are assumed to be more or less quality invariant. However, there are some items in the list of items given below which are highly quality sensitive but exactly matching with the nomenclature consumed by households in CES eg. mango, readymade tea, readymade coffee etc. Commodities taken up for this study have been given in the following table.

Table-9: Item description

Item	Description	Item	Description	Item	Description
022	Chira (Flattened rice)	069	Ghee (buffalo)	108	Cauliflower
023	Muri (Puffed rice)	070	Ghee (cow)	109	Cabbage
024	Maida	071	Ghee mixed (Cow & buffalo)	110	Bitter gourd
026	Suji	072	Curd	112	Banana
029	Arhar (tur) dal	076	Chillies green	114	Coconut
032	Masur dal (Split washed)	081	Garlic	115	Mango
036	Moong dal Washed	082	Ginger	116	Lemon
039	Urd dal (Washed)	087	Potato	117	Guava
040	Khesari dal	088	Sweet potato	118	Papaya (ripe)
041	Pea dal	089	Radish	119	Pine apple
042	Soyabean	090	Onion fresh	120	Sugar
046	Groundnut oil (Loose)	091	Arum	122	Gur
048	Mustard oil (Loose)	092	Carrot	123	Tea (Readymade)
049	Coconut oil	093	Turnip	124	Coffee (Readymade)
055	Vanaspati	099	Tomato	125	Tea leaf (Loose)
056	Meat (goat)	100	Cucumber	126	Tea leaf (Packet)
059	Beef	101	Gourd	127	Coffee powder (Loose)
060	Pork	102	Snake gourd	129	Salted Refreshment
061	Poultry	104	Pumpkin	132	Cooked meal
065	Eggs (farm)	105	Lady's finger	134	Cigarette
067	Milk (cow)	106	Torai	140	Pan finished Ordinary
068	Milk (buffalo)	107	Beans		

The consumption data for all these items are collected in CES. The consumption of milk is collected without mentioning whether it is cow milk or buffalo milk. Therefore the consumption data on milk has been tested against both cow and buffalo milk. The seasonality factor has been taken care of by

estimating the price data sub-round[3] wise from CES. These sub-round wise price data have been checked against the corresponding quarterly figures of RPC.

Bargaining is a reality in Indian rural market situation. This phenomenon has been dealt with by giving 5% allowance on board to all the commodities that are purchased by Indian household. Having consciously making effort to minimizing the quality difference, taking care of seasonality factors by estimating sub-round wise estimates and giving an allowance for bargaining we can expect an equilibrium of *price demanded(RPC)-the supply side and the price supplied(CES)- the demand side* will be statistically tested O.K. In the next few paragraphs a discussion on the test procedures and test results will follow.

If we look at the price data of RPC and CES as it is(see statement 2) we find that most of the price data derived from CES is less than the RPC except few. For example: pork, beef, salted refreshments (see highlighted rows of statement 2)

A two-sample T-test has been carried out on these 65 items. The results were mixed. The following table gives the results of the test both before adjustment for bargaining and after bargaining.

Table-10: Subround wise no. of items statistically tested valid

Serial Number	Sub-round	Number of item tested O.K	
		Before adjustment for bargaining	After adjustment for bargaining
1	Sub-round-1	39	47
2	Sub-round-2	38	46
3	Sub-round-3	38	46
4	Sub-round-4	40	50

While items, which have passed, the test confirms the Hypothesis that CES data could be externally validated it is more important to explore the reasons why some of the item fails the test even after giving the allowance for bargaining. A closer look for those items that failed the test is necessary. The following table shows some of the items appeared in sub-round I & II, where wide divergence have been observed. The detailed tables are given in Statement-2

Table-11: Items with wide divergence between RPC and CES

Subround-1				Subround-2			
Item Description	unit	Quarter ending sept-04	Derived price in CES	Item Description	unit	Quarter ending dec-05	Derived price in CES
Muri (Puffed rice)	kg.	21.8	15.7	Muri (Puffed rice)	kg.	21.9	17.1
Coconut oil	per litre	75.4	69.4	Coconut oil	per litre	76.7	70.8
Meat (goat)	kg.	112.9	102.5	Meat (goat)	kg.	115.4	87.2
Pork	kg.	56.6	70.2	Pork	kg.	58.2	73.1
Papaya (ripe)	kg.	10.6	8.9	Ghee mixed (Cow & buffalo)	kg.	154.7	119.5
Coffee (Readymade)	per cup	3.9	0.8	Curd	kg.	25.2	15.7
Coffee powder (Loose)	100 gms.	18	12.0	Coffee (Readymade)	kg.	10.1	7.7
Salted Refreshment	100 gms.	5.3	14.5	Salted Refreshment	kg.	5.5	32.3

A closer look at the items which failed the test even after giving 5% allowance revealed that a fixed set of items irrespective of sub-round, failed the test. Many items, which failed the test, are vegetables and may be home grown. The item like Pork and Beef, salted refreshments have price derived from CES always greater than the RPC. From statement-2 one can easily identify a pattern for which the price derived from CES is always greater than the reported price in the market(RPC). This indicates some kind of under reporting of a set of items across the country.

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[3] The NSS round of consumer expenditure survey can be divided into four sub-rounds. The design permits independent estimates of each sub-round.

Table-12: Few items which failed the test

Item Description	unit	Quarterly average price (RPC)	Derived price in CES	Bargained price	T values on Bargained price	T test results on Bargained price
Sub-round-1						
Pea dal	kg.	19.5	16.6679	18.525	7.015	failed
Pork	**kg.**	**56.6**	**70.1993**	**56.6**	**-5.769**	**failed**
Ghee (cow)	kg.	192.2	155.3689	182.59	13.243	failed
Curd	kg.	24.2	17.0269	22.99	9.747	failed
Cucumber	kg.	9.5	6.946	9.025	6.086	failed
Lady's finger	kg.	12.1	8.6611	11.495	10.884	failed
Torai	kg.	10.4	6.2932	9.88	9.586	failed
Lemon	pair	1.7	0.6885	1.615	6.454	failed
Coffee powder (Loose)	100 gms.	18	12.0005	17.1	5.021	failed
Sub-round-2						
Suji	**kg.**	**12.5**	**13.3825**	**12.5**	**-10.643**	**failed**
Pea dal	kg.	19.7	17.5282	18.715	4.962	failed
Mustard oil (Loose)	**per litre**	**53.4**	**57.1944**	**53.4**	**-5.49**	**failed**
Vanaspati	kg.	51	50.8751	48.45	-5.17	failed
Meat (goat)	kg.	115.4	87.2222	109.63	17.583	failed
Pork	**kg.**	**58.2**	**73.1497**	**58.2**	**-6.085**	**failed**
Tomato	**kg.**	**7.6**	**10.4555**	**7.6**	**-9.283**	**failed**
Cucumber	kg.	10.1	7.6754	9.595	9.027	failed
Lady's finger	kg.	14.8	10.234	14.06	19.987	failed
Torai	kg.	11.8	6.8119	11.21	10.702	failed
Bitter gourd	kg.	14.9	11.657	14.155	14.11	failed
Pine apple	kg.	15	7.8199	14.25	12.631	failed
Salted Refreshment	**100 gms.**	**5.5**	**32.3245**	**5.5**	**-9.138**	**failed**
Sub-round-3						
Muri (Puffed rice)	kg.	21.9	17.4874	20.805	11.948	failed
Suji	**kg.**	**12.5**	**13.3968**	**12.5**	**-11.412**	**failed**
Pork	**kg.**	**58.2**	**73.0273**	**58.2**	**-6.215**	**failed**
Ghee (cow)	kg.	194.2	132.2023	184.49	6.249	failed
Cucumber	kg.	10.1	7.2961	9.595	13.909	failed
Lady's finger	kg.	14.8	11.1623	14.06	23.126	failed
Torai	kg.	11.8	9.2259	11.21	8.683	failed
Bitter gourd	kg.	14.9	12.0713	14.155	13.512	failed
Pine apple	kg.	15	8.2831	14.25	6.794	failed
Sub-round-4						
Muri (Puffed rice)	kg.	21.9	18.3437	20.805	7.45	failed
Suji	**kg.**	**12.5**	**13.4172**	**12.5**	**-10.668**	**failed**
Coconut oil	per litre	76.7	66.6452	72.865	8.726	failed
Pork	**kg.**	**58.2**	**75.639**	**58.2**	**-9.294**	**failed**
Carrot	kg.	9	11.0553	9	-8.29	failed
Cucumber	kg.	10.1	6.7473	9.595	14.533	failed
Lady's finger	kg.	14.8	9.0136	14.06	24.146	failed
Torai	kg.	11.8	7.0893	11.21	13.113	failed
Pine apple	kg.	15	5.0887	14.25	25.593	failed

Section-IV: Cross-validation of 61st round CES with the EUS results:

A comparison with the different subject-schedule canvassed in the same survey not only cross-validate the results but also be used as an yardstick of proper implementation of the sampling design. Here the education data collected in CES have been cross-validate against the same of EUS.

If one examine the formation of Second Stage Strata and allocation of households one can find that for both Schedule 1.0 and Schedule 10, households listed in the selected village/block/ hamlet-groups/sub-blocks are stratified into three second stage strata (SSS). In the **Rural** sector the second stage stratums were (a) Relatively Affluent Households (SSS1), (b) From The Remaining Households, Households Having Principal Earning From Non- Agricultural Activity (SSS2), (c) Other Households (SSS3). Likewise in the **urban** sector they were (i) Households with MPCE more than A[4] (i.e. MPCE > A) (SSS1), (ii) Households with MPCE equal to or less than A but equal to or more than B[4] (i.e. B ≤ MPCE ≤ A) (SSS 2), (iii) Households with MPCE less than B (i.e. MPCE < B) (SSS 3). 10 distinct households were selected for both CES and EUS following the identical rules for distribution of households in different SSS. From each SSS the sample households for both the schedules are selected by SRSWOR.

The estimates of results form 61st round survey for both CES and EUS were generated using the same set multiplier as given below

s = subscript for s-th stratum, **t** = subscript for t-th sub-stratum, **m** = subscript for sub-sample (m =1, 2), **i** = subscript for i-th FSU[5] [village (panchayat ward) / block], **j** = subscript for j-th second stage stratum in an FSU/ hg/sb (j = 1, 2 or 3)

D = **total number of hg's/sb's formed in the sample village (panchayat ward) / block**

D* = 1 if **D** = 1

= **D** / 2 for FSUs with **D** > 1

Z = total size of a rural sub-stratum (= sum of sizes for all the FSUs of a rural sub-stratum), **z** = size of sample village used for selection, **n** = number of sample village / block surveyed including zero cases but excluding casualty for a particular sub-sample and sub-stratum, **H** = total number of households listed in a second-stage stratum of a village/block/hamlet-group/sub-block of sample FSU, **h** = number of households surveyed in a second-stage stratum of a village/block/hamlet-group/sub-block of sample FSU.

Table-13: Multiplier used in CES

1.0 / 10	rural	$\dfrac{Z_{st}}{n_{stmj}} \times \dfrac{1}{z_{stmi}} \times D^*_{stmi} \times \dfrac{H_{stmi1j}}{h_{stmi1j}}$ j = 1, 2, 3	$\dfrac{Z_{st}}{n_{stmj}} \times \dfrac{1}{z_{stmi}} \times D^*_{stmi} \times \dfrac{H_{stmi2j}}{h_{stmi2j}}$ j = 1, 2, 3
	urban	$\dfrac{N_{st}}{n_{stmj}} \times D^*_{stmi} \times \dfrac{H_{stmi1j}}{h_{stmi1j}}$, j = 1, 2, 3	$\dfrac{N_{st}}{n_{stmj}} \times D^*_{stmi} \times \dfrac{H_{stmi2j}}{h_{stmi2j}}$, j = 1, 2, 3

Thus, if the sampling design is properly implemented the results of CES will statistically tested O.K. for the similar data collected in EUS. Two tests have been carried out one using χ^2 contingency table and other a more stringent test, using **Kolmogrov-Smirnov (K-S)** nonparametric test. The construct of Null hypothesis was ' sample design was properly implemented in the villages and urban blocks i.e. the data on education collected through CES and EUS belong to the same population.'

Table-14: general education level for age 15+ Population

	Male	general education level	persons (15+)

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[4] Two cut-off points, say 'A' and 'B', based on MPCE of NSS 55th round, have been determined at **NSS Region level** in such a way that top 10% of households have MPCE more than 'A' and bottom 30% have MPCE less than 'B'.

[5] First Stage Unit (FSU), village for rural area and urban block for urban area.

	State	not literate	literate & upto primary	middle	secon-dary	higher secondary	diploma/ certificate course	graduate & above	n.r.	estd. (00)	sample
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
					Schedule 1.0 (CES)						
Rural	ALL	314	249	212	118	61	7	39	1	2379029	134645
Urban	ALL	119	180	211	178	120	22	170	1	925857	74387
					Schedule 10 (EUS)						
Rural	ALL	320	277	191	107	55	10	38	0	2344814	132633
Urban	ALL	121	202	194	169	116	35	162	0	918966	73335

Table-14: general education level for age 15+ population

Male		general education level								persons (15+)	
	State	not literate	literate & upto primary	middle	secon-dary	higher secondary	diploma/ certificate course	graduate & above	n.r.	estd. (00)	sample
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
					Schedule 1.0 (CES)						
Rural	ALL	314	249	212	118	61	7	39	1	2379029	134645
Urban	ALL	119	180	211	178	120	22	170	1	925857	74387
					Schedule 10 (EUS)						
Rural	ALL	320	277	191	107	55	10	38	0	2344814	132633
Urban	ALL	121	202	194	169	116	35	162	0	918966	73335

General education level for the age 15+ population has been taken up for study. The above table(table-14) gives the per 1000 distribution of population of various educational attainment levels. As it appears, per 1000 distribution of various attainment levels are very close for CES and EUS. Statistical test can only confirm whether per 1000 distribution obtain from CES is in conformity with that of EUS.

To construct the test statistics the following formula was used.

(1)   Let a_{1j} ($j=1,2,…..k$) be the no. of observations in j^{th} class of education attainment obtained from CES and a_{2j} are those of EUS. Where $\sum_j a_{1j}= m_1$ and $\sum_j a_{2j}= m_2$ and $m_1+ m_2 = N$ and $a_{1j} + a_{2j} =n_j$

Under the hypothesis of independence of attributes, we have

$$\chi^2 = \frac{1}{pq}\left(\sum_{i=1}^{k} \frac{a_{ij}^2}{n_j} - \frac{m_1^2}{N}\right) \square \chi^2$$ with **(k-1)(d-1)** degrees of freedom. Where **k** is the total classes of education attainments and **d** is the number of independent samples.

(2)   Kolmogrov-Smirnov (K-S) for two sample test is defined as follows: where **x** and **X** are two samples, CES and EUS with **N** and **M** observation respectively.

$$D_{NM} = \underset{x}{SUP}[S_N(x) - F_M(X)]$$, Kolmogrov-Smirinov test statistic is $\sqrt{\frac{M*N}{M+N}} D_{NM}$. While the χ^2 test is more straight forward the Kolmogrov-Smirnov test is robust and stringent. In K-S test the maximum distance of the points of two *Ogives* is taken as the test statistics. For example: For rural male of Andhra Pradesh the cumulative proportions of different education status are as follows:

Table-14: Cumulative proportion in CES and EUS

	not literate	Literate upto pri.	middle	secondary	higher	Diploma etc.	Graduate & above	n.r
sch 1.0	0.456	0.664	0.801	0.916	0.963	0.970	1.000	1.000
sch 10	0.453	0.674	0.808	0.914	0.957	0.968	1.000	1.000

Chart-1

Cumualative curves of the proportions of different education status of observed from two schedules for Andhra Pradesh (Rural-Male).
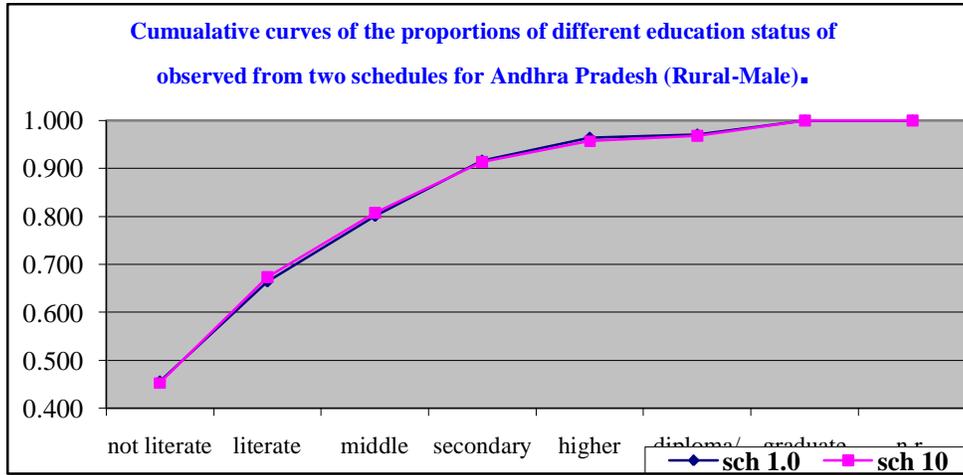
One can find that the maximum difference between the two curves occurred at '*literate upto primary*' class (.010). This is the K-S statistics. The results of four states have been given in statement-3. It appears that for such comparison K-S test is more robust than the χ^2 test.

Limitations: As described earlier the main objective of this paper is to find a methodology for external validation of CES. The procedures stated above are only few validation points one can think of. A detail study requires longer time and institutional participation. One of the limitations of such statistical tests like χ^2 and **K-S** is that they tend to reject the Null Hypothesis for large samples. A better option would have been to slice the samples and perform the tests at sub state level.

Conclusion: This paper is perhaps the first attempt to validate NSS data externally. Although NSS data has been compared with Census data in many studies and found to be under estimating. That makes it all the more necessary to validate estimates of the other parameters generated from CES externally. On an average, the cross validation of CES data with RPC made the CES data reliable. One of the interesting finding from this cross validation was that value and quantities of some items tend to be improperly reported irrespective of the individual investigator or any specific region. The field operation division may investigate the reasons for such peculiarities.

The results of the χ^2 and **K-S** tests are very encouraging. Such test between two subjects in the same survey checks whether the design has been implemented properly at the second stage stratification level or not. This is specially important because these statistical tests are known to reject Null Hypothesis when the sample sizes are very large. However for those which have failed the test one should attempt **boot strapping techniques** to check whether the design has been implemented properly at the lower level.

However, for making policies of external validation of all the NSS surveys detail study with institutional participation is required.

References:
1. *Report of The Committee On Underestimation Of Population In The NSS -December 2006. Ministry of Statistics and Programme Implementation, National Sample Survey Organisation.*
2. *Linear Statistical Inference And Its Applications-C.R.Rao, Wiley Eastern Private Limited*
3. *http//rkb.home.cern.ch/rkb/AN16pp/node143.html.*
4. *Dasu, T. & T. Johnson. (2003). Exploratory Data Mining and Data Cleaning. John Wiley & Sons: New York.*
5. *Tukey, J.W. (1962). The future of data analysis. Annals of mathematical statistics,33, 1-67*

Statement-1: Population RSE of 61st Round

St code	State name	Rural				Urban		
		Estd. Popln.	RSE	sample		Estd. Popln.	RSE	sample
(1)	(2)	(3)	(4)	(5)		(6)	(7)	(8)
01	andhra pradesh	54227140	0.4413	5555		18642337	1.6433	2876
02	arunachal pradesh	771304	1.5564	1503		99820	3.7343	540
03	assam	22912412	0.8762	3350		2336495	4.0311	900
04	bihar	66754099	0.5703	4354		6810923	4.3422	1398
05	chhattisgarh	18192277	0.9071	1997		3290984	2.9613	799
06	delhi	839486	0	59		11578570	2.836	1101
07	goa	670762	1.8575	160		402821	8.6433	238
08	gujarat	30935559	0.8116	2320		16283668	3.2464	1955
09	haryana	15821321	1.2766	1680		5742435	2.5352	1040
10	himachal pradesh	5557755	0.6593	2143		580727	7.4891	400
11	jammu & kashmir	5064930	0.7774	1882		1705214	2.0698	884
12	jharkhand	20342693	0.8094	2379		3910094	4.1751	1040
13	karnataka	34112124	0.61	2880		15167622	1.7214	2227
14	kerala	23567249	0.5384	3300		7230306	2.0544	1950
15	madhya pradesh	46018374	0.6398	3838		14069192	1.999	2075
16	maharashtra	55121475	0.501	5014		37218575	1.4324	4993
17	manipur	1451626	2.0343	2177		469111	3.9107	1000
18	meghalaya	1805274	1.525	1159		277005	3.9621	437
19	mizoram	427969	1.2691	800		278864	2.4556	1112
20	nagaland	572113	1.8079	960		237932	2.7487	320
21	orissa	32108027	0.5377	3836		5082842	3.1698	1187
22	punjab	15707276	0.7272	2433		7449611	2.2246	1855
23	rajasthan	42977092	0.5145	3541		12318841	2.3135	1630
24	sikkim	446454	1.2265	920		56802	6.335	200
25	tamil nadu	34508254	0.6237	4159		21563520	1.3993	4137
26	tripura	2751111	0.7761	1760		448804	4.1812	560
27	uttaranchal	6372975	0.9327	1465		1943801	4.0679	750
28	uttar pradesh	132536305	0.4334	7868		32414282	1.9064	3345
29	west bengal	59616847	0.4488	4988		19319973	1.9096	2889
30	A & N islands	196652	1.7515	268		101281	2.7015	359
31	chandigarh	90307	7.0717	80		793605	4.7306	300
32	dadra & nagar haveli	181419	3.5382	160		24245	3.8928	80
33	daman & diu	107004	2.3912	80		57952	17.0644	80
34	lakshadweep	29279	3.9457	70		28768	3.6193	129
35	pondicherry	310563	1.3033	160		568092	4.5322	560
	All India	733105507	0.1477	79298		248505113	0.5467	45346

Statement-2: Results of cross-validation between RPC and CES

item	Item Description	unit	No. of quotation received in RPC	Qtr. ending Sept-04	No. of observation in CES	Derived price in CES	T Values	T test results	Bargained price	T values on Bargained price	T test results on Bargained price
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Subround-1											
022	Chira (Flattened rice)	kg.	1361	15.3	2504	12.5	11.094	failed	14.5	8.026	failed
023	Muri (Puffed rice)	kg.	1346	21.8	3140	15.7	8.016	failed	20.7	6.589	failed
024	Maida	kg.	1669	12	1301	12.5	-3.177	passed	12.0	-3.177	passed
026	Suji	kg.	1581	12.7	4119	13.4	-8.832	failed	12.7	-8.832	failed
029	Arhar (tur) dal	kg.	1655	32	9771	28.7	14.034	failed	30.4	7.227	failed
032	Masur dal (Split washed)	kg.	900	27.4	8509	28.3	-2.331	passed	27.4	-2.331	passed
036	Moong dal Washed	kg.	1509	28.9	8503	26.7	10.473	failed	27.5	3.158	passed
039	Urd dal (Washed)	kg.	1313	26	6768	24.6	5.328	failed	24.7	0.453	passed
040	Khesari dal	kg.	299	15.9	588	14.6	2.358	passed	15.1	0.871	passed
041	Pea dal	kg.	567	19.5	1878	16.7	10.698	failed	18.5	7.015	failed
042	Soyabean	kg.	587	29.3	787	25.8	4.869	failed	27.8	2.839	passed
046	Groundnut oil (Loose)	per litre	843	56.8	2504	55.1	2.755	passed	54.0	-1.718	passed
048	Mustard oil (Loose)	per litre	1106	54.5	11021	49.1	0.461	passed	51.8	0.228	passed
049	Coconut oil	per litre	336	75.4	841	69.4	10.714	failed	71.6	3.194	passed
055	Vanaspati	kg.	1646	52.2	2827	45.3	1.303	passed	49.6	0.812	passed
056	Meat (goat)	kg.	1546	112.9	3400	102.5	7.568	failed	107.3	3.247	passed
059	Beef	kg.	300	45.1	2033	48.2	-1.101	passed	45.1	-1.101	passed
060	Pork	kg.	431	56.6	1348	70.2	-5.769	failed	56.6	-5.769	failed
061	Poultry	approx. weight	1343	66.7	4040	68.7	-1.672	passed	66.7	-1.672	passed
065	Eggs (farm)	each	1608	1.9	6805	1.9	-0.010	passed	1.9	-0.01	passed
067	Milk (cow)	per litre	1322	12.9	13707	11.4	0.464	passed	12.3	0.262	passed
068	Milk (buffalo)	per litre	1255	13.5	13707	11.4	0.635	passed	12.8	0.429	passed
069	Ghee (buffalo)	kg.	656	161.9	1625	155.4	3.014	passed	153.8	-0.961	passed
070	Ghee (cow)	kg.	542	192.2	1625	155.4	17.918	failed	182.6	13.243	failed
071	Ghee mixed (Cow & buffalo)	kg.	597	155.5	1625	155.4	0.076	passed	147.7	-1.444	passed
072	Curd	kg.	1117	24.2	659	17.0	11.725	failed	23.0	9.747	failed
076	Chillies green	100 gms.	1615	2.2	16813	1.0	0.449	passed	2.1	0.408	passed
081	Garlic	100 gms.	1627	3.1	15987	3.3	-1.838	passed	3.1	-1.838	passed
082	Ginger	100 gms.	1599	5.3	10208	4.5	3.166	passed	5.0	2.398	passed

item	Item Description	unit	No. of quotation received in RPC	Qtr. ending Sept-04	No. of observation in CES	Derived price in CES	T Values	T test results	Bargained price	T values on Bargained price	T test results on Bargained price
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Subround-1											
087	Potato	kg.	1665	8.2	18130	7.2	0.465	passed	7.8	0.265	passed
088	Sweet potato	kg.	711	7.9	268	7.7	0.603	passed	7.5	-0.803	passed
089	Radish	kg.	1351	6.3	3433	5.7	2.931	passed	6.0	1.506	passed
090	Onion fresh	kg.	749	9.1	18917	7.9	2.890	passed	8.6	1.775	passed
091	Arum	kg.	913	9.7	4988	7.0	6.642	failed	9.2	5.435	failed
092	Carrot	kg.	1020	13.1	1732	12.6	2.943	passed	12.4	-1.032	passed
093	Turnip	kg.	322	9.3	126	8.2	2.615	passed	8.8	1.509	passed
099	Tomato	kg.	1688	12.7	12195	11.6	3.133	passed	12.1	1.61	passed
100	Cucumber	kg.	1280	9.5	4992	6.9	7.476	failed	9.0	6.086	failed
101	Gourd	kg.	1564	6.7	8156	5.8	3.125	passed	6.4	2.099	passed
102	Snake gourd	kg.	497	8.8	1828	6.8	3.143	passed	8.4	2.668	passed
104	Pumpkin	kg.	1415	6.7	8213	5.2	2.730	passed	6.4	2.672	passed
105	Lady's finger	kg.	1331	12.1	11193	8.7	13.207	failed	11.5	10.884	failed
106	Torai	kg.	921	10.4	8151	6.3	10.976	failed	9.9	9.586	failed
107	Beans	kg.	1180	13.2	4988	10.0	9.247	failed	12.5	7.339	failed
108	Cauliflower	kg.	1442	12.5	1624	13.5	-4.186	failed	12.5	-4.186	failed
109	Cabbage	kg.	1476	9.5	5217	9.5	0.066	passed	9.0	-2.479	passed
110	Bitter gourd	kg.	1307	13	6175	10.8	9.184	failed	12.4	6.426	failed
112	Banana	pair	1619	2.2	10985	0.9	2.560	passed	2.1	3.257	passed
114	Coconut	each	1484	8.4	5068	5.8	3.197	passed	8.0	3.132	passed
115	Mango	kg.	35	13.9	2413	16.9	-0.569	passed	13.9	-0.569	passed
116	Lemon	pair	1572	1.7	7217	0.7	7.046	failed	1.6	6.454	failed
117	Guava	kg.	1096	9.8	3076	6.1	2.624	passed	9.3	3.006	passed
118	Papaya (ripe)	kg.	992	10.6	412	8.9	5.336	failed	10.1	3.171	passed
119	Pine apple	kg.	567	14.9	819	6.1	12.236	failed	14.2	11.205	failed
120	Sugar	kg.	1710	17.8	16481	17.4	1.297	passed	16.9	-1.699	passed
122	Gur	kg.	1619	18.7	4020	16.6	8.721	failed	17.8	2.788	passed
123	Tea (Readymade)	per cup	1610	2.1	9395	1.6	0.616	passed	2.0	0.476	passed
124	Coffee (Readymade)	per cup	788	3.9	155	0.8	3.043	passed	3.7	2.849	passed
125	Tea leaf (Loose)	100 gms.	1304	12.1	16725	13.1	-2.147	passed	12.1	-2.147	passed

Subround-1

item	Item Description	unit	No. of quotation received in RPC	Qtr. ending Sept-04	No. of observation in CES	Derived price in CES	T Values	T test results	Bargained price	T values on Bargained price	T test results on Bargained price
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
126	Tea leaf (Packet)	100 gms.	1502	15.7	16725	13.1	5.750	failed	14.9	3.199	passed
127	Coffee powder (Loose)	100 gms.	239	18	983	12.0	5.908	failed	17.1	5.021	failed
129	Salted Refreshment	100 gms.	1707	5.3	8959	14.5	-1.871	passed	5.3	-1.871	passed
132	Cooked meal	single meal	1490	15.7	1251	12.6	1.023	passed	14.9	0.765	passed
134	Cigarette	each packet	1612	11.6	1156	11.8	-0.159	passed	11.6	-0.159	passed
140	Pan finished Ordinary	each	1439	1.8	2710	1.0	0.526	passed	1.7	0.465	passed

item	Item Description	unit	No. of quotation received in RPC	Qtr. ending Dec-04	No. of observation in CES	Derived price in CES	T Values	T test results	Bargained price	T values on Bargained price	T test results on Bargained price
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)

Subround-2:

item	Item Description	unit	No. of quotation received in RPC	Qtr. ending Dec-04	No. of observation in CES	Derived price in CES	T Values	T test results	Bargained price	T values on Bargained price	T test results on Bargained price
022	Chira (Flattened rice)	kg.	1365	15.1	2907	12.5	6.886	failed	14.3	4.912	failed
023	Muri (Puffed rice)	kg.	1346	21.9	3367	17.1	8.453	failed	20.8	6.511	failed
024	Maida	kg.	1672	12	1808	11.7	1.381	passed	11.4	-1.741	passed
026	Suji	kg.	1652	12.5	4797	13.4	-10.643	failed	12.5	-10.643	failed
029	Arhar (tur) dal	kg.	1647	29.7	9836	29.7	0.125	passed	28.2	-1.57	passed
032	Masur dal (Split washed)	kg.	961	27.7	8455	28.5	-2.156	passed	27.7	-2.156	passed
036	Moong dal Washed	kg.	1554	29.1	8822	26.9	11.519	failed	27.6	3.199	passed
039	Urd dal (Washed)	kg.	1360	27	7300	24.6	8.630	failed	25.7	3.177	passed
040	Khesari dal	kg.	294	16.4	496	13.3	2.239	passed	15.6	1.643	passed
041	Pea dal	kg.	567	19.7	1976	17.5	9.081	failed	18.7	4.962	failed
042	Soyabean	kg.	591	29.3	717	26.1	5.878	failed	27.8	3.174	passed
046	Groundnut oil (Loose)	per litre	836	54.4	2375	57.0	-3.242	passed	54.4	-3.241	passed
048	Mustard oil (Loose)	per litre	1124	53.4	11044	57.2	-5.490	failed	53.4	-5.49	failed
049	Coconut oil	per litre	338	76.7	819	70.8	9.427	failed	72.9	3.262	passed
055	Vanaspati	kg.	1625	51	3074	50.9	0.266	passed	48.5	-5.17	failed
056	Meat (goat)	kg.	1554	115.4	3661	87.2	22.111	failed	109.6	17.583	failed

item	Item Description	unit	No. of quotation received in RPC	Qtr. ending Dec-04	No. of observation in CES	Derived price in CES	T Values	T test results	Bargained price	T values on Bargained price	T test results on Bargained price
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Subround-2:											
059	**Beef**	**kg.**	**292**	**46.8**	**2170**	**48.4**	**-0.522**	**passed**	**46.8**	**-0.522**	**passed**
060	**Pork**	**kg.**	**455**	**58.2**	**1397**	**73.1**	**-6.085**	**failed**	**58.2**	**-6.085**	**failed**
061	Poultry	approx. weight	1369	68.1	4558	67.1	1.007	passed	64.7	-2.514	passed
065	Eggs (farm)	each	1591	2	7465	1.9	0.201	passed	1.9	-0.185	passed
067	Milk (cow)	per litre	1351	12.9	14068	11.5	0.448	passed	12.3	0.247	passed
068	Milk (buffalo)	per litre	1288	13.6	14068	11.5	0.650	passed	12.9	0.443	passed
069	Ghee (buffalo)	kg.	684	162.3	1688	119.5	1.573	passed	154.2	1.275	passed
070	Ghee (cow)	kg.	544	194.2	1688	119.5	2.443	passed	184.5	2.125	passed
071	Ghee mixed (Cow & buffalo)	kg.	616	154.7	1688	119.5	1.229	passed	147.0	0.959	passed
072	Curd	kg.	1126	25.2	704	15.7	14.658	failed	23.9	12.717	failed
076	Chillies green	100 gms.	1666	2.1	16899	1.1	0.530	passed	2.0	0.472	passed
081	Garlic	100 gms.	1663	3	17269	3.3	-2.878	passed	3.0	-2.878	passed
082	Ginger	100 gms.	1627	5.1	12505	3.8	8.337	failed	4.8	6.726	failed
087	**Potato**	**kg.**	**1684**	**5.9**	**18367**	**7.0**	**-1.873**	**passed**	**5.9**	**-1.873**	**passed**
088	Sweet potato	kg.	1026	7.2	942	7.1	0.324	passed	6.8	-0.781	passed
089	Radish	kg.	1366	5.1	8756	4.3	3.251	passed	4.8	2.381	passed
090	**Onion fresh**	**kg.**	**961**	**7.6**	**19051**	**8.4**	**-2.525**	**passed**	**7.6**	**-2.525**	**passed**
091	Arum	kg.	703	10.1	3923	7.1	6.255	failed	9.6	5.211	failed
092	Carrot	kg.	1567	9	3583	8.4	2.644	passed	8.6	0.623	passed
093	Turnip	kg.	489	7.4	772	5.8	5.861	failed	7.0	4.544	failed
099	**Tomato**	**kg.**	**1704**	**7.6**	**14352**	**10.5**	**-9.283**	**failed**	**7.6**	**-9.283**	**failed**
100	Cucumber	kg.	1110	10.1	3667	7.7	11.402	failed	9.6	9.027	failed
101	Gourd	kg.	1484	7	7439	5.3	7.649	failed	6.7	6.043	failed
102	Snake gourd	kg.	372	8.9	1293	8.3	2.687	passed	8.5	0.723	passed
104	Pumpkin	kg.	1292	6.6	6976	5.3	5.131	failed	6.3	3.186	passed
105	Lady's finger	kg.	1097	14.8	6110	10.2	23.853	failed	14.1	19.987	failed
106	Torai	kg.	533	11.8	4236	6.8	12.138	failed	11.2	10.702	failed
107	Beans	kg.	1336	11.8	4837	10.5	6.686	failed	11.2	3.268	passed
108	Cauliflower	kg.	1526	8.4	9504	7.7	1.966	passed	8.0	0.797	passed

65

Subround-2:

item	Item Description	unit	No. of quotation received in RPC	Qtr. ending Dec-04	No. of observation in CES	Derived price in CES	T Values	T test results	Bargained price	T values on Bargained price	T test results on Bargained price
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
109	Cabbage	kg.	1618	6.2	9713	7.5	-2.546	passed	6.2	-2.546	passed
110	Bitter gourd	kg.	1151	14.9	3979	11.7	18.318	failed	14.2	14.11	failed
112	Banana	pair	1629	2.3	11942	0.9	2.587	passed	2.2	2.297	passed
114	Coconut	each	1490	8.6	5772	6.3	2.687	passed	8.2	2.997	passed
116	Lemon	pair	1589	1.7	5874	0.6	6.869	failed	1.6	6.321	failed
117	Guava	kg.	977	10.1	3159	8.2	2.395	passed	9.6	1.743	passed
118	Papaya (ripe)	kg.	1082	9.9	580	8.7	4.267	failed	9.4	2.554	passed
119	Pine apple	kg.	590	15	262	7.8	14.104	failed	14.3	12.631	failed
120	Sugar	kg.	1724	20	16539	17.6	1.822	passed	19.0	1.051	passed
122	Gur	kg.	1668	17.4	4958	16.6	3.167	passed	16.5	-0.311	passed
123	Tea (Readymade)	per cup	1641	2.2	9364	1.7	0.731	passed	2.1	0.569	passed
124	Coffee (Readymade)	per cup	793	4	196	1.0	3.149	passed	3.8	3.256	passed
125	**Tea leaf (Loose)**	**100 gms.**	**1307**	**12.1**	**17020**	**13.0**	**-1.853**	**passed**	**12.1**	**-1.853**	**passed**
126	Tea leaf (Packet)	100 gms.	1508	16	17020	13.0	6.611	failed	15.2	2.846	passed
127	Coffee powder (Loose)	100 gms.	219	15.6	1067	13.0	3.102	passed	14.8	2.17	passed
129	**Salted Refreshment**	**100 gms.**	**1693**	**5.5**	**9383**	**32.3**	**-9.138**	**failed**	**5.5**	**-9.138**	**failed**
132	Cooked meal	single meal	1477	15.7	1293	14.0	0.129	passed	14.9	0.068	passed
134	Cigarette	each packet	1617	11.6	1186	12.3	-0.634	passed	11.6	-0.634	passed
140	Pan finished Ordinary	each	1442	1.9	2672	1.1	0.267	passed	1.8	0.233	passed

item	Item Description	unit	No. of quotation received in RPC	Qtr. ending March-05	No. of observation in CES	Derived price in CES	T Values	T test results	Bargained price	T values on Bargained price	T test results on Bargained price
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)

Subround-3:

022	Chira (Flattened rice)	kg.	1371	15.1	3004	12.3	9.613	failed	14.3	7.03	failed
023	Muri (Puffed rice)	kg.	1349	21.9	3316	17.5	15.892	failed	20.8	11.948	failed
024	Maida	kg.	1664	12	1346	12.0	-0.014	passed	12.0	-0.014	passed

66

Subround-3:

item	Item Description	unit	No. of quotation received in RPC	Qtr. ending March-05	No. of observation in CES	Derived price in CES	T Values	T test results	Bargained price	T values on Bargained price	T test results on Bargained price
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
026	**Suji**	**kg.**	**1652**	**12.5**	**4194**	**13.4**	**-11.412**	**failed**	**12.5**	**-11.412**	**failed**
029	Arhar (tur) dal	kg.	1645	29.7	9585	28.2	5.070	failed	28.2	0.043	passed
032	**Masur dal (Split washed)**	**kg.**	**974**	**27.7**	**8514**	**28.4**	**-1.889**	**passed**	**27.7**	**-1.889**	**passed**
036	Moong dal Washed	kg.	1564	29.1	8522	25.8	1.877	passed	27.6	1.049	passed
039	Urd dal (Washed)	kg.	1366	27	7197	24.7	9.825	failed	25.7	3.115	passed
040	Khesari dal	kg.	306	16.4	549	14.9	2.606	passed	15.6	1.161	passed
041	Pea dal	kg.	569	19.7	1908	17.7	7.865	failed	18.7	3.192	passed
042	Soyabean	kg.	594	29.3	675	25.5	2.488	passed	27.8	2.397	passed
046	**Groundnut oil (Loose)**	**per litre**	**844**	**54.4**	**2296**	**55.2**	**-1.571**	**passed**	**54.4**	**-1.571**	**passed**
048	**Mustard oil (Loose)**	**per litre**	**1160**	**53.4**	**11117**	**54.7**	**-0.320**	**passed**	**53.4**	**-0.32**	**passed**
049	Coconut oil	per litre	342	76.7	834	72.0	6.877	failed	72.9	1.211	passed
055	Vanaspati	kg.	1630	51	2696	50.6	1.213	passed	48.5	-1.696	passed
056	Meat (goat)	kg.	1566	115.4	3614	108.8	7.766	failed	109.6	0.992	passed
059	**Beef**	**kg.**	**292**	**46.8**	**2202**	**49.9**	**-1.276**	**passed**	**46.8**	**-1.276**	**passed**
060	**Pork**	**kg.**	**470**	**58.2**	**1473**	**73.0**	**-6.215**	**failed**	**58.2**	**-6.215**	**failed**
061	**Poultry**	**approx. weight**	**1365**	**68.1**	**4740**	**69.7**	**-1.390**	**passed**	**68.1**	**-1.39**	**passed**
065	Eggs (farm)	each	1608	2	7778	2.0	0.041	passed	1.9	-0.269	passed
067	Milk (cow)	per litre	1359	12.9	13924	11.4	0.477	passed	12.3	0.267	passed
068	Milk (buffalo)	per litre	1286	13.6	13924	11.4	0.686	passed	12.9	0.471	passed
069	Ghee (buffalo)	kg.	690	162.3	1570	132.2	3.197	passed	154.2	2.899	passed
070	Ghee (cow)	kg.	558	194.2	1570	132.2	7.410	failed	184.5	6.249	failed
071	Ghee mixed (Cow & buffalo)	kg.	629	154.7	1570	132.2	2.873	passed	147.0	1.885	passed
072	Curd	kg.	1169	25.2	851	17.9	8.183	failed	23.9	6.773	failed
076	Chillies green	100 gms.	1680	2.1	16634	1.2	0.604	passed	2.0	0.532	passed
081	Garlic	100 gms.	1653	3	17568	3.3	-2.413	passed	3.0	-2.413	passed
082	Ginger	100 gms.	1619	5.1	12916	3.7	8.520	failed	4.8	6.957	failed
087	Potato	kg.	1713	5.9	18466	4.6	1.969	passed	5.6	1.51	passed
088	Sweet potato	kg.	669	7.2	1381	6.4	2.083	passed	6.8	1.142	passed

item	Item Description	unit	No. of quotation received in RPC	Qtr. ending March-05	No. of observation in CES	Derived price in CES	T Values	T test results	Bargained price	T values on Bargained price	T test results on Bargained price
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Subround-3:											
089	Radish	kg.	909	5.1	7803	4.0	3.240	passed	4.8	2.575	passed
090	Onion fresh	kg.	602	7.6	19054	7.4	0.293	passed	7.2	-0.304	passed
091	Arum	kg.	719	10.1	2604	6.6	6.900	failed	9.6	5.905	failed
092	Carrot	kg.	1014	9	6775	6.9	7.089	failed	8.6	5.577	failed
093	Turnip	kg.	206	7.4	933	5.6	2.368	passed	7.0	2.477	passed
099	Tomato	kg.	1701	7.6	16940	7.4	0.418	passed	7.2	-0.523	passed
100	Cucumber	kg.	1515	10.1	3358	7.3	16.964	failed	9.6	13.909	failed
101	Gourd	kg.	1569	7	5626	5.1	6.428	failed	6.7	5.268	failed
102	Snake gourd	kg.	484	8.9	1229	8.7	1.219	passed	8.5	-0.961	passed
104	Pumpkin	kg.	1425	6.6	5550	4.7	3.284	passed	6.3	3.155	passed
105	Lady's finger	kg.	1636	14.8	4343	11.2	29.032	failed	14.1	23.126	failed
106	Torai	kg.	1046	11.8	1723	9.2	11.265	failed	11.2	8.683	failed
107	Beans	kg.	1055	11.8	4577	9.8	7.525	failed	11.2	5.28	failed
108	Cauliflower	kg.	821	8.4	11562	6.3	2.700	passed	8.0	3.178	passed
109	Cabbage	kg.	1230	6.2	13323	5.4	1.576	passed	5.9	0.927	passed
110	Bitter gourd	kg.	1501	14.9	3319	12.1	18.343	failed	14.2	13.512	failed
112	Banana	pair	1610	2.3	9828	0.9	3.176	passed	2.2	3.144	passed
114	Coconut	each	1507	8.6	5352	6.4	3.156	passed	8.2	2.874	passed
116	Lemon	pair	1575	1.7	5850	0.7	6.511	failed	1.6	5.98	failed
117	Guava	kg.	484	10.1	2520	7.8	6.634	failed	9.6	3.154	passed
118	Papaya (ripe)	kg.	1080	9.9	808	7.4	7.502	failed	9.4	6.031	failed
119	Pine apple	kg.	650	15	211	8.3	7.648	failed	14.3	6.794	failed
120	Sugar	kg.	1738	20	16368	19.8	0.784	passed	19.0	-1.411	passed
122	Gur	kg.	1698	17.4	6578	16.2	5.160	failed	16.5	1.299	passed
123	Tea (Readymade)	per cup	1639	2.2	9222	1.7	0.658	passed	2.1	0.513	passed
124	Coffee (Readymade)	per cup	795	4	153	1.0	3.235	passed	3.8	3.123	passed
125	Tea leaf (Loose)	100 gms.	1351	12.1	16942	13.4	-2.902	passed	12.1	-2.902	passed
126	Tea leaf (Packet)	100 gms.	1497	16	16942	13.4	6.382	failed	15.2	2.448	passed
127	Coffee powder (Loose)	100 gms.	240	15.6	1068	12.7	3.072	passed	14.8	2.251	passed
129	**Salted Refreshment**	**100 gms.**	**1702**	**5.5**	**9531**	**20.3**	**-2.345**	**passed**	**5.5**	**-2.344**	**passed**

Subround-3:

item	Item Description	unit	No. of quotation received in RPC	Qtr. ending March-05	No. of observation in CES	Derived price in CES	T Values	T test results	Bargained price	T values on Bargained price	T test results on Bargained price
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
132	Cooked meal	single meal	1495	15.7	1342	11.8	0.847	passed	14.9	0.677	passed
134	Cigarette	each packet	1630	11.6	1255	11.7	-0.071	passed	11.6	-0.071	passed
140	Pan finished Ordinary	each	1462	1.9	2703	1.1	0.679	passed	1.8	0.593	passed

Subround-4:

item	Item Description	unit	No. of quotation received in RPC	Qtr. ending June-05	No. of observation in CES	Derived price in CES	T Values	T test results	Bargained price	T values on Bargained price	T test results on Bargained price
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
022	Chira (Flattened rice)	kg.	1353	15.1	2903	12.6	9.789	failed	14.3	6.835	failed
023	Muri (Puffed rice)	kg.	1349	21.9	3229	18.3	10.764	failed	20.8	7.45	failed
024	Maida	kg.	1674	12	1602	11.7	1.547	passed	11.4	-1.38	passed
026	**Suji**	**kg.**	**1657**	**12.5**	**4503**	**13.4**	**-10.668**	**failed**	**12.5**	**-10.668**	**failed**
029	Arhar (tur) dal	kg.	1666	29.7	10065	28.0	8.374	failed	28.2	0.913	passed
032	**Masur dal (Split washed)**	**kg.**	**992**	**27.7**	**8756**	**28.2**	**-1.219**	**passed**	**27.7**	**-1.219**	**passed**
036	Moong dal Washed	kg.	1571	29.1	8853	27.5	6.764	failed	27.6	0.751	passed
039	Urd dal (Washed)	kg.	1354	27	6978	25.4	8.036	failed	25.7	1.411	passed
040	Khesari dal	kg.	296	16.4	556	15.3	1.687	passed	15.6	0.404	passed
041	Pea dal	kg.	555	19.7	2019	17.5	8.248	failed	18.7	2.582	passed
042	Soyabean	kg.	594	29.3	710	26.6	3.187	passed	27.8	1.752	passed
046	Groundnut oil (Loose)	per litre	849	54.4	2343	54.8	-0.552	passed	54.4	-0.552	passed
048	**Mustard oil (Loose)**	**per litre**	**1135**	**53.4**	**11205**	**55.1**	**-2.671**	**passed**	**53.4**	**-2.671**	**passed**
049	Coconut oil	per litre	336	76.7	825	66.6	14.106	failed	72.9	8.726	failed
055	Vanaspati	kg.	1641	51	2925	50.1	2.635	passed	48.5	-1.172	passed
056	Meat (goat)	kg.	1562	115.4	3694	111.1	2.988	passed	109.6	-2.045	passed
059	**Beef**	**kg.**	**287**	**46.8**	**2199**	**48.5**	**-0.250**	**passed**	**46.8**	**-0.25**	**passed**
060	**Pork**	**kg.**	**443**	**58.2**	**1312**	**75.6**	**-9.294**	**failed**	**58.2**	**-9.294**	**failed**

69

Subround-4:

item	Item Description	unit	No. of quotation received in RPC	Qtr. ending June-05	No. of observation in CES	Derived price in CES	T Values	T test results	Bargained price	T values on Bargained price	T test results on Bargained price
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
061	Poultry	approx. weight	1377	68.1	4904	66.7	0.699	passed	64.7	-0.971	passed
065	Eggs (farm)	each	1605	2	7573	1.9	0.294	passed	1.9	-0.068	passed
067	Milk (cow)	per litre	1360	12.9	14012	11.9	0.371	passed	12.3	0.139	passed
068	Milk (buffalo)	per litre	1304	13.6	14012	11.9	0.610	passed	12.9	0.371	passed
069	Ghee (buffalo)	kg.	688	162.3	1588	96.6	1.949	passed	154.2	1.708	passed
070	Ghee (cow)	kg.	583	194.2	1588	96.6	2.661	passed	184.5	2.397	passed
071	Ghee mixed (Cow & buffalo)	kg.	642	154.7	1588	96.6	1.665	passed	147.0	1.443	passed
072	Curd	kg.	1151	25.2	1034	19.0	7.171	failed	23.9	3.172	passed
076	Chillies green	100 gms.	1685	2.1	16849	0.8	0.588	passed	2.0	0.54	passed
081	Garlic	100 gms.	1665	3	17190	3.0	0.238	passed	2.9	-0.951	passed
082	Ginger	100 gms.	1599	5.1	10775	3.9	7.778	failed	4.8	3.097	passed
087	**Potato**	**kg.**	**1718**	**5.9**	**18658**	**6.5**	**-1.094**	**passed**	**5.9**	**-1.094**	**passed**
088	Sweet potato	kg.	356	7.2	711	6.7	0.951	passed	6.8	0.314	passed
089	Radish	kg.	918	5.1	3297	5.7	-2.534	passed	5.1	-2.534	passed
090	Onion fresh	kg.	345	7.6	19276	6.8	0.357	passed	7.2	0.195	passed
091	Arum	kg.	1095	10.1	2680	6.9	8.073	failed	9.6	6.801	failed
092	Carrot	kg.	688	9	2764	11.1	-8.290	failed	9.0	-8.29	failed
093	Turnip	kg.	133	7.4	274	7.7	-0.820	passed	7.4	-0.82	passed
099	Tomato	kg.	1652	7.6	15156	9.0	-3.198	passed	7.6	-3.198	passed
100	Cucumber	kg.	1499	10.1	6996	6.7	17.110	failed	9.6	14.533	failed
101	Gourd	kg.	1539	7	9137	5.5	6.287	failed	6.7	2.771	passed
102	Snake gourd	kg.	643	8.9	1639	7.8	5.630	failed	8.5	3.137	passed
104	Pumpkin	kg.	1461	6.6	8170	5.0	6.828	failed	6.3	2.394	passed
105	Lady's finger	kg.	1647	14.8	11141	9.0	27.687	failed	14.1	24.146	failed
106	Torai	kg.	1221	11.8	5908	7.1	14.990	failed	11.2	13.113	failed
107	Beans	kg.	1036	11.8	4780	11.2	2.176	passed	11.2	-0.044	passed
108	**Cauliflower**	**kg.**	**845**	**8.4**	**2467**	**10.1**	**-2.734**	**passed**	**8.4**	**-2.734**	**passed**
109	Cabbage	kg.	1201	6.2	6780	8.0	-7.291	failed	6.2	-7.291	failed

item	Item Description	unit	No. of quotation received in RPC	Qtr. ending June-05	No. of observation in CES	Derived price in CES	T Values	T test results	Bargained price	T values on Bargained price	T test results on Bargained price
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Subround-4:											
110	Bitter gourd	kg.	1516	14.9	6536	10.9	29.629	failed	14.2	24.085	failed
112	Banana	pair	1665	2.3	8578	1.0	3.233	passed	2.2	3.046	passed
114	Coconut	each	1541	8.6	5155	6.0	3.085	passed	8.2	3.04	passed
115	Mango	kg.	674	24.3	8477	13.9	6.965	failed	23.1	6.153	failed
116	Lemon	pair	1611	1.7	8693	0.8	7.805	failed	1.6	7.093	failed
117	Guava	kg.	820	10.1	500	7.9	3.193	passed	9.6	3.02	passed
118	Papaya (ripe)	kg.	964	9.9	671	9.3	1.875	passed	9.4	0.383	passed
119	Pine apple	kg.	787	15	482	5.1	27.689	failed	14.3	25.593	failed
120	Sugar	kg.	1730	20	16558	19.8	0.909	passed	19.0	-2.456	passed
122	Gur	kg.	1685	17.4	4500	17.0	1.889	passed	16.5	-2.571	passed
123	Tea (Readymade)	per cup	1659	2.2	9315	1.2	0.058	passed	2.1	0.051	passed
124	Coffee (Readymade)	per cup	809	4	150	0.7	3.154	passed	3.8	3.264	passed
125	Tea leaf (Loose)	100 gms.	1342	12.1	16817	13.4	-3.165	passed	12.1	-3.165	passed
126	Tea leaf (Packet)	100 gms.	1516	16	16817	13.4	6.830	failed	15.2	2.745	passed
127	Coffee powder (Loose)	100 gms.	249	15.6	1064	13.3	2.118	passed	14.8	1.396	passed
129	**Salted Refreshment**	**100 gms.**	**1699**	**5.5**	**9660**	**21.6**	**-2.316**	**passed**	**5.5**	**-2.316**	**passed**
132	Cooked meal	single meal	1493	15.7	1291	12.4	0.888	passed	14.9	0.679	passed
134	Cigarette	each packet	1653	11.6	1362	11.7	-0.050	passed	11.6	-0.05	passed
140	Pan finished Ordinary	each	1480	1.9	2735	1.1	0.629	passed	1.8	0.553	passed

Statement 3:Test of uniformity between CES and EUS using Kolmogrov-Smirnov(K-S) and χ^2 tests.

RURAL	Male												
State	not literate	literate & upto primary	middle	secon-dary	higher secondary	diploma/ certificate course	graduate & above	n.r.	estd. (00)	sample	K-S stat.	result	χ^2 statistic
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Andhra Pradesh													
Schedule 1.0	456	208	137	115	47	7	30	0	184533	7909	1.463	passed	38.1565
Schedule 10	453	221	134	106	43	11	33	0	183008	7852			
Bihar													
Schedule 1.0	360	203	192	145	53	4	42	1	189752	7063	3.223	failed	56.4435
Schedule 10	386	239	156	121	55	3	39	1	184402	6780			
Gujrat													
Schedule 1.0	276	256	241	117	64	12	32	1	106751	4006	0.729	passed	14.3444
Schedule 10	259	291	228	121	49	15	37	0	108064	4003			
Haryana													
Schedule 1.0	239	263	151	185	86	14	61	0	55645	3175	0.602	passed	6.8408
Schedule 10	272	266	135	180	76	16	54	0	54564	3177			

RURAL	Female												
State	not literate	literate & upto primary	middle	secon-dary	higher secondary	diploma/ certificate course	graduate & above	n.r.	estd. (00)	sample	K-S stat.	result	χ^2 statistic
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Andhra Pradesh													
Schedule 1.0	676	165	73	57	19	1	8	0	190787	8182	0.339	passed	9.6816
Schedule 10	674	165	69	63	18	3	8	0	190383	8167			
Bihar													
Schedule 1.0	705	148	82	46	13	0	5	2	189627	6957	1.703	failed	39.2664
Schedule 10	706	163	70	46	10	0	3	1	182730	6751			
Gujrat													
Schedule 1.0	563	185	133	70	37	3	9	0	101980	3862	1.058	passed	12.5972
Schedule 10	568	199	120	58	34	3	18	0	103920	3854			
Haryana													
Schedule 1.0	537	184	106	93	54	2	25	0	49390	2988	1.455	passed	15.6187
Schedule 10	554	205	86	72	45	4	34	0	48873	2910			

Test of uniformity between CES and EUS using Kolmogrov-Smirnov(K-S) and χ^2 tests.

Urban	Male												
State	not literate	literate & upto primary	middle	secon-dary	higher secondary	diploma/ certificate course	graduate & above	n.r.	estd. (00)	sample	K-S stat.	result	χ^2 statistic
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Andhra Pradesh													
Schedule 1.0	187	157	167	187	111	24	166	1	69222	4175	1.791	failed	58.785
Schedule 10	186	192	146	161	102	48	164	0	66932	4129			
Bihar													
Schedule 1.0	151	136	171	142	138	10	230	22	23919	2380	0.798	passed	13.1905
Schedule 10	156	158	168	165	138	8	207	0	22492	2350			
Gujrat													
Schedule 1.0	80	179	231	214	112	33	151	0	60716	3330	0.31	passed	6.444
Schedule 10	77	198	213	214	118	38	141	0	59588	3332			
Haryana													
Schedule 1.0	111	203	161	214	131	18	161	0	20984	1790	0.443	passed	10.6215
Schedule 10	129	184	146	245	115	33	148	0	21410	1753			

Urban	Female												
State	not literate	literate & upto primary	middle	secon-dary	higher secondary	diploma/ certificate course	graduate & above	n.r.	estd. (00)	sample	K-S stat.	result	χ^2 statistic
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Andhra Pradesh													
Schedule 1.0	370	179	149	123	88	6	85	0	65821	4152	1.938	failed	43.8721
Schedule 10	381	201	121	122	72	14	88	0	68115	4164			
Bihar													
Schedule 1.0	374	151	137	151	104	1	78	3	20131	2086	0.773	passed	21.039
Schedule 10	380	191	141	165	73	0	48	1	18746	2099			
Gujrat													
Schedule 1.0	230	155	211	165	112	9	119	0	56262	3189	1.019	passed	17.2047
Schedule 10	222	195	216	158	83	20	106	0	53978	3149			
Haryana													
Schedule 1.0	300	162	124	163	108	21	122	0	18447	1569	0.194	passed	3.0029
Schedule 10	305	150	115	155	125	23	127	0	18994	1591			

It's all about the lowest MPCE class

K.Thomas[*]

Introduction: The consumption pattern of Indian society can be best studied through the NSS household consumer expenditure surveys. Household consumer expenditure is one of the major subjects covered under the NSS starting from its first round (1950-51). From 27th round (1972-73) onwards household consumer expenditure survey is carried out on quinquennial basis with larger samples. The 61st round (July 2004-June 2005) is the latest in the quinquennial series with an All India sample size of 12788 FSUs, covering 10 households from each FSU. In the NSS pattern of tabulation MPCE (Monthly Per Capita Consumer Expenditure) class intervals are revised on periodical basis to accommodate the entire population within reasonable number of class intervals and also with significant representation in each class. Generally the lowest mpce class represents the bottom 5% of the population at all India level. For the 55th round the lowest class for rural sector was '0-225' and '0-300' for urban sector. In the NSS 61st round the lowest class of the society is categorized in the '0-235' class for the rural sector and in the '0-335' class in the urban sector. For 61st round the uppermost classes are kept as '1155 & above' and '2540 & above' in the rural and urban sectors respectively. The population in the upper strata is well placed in the society and has attained a stage of economic independence. But the lower strata of the society is left behind the rest finding difficulty even for the basic needs, i.e. food. In the NSS 61st round, the population categorized in the lowest class is approximately left with less than Rs.8/- per day in the rural sector and Rs.11/- per day in the urban sector. This paper is an attempt to study about the population in the lowest mpce class mainly based on the 61st round results.

Concentration of population of the lowest mpce class: The population under lowest class of mpce is spread throughout the major states but there is concentration in Orissa, Chattisgarh, MP, Bihar, Jharkand and UP (see table-1). Geographically all these states lie adjacent to each other. In percentage terms Orissa has the maximum concentration of lowest mpce class. In rural Orissa every 5th person comes under the lowest mpce class compared to every 20th person at all India level. Similar concentration of population of lower mpce class in these states was noticed in the NSS 55th round (1999-2000) also. These are few states where the mpce for rural and urban sectors are below the national average. Smaller states in the north eastern region viz. Manipur, Meghalaya, Mizoram, and Nagaland have almost no representation of the bottom 5% at all India level.

Table-1: State-wise distribution of population in % terms in the lowest mpce class for major states

State	Rural	Urban
Andhra Pradesh	3.9	3.0
Assam	1.4	1.4
Bihar	6.2	14.4
Chattisgarh	13.6	11.4
Gujarat	2.2	1.1
Haryana	0.6	3.3
Jharkand	7.5	7.4
Karnataka	2.7	5.4
Kerala	1.3	2.9
Madhya Pradesh	11.5	10.1
Maharashtra	4.9	4.4
Orissa	20.7	15.3
Punjab	0.1	0.3
Rajasthan	1.3	3.7
Tamil Nadu	2.1	2.9
U.P	4.0	9.1
Uttaranchal	0.4	2.2
West Bengal	2.3	4.0
All India	4.8	5.0

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[*] The author is working as Directors in NSSO, DPC, Nagpur. The views expressed in this paper are those of the author and not of the institution to which he belongs.

General consumption pattern of the bottom 5% of the population: As the theory goes, as income level increases the percentage of expenditure for food decreases, but for this group there is no alternative other than spending the maximum possible for food items. In the rural sector 68.45% of the expenditure is towards food items and the remaining for non-food items. Out of the expenditure on food items 50.67% is spent towards cereal items. In the urban sector 64.86% of the expenditure is towards food items and of that 40.53% is spent towards cereals. For the highest mpce class expenditure on food items are 33.69% and 23.70% for the rural and urban sectors. In percentage terms and also in absolute terms consumption of certain items like dry fruits, footwear, medical (institutional), durable goods etc. is very less in the lowest strata. Less expenditure for medical (institutional) may be due to the reason that this class may be depending mainly on Govt. facilities. Consumption of second hand items is slowly becoming a practice in the society, but it is seen that second hand consumption of durable goods are not reported by these class and second hand consumption of clothing is also reported at a very lower side.

Consumption pattern of cereals: It may be seen from table-2 that consumption of cereals in terms of quantity is concerned, there is proportionate increase over the classes in rural sector but no significant difference seen in the urban sector, but in value terms the difference is apparent in both the sectors. Hence it may be presumed that the lowest class is either supported with the supply through PDS or they depend on verities available with lesser price in the open market. As a crude measure, the average rate for cereals is worked out to be Rs.7.05 at the lower class and Rs.9.93 at the highest class for rural sector. Similarly for urban sector it is Rs.7.97 and Rs.14.80.

Table-2: MPCE class wise consumption of cereals in quantity and value terms – all India

Rural Sector			Urban sector		
MPCE Class	Average quantity consumptn (Kg)	Average value consumptn (Rs)	MPCE Class	Average quantity consumptn (Kg)	Average value consumptn (Rs)
0-235	9.88	69.67	0-335	9.25	73.72
235-270	10.87	79.64	335-395	10.04	86.38
270-320	11.33	86.98	395-485	10.09	89.82
320-365	11.70	91.47	485-580	10.24	95.38
365-410	11.98	95.26	580-675	10.12	99.07
410-455	12.16	98.83	675-790	10.25	104.65
455-510	12.37	101.91	790-930	10.08	107.47
510-580	12.61	106.42	930-1100	10.09	111.99
580-690	12.77	110.83	1100-1380	9.97	117.01
690-890	12.72	113.67	1380-1880	9.63	121.19
890-1155	12.77	119.17	1880-2540	9.50	129.07
1155 & more	13.50	134.00	2540 & more	9.10	134.65
All classes	12.12	100.68	All classes	9.94	105.84

Like in the upper class, rice& wheat are the major cereals consumed by the lower mpce class. At all India level for both rural and urban sectors consumption of rice in quantity terms is more than wheat, but there is significant variation across the states. Consumption of wheat is generally more in the northern states.

Consumption pattern of non food items: Major item under non food items in both rural and urban sector is 'fuel and light'; the expenditure comes to around 43.3% of the nonfood items in rural sector and 40.7% in urban sector. The primary source of energy used for lighting for the lowest mpce class in the rural sector is kerosene for 70.1% and 28.4% have electricity as source of lighting. In the urban sector 62.1% hhs have electricity as the primary source of lighting and 36.1% depends on kerosene.

Primary source of energy for cooking for the lowest mpce class in rural sector is firewood & chips for 78.4% of the hhs and dung cake as the next major source for 7.2%. LPG is also reported in few states (All India-0.2%) like Haryana(5.6%), Kerala(5.1%), Maharashtra(0.5%), Orissa(0.3%), TN(1.7%). In the urban sector 68.6% hhs depend on firewood & chips and about 15% (approx.5-6% each) depend on kerosene, LPG and dung cake.

Food Sufficiency: As regards food adequacy status in the rural sector , West Bengal is at the bottom with only 88% hhds getting adequate food throughout the year, followed by Orissa- 93.4%, Assam-94.0%, Bihar – 96.7% ,Chattisgarh – 97.4%, Kerala -97.5% ..... . In the urban sector Assam is at the bottom with 97.3%, Bihar - 97.5%, Kerala – 98.2%, WB – 98.4%, UP- 99.0%,Orissa – 99.4% ..... .

Concentration of population of lower mpce class is seen maximum in Orissa, but in terms of food adequacy Orissa is better positioned compared to WB in Rural sector and many states like Assam, Bihar, Kerala, WB, UP etc. in urban sector. In this context, it is pertinent to mention that food adequacy is

ascertained either by the perception of the investigator or by a direct question to the informant, but mpce is arrived at after a detail probing.

Child-Adult ratio and Sex ratio: The average household size of the lowest mpce class is 5.61 in the rural sector against the national average of 4.88. In the urban it is 5.93 against the national average of 4.36. *Child- Adult ratio (number of children per 1000 adults; persons below 15 are considered as children.)* worked out on the similar lines of sex ratio depicts wide variation between lower and upper classes in both the sectors (see table -3). Child-Adult ratio for the lowest class is 948 in the rural sector while for the highest class it is 282. For urban the corresponding figures are 856 and 174. No comments on this pattern.

The sex ratio as per the census just after independence was 946 (census 1951) and the same has come down to 933 as per the latest census 2001.The same at world wide is much above 1000, except for a few countries. Decreasing sex ratio over the years is a serious concern and efforts are being taken to arrest this trend through different schemes. As per NSS 61st round, it is further alarming to see that there is significant difference in sex ratio between the different mpce classes. At the national level it is seen that the sex ratio is positively skewed to the lower mpce class both in rural and urban sector. In the rural sector the sex ratio in the lowest mpce class is 1062 compared to 953 at all India level and for urban sector the same is 1044 compared to 909 at all India level. This trend is seen uniformly for almost all states except for AP (Rural) where the sex ratio is estimated as 833 in the lowest class against the state average 999, but for other lower classes the case is different.

Table-3: Child-Adult ratio and Sex ratio. MPCE class wise (All India)

Rural Sector				Urban sector			
MPCE Class	Child-Adult ratio	Sex ratio		MPCE Class	Child-Adult ratio	Sex ratio	
		All	Children			All	Children
0-235	948	1062	1023	0-335	856	1044	1021
235-270	895	999	917	335-395	669	1015	972
270-320	780	1000	950	395-485	594	994	958
320-365	704	974	923	485-580	499	918	865
365-410	641	975	918	580-675	463	893	877
410-455	575	955	918	675-790	429	944	951
455-510	534	953	905	790-930	367	873	805
510-580	481	925	842	930-1100	329	861	811
580-690	415	906	815	1100-1380	283	870	813
690-890	374	911	820	1380-1880	244	871	821
890-1155	321	914	823	1880-2540	216	839	765
1155 & more	282	914	838	2540 & more	174	867	838
All classes	552	953	897	All classes	397	909	883

 The sex ratio at the upper echelon of the society is found much below the all India average, which is 914 in the rural sector and 867 in the urban sector compared to the national average of 953 and 909.   The sex ratio for children also depicts the same picture with comparatively more female children in the lower strata and less female children in the upper strata. Why the economically independent, educated and the affluent class having better medical facilities both in rural and urban sectors have lesser number of females? This is a question remains unanswered. From the above, it may be concluded that the imbalance in the sex ratio at national level is largely due to the low sex ratio in the upper mpce classes.

Conclusion: Concentration of population of the lowest mpce class is seen in the states of Orissa, Bihar, MP, Chattisgarh and Jharkand. The society in the lowest mpce class spends 68% of the total expenditure towards food items in the rural sector and 65% in the urban sector. Major expenditure of food items is towards cereal items and major non food expenditure is towards 'fuel & light'. Primary source of energy for lighting is kerosene in rural sector and electricity in urban sector. Major source of energy for cooking is firewood & chips in both sectors. Non adequacy of food and concentration of lowest mpce segment do not seem to have any direct relation. Average household size is 5.6 in the rural sector, while for urban sector it is 5.9.The child-adult ratio *(number of children per 1000 adults)* is seen very high at the lowest mpce class and too low at the high mpce classes. Sex ratio is seen more than 1000 in the lowest mpce class, but much below the all India figure for the higher mpce classes. This pattern is seen uniformly for all states both in rural and urban sectors - a matter of concern.

References: i) NSS report no.508(61/1.0/1) : Level and pattern of consumer expenditure, 2004-05.
ii) NSS report no.511(61/1.0/4) : Energy sources of Indian households for cooking   and lighting, 2004-05.
iii) NSS report no.512(61/1.0/5) : Perceived adequacy of food consumption in Indian households 2004-05.
iv)NSS report no. 457(55/1.0/3): Level and pattern of consumer expenditure in India 1999-2000.

The Sources of Energy Used for Cooking By Households In Rural India

Altaf Hussain Haji[*]

Rural people largely depend upon fuel-wood, crop residues, and cattle dung for meeting the basic energy needs for cooking and heating purposes. With increasing population pressure, the consumption of fuel-wood has far exceeded its supply, thereby causing deforestation and desertification. The objective of this paper is to analysis the trend of the uses of sources of energy for cooking of rural households in India. For this analysis NSS data of 55th round and 61st round has been considered. To analysis the data by using the concepts of regression analysis and find expected values on the basis of NSS data 61st round. These expected figures give the way to suggest the government for speed up the programs and schemes for the development concepts to improve situation of the sources of energy used for cooking of households of rural sector in India and also improve the situation of causing deforestation and desertification

1.1 Two third of the population live in the rural sector as per census 2001. Rural sectors earmarked all areas which are not identified as Urban. The concepts of Urban and Rural sectors followed in the socio-Economic of NSSO is same as followed in the population census.

1.2 The NSSO conducts regular consumer expenditure surveys as part of its rounds, each round normally of a years duration and covering more than one subject of study. The surveys are conducted through household interviews, using a random sample of households covering practically the entire geographical area of the country. The presently report is based on data collected through the 61st round of NSS (July 2004-June 2005).

1.3 <u>Source of energy for cooking</u>; The source of energy used by a household during the last 30 days preceding the date of survey has been ascertained and collected in the NSS 61st round survey are Coke, coal, Firewood and chips, LPG, Gobar gas, Dung cake, Charcoal, Kerosene, Electricity, others

1.4 The basic data released through the 61st Round NSS (July 2004-June 2005) report are " Per thousand distributions of households by primary source of energy for cooking or lighting in each monthly pre capita expenditure(MPCE) class for each State/UT and all-India and Per thousand distributions of households by primary source for cooking or lighting for each household (occupational) type and social group for each State/UT and all-India." All the data are provided separately for rural and urban sectors. Let us take the rural data for consideration and analysis the data of source of energy for cooking .

Table 1:_Per 1000 distribution of households by primary sourc e of energy used for cooking for all India (rural)_

S.no	Primary source of energy used for cooking	55th round NSS July 1999-June 2000 X(1)	61st round NSS July 2004-June 2005 X(2)
1	No cooking arrangements	11	13
2	Firewood and chips	755	750
3	Dung cake	106	91
4	LPG	54	86
5	Others(Gobar gas charcoal, K.oil, electricity) includes coke and coal	74	60
6	Total	1000	1000

1.5 Some general findings relating to the primary source of energy used for cooking in rural areas based on data collected during 61st round (July 2004-june 20050 are as under , The above data in the above table and Bar graph shows that although the energy used by households in rural India is changing from 55th round to 61st round NSS and the traditional fuels such as firewood and chips, dung cakes are still the main sources of household cooking energy Country in the rural areas of the country . As we know that in the rural areas of the, the household used mainly three primary sources of energy for cooking Viz firewood and chips, dung cakes and LPG. As indicated table 1 above, firewood and chips was used by three-fourths of the rural households. However. There was a marginal decrease in the percentage of households using firewood and chips over the period 1999-2005 which is the percentages

[*] The author is working as Deputy Director ,NSSO(FOD), Srinagar (J &K). The views expressed in this paper are those of the author and not of the institution to which he belongs.

decreased by point over 1999-2005. This percentage of decreasing is not considered as improvement of our country. The main cause of this marginal decrease is poor implementation of various schemes and programmes of Government of India and state governments.

1.6   India has today among the world's largest programmes for renewable energy. Our activities cover all major renewable energy sources of interest to us, such as, biogas, biomass, solar energy, wind energy, small hydro power and the other emerging technologies. In each of these areas, we have programs of resource assessment, R&D, technology development and demonstration. Several renewable energy systems and products are now not only commercially available, but are also economically viable in comparison to fossil fuels, particularly when the environmental costs of fossil fuels are taken into account.

Diagram 1
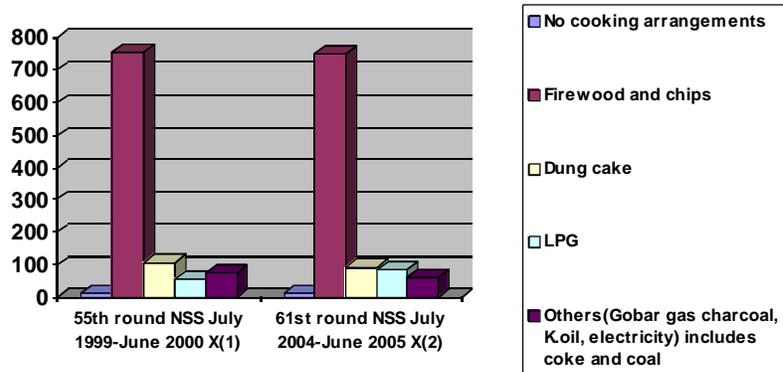
Diagram 2A

Diagram 2B

78
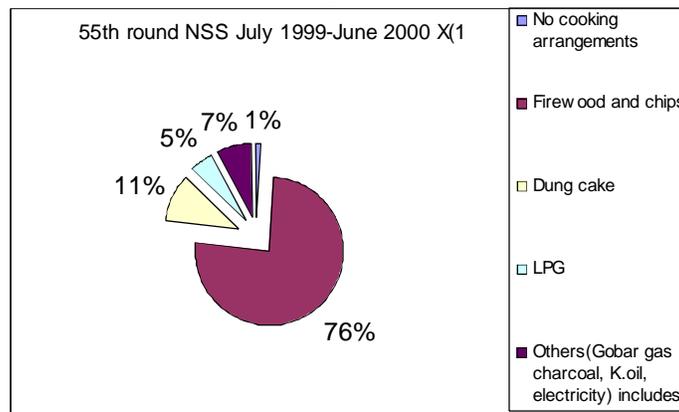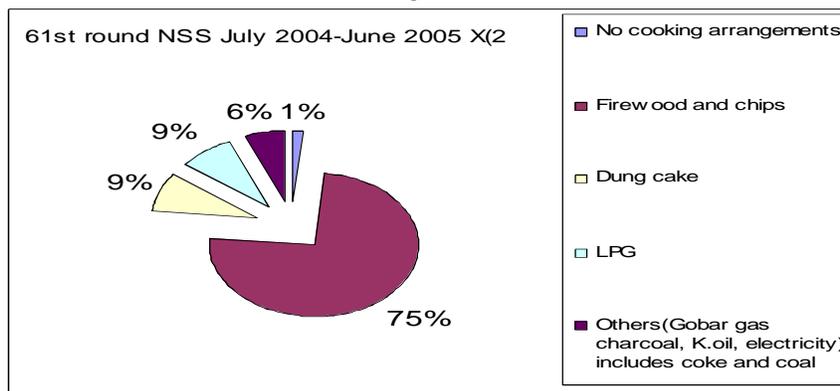
1.7 Government of India is involved in the implementation of these programs for development, demonstration and utilization of various renewable energy based technologies, such as, solar thermal; solar photo-voltaic; wind power generation and water pumping; biomass combustion/co-generation; small, mini, & micro hydro power; solar power; utilization of biomass - gasifies, briquetting, biogas, improved chulha (cook-stove); geothermal for heat applications and power generation/energy recovery from urban, municipal and industrial wastes; and tidal power generation. Rural people largely depend upon fuel-wood, crop residues, and cattle dung for meeting the basic energy needs for cooking and heating purposes. with the increasing population pressure, the consumption of fuel-wood has far exceeded its supply, thereby causing deforestation and desertification. Similarly, the age old practice of burning of cattle dung and crop residues for cooking purpose is depriving the agricultural lands of much needed manure and consequently causing loss of soil fertility.

1.8 Besides, the inefficient burning of biomass fuel materials in traditional chulhas creates high level of in-door air pollution, which in turn causes eye and respiratory related diseases among women and children in the rural areas. Therefore, the strategy of the Government has been to promote biogas units for recycling of cattle dung to harness its fuel value without destroying the manure value. Toilet linked biogas plants are also popularized for sanitary treatment of human waste. A variety of smokeless efficient chulhas has been popularized to conserve fuel wood and reduce domestic air pollution. .

1.9 The nodal ministry, Ministry of new and renewable energy has taken up following programmes for meeting the rural energy needs, specially cooking energy :[1] Biogas development [2] National programme on Improved Chullias [3] Integrated energy programme

1.10 Based on above data available in the table 1 and the implementation of various programs can our country is able to show the more decrease in firewood and chips, dung cake and other primary sources of energy and increase use of LPG for Cooking purpose in future. This is a problem we have to look upon it.

Let us analysis above data to find regression line between 55th and 61st round NSS data. i.e X(1) and X(2). Let the regression line between X(2) and X(1) is X(2) = A *X(1) + B

Where A =

{Sum of product of {x(1),x(2)}- product of Sum of x(1) & sum of x(2)/n}/ {Sum of sq of x(1) —Sq of sum of x(1)}   Here n=5

Table 2

55th round NSS July 1999-June 2000 X(1)	61st round NSS July 2004-June 2005 X(2)	x(1)=X(1)--a	x(2)=X(2)-b	Sq{x(1)	Sq{x(2)}	x(1)*x(2)
11	13	-95	-78	9025	6084	7410
755	750	649	659	421201	434281	427692
106 =a	91 =b	0	0	0	0	0
54	86	-52	-5	2704	25	260
74	60	-32	-31	1024	961	992
Sum X(1)= 1000 Mean of X(1)=200	Sum X(2)= 1000 Mean of X(2)=200	Sum x(1)= 470	Sum x(2)= 545	Sum of sq x(1)= 433945	Sum of sq x(2)= 441351	Sum of x(1)*x(2)=436334

Using the values in above equation we get

Value of regression coefficient A = 0.9880

And B =2.4.000

The linear equation is as under

X(2) = 0.9880*X(1) +2.4000 ----------------(1)

Using this equation we can find the future vales for energy sources of Indian households of rural areas for cooking purpose . let us we calculate the values of the sources of cooking in rural India for the year 2010 i.e. X(3) on the bases of data X(2) above .

Keeping above equation (1) above , let the equation be

$X(3) = 0.9880*X(2) + 2.4000$ -----------------(2)

The future values will be calculated as under table 3

Table 3

S.no	Primary source of energy used for cooking	61st round NSS July 2004-June 2005 X(2)	Expected values of X(3) (year 2010)
1	No cooking arrangements	13	15
2	Firewood and chips	750	743
3	Dung cake	91	89
4	LPG	86	88
5	Others(Gobar gas charcoal, K.oil, electricity) includes coke and coal	60	61
6	Total	1000	

Diagram 3

Expected values of X(3) (year 2010
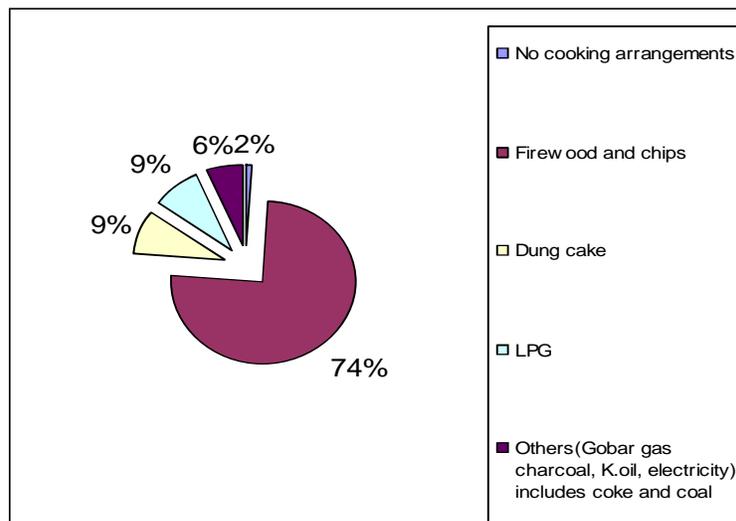
1.10   In the table 3 and Diagram 3 shows that there will be same marginal decrease for firewood and chips and Dung cakes during 2010 which will not trace out the problems of deforestation and desertification and other problems of pollution. In the table 3 the figures shows that it will be possible to take many decades to control the problems of deforestation and desertification and other problems and it takes nearly 250 years to reduce below 50% the primary resources of energy of firewood and chips of households of rural areas. Further the no use of dung cakes will be possible after 100 years.

1.11   It is suggested that at this stage we have to stand regarding above problems and trace out the problem as early as possible. The government has to think over such big problems nowadays and make programs and schemes in such a way to control by fixing goals and target. There should be fixed mission and vision for energy resources i.e. Energy for all.

Reference

[1] Report no 311(61/1.0/4) Energy sources of Indian households for cooking and Lighting 2004-05

[2] Econometrics and Mathematical Economics by S.P Singh, Anil K Parashar and H.P Singh of S. Chand & Company Ltd Ram Nagar New Delhi --110055

[3] Annual report 2006-2007 , Ministry of Statistics and programme implantation Government of India

Horizontal Rift versus Vertical Mobility of People across Different Expenditure Classes in Indian States in Recent Period[*]

Nivedita Gupta & Buddhadeb Ghosh[*]

Abstract : *There is adequate evidence to suggest that while overall poverty and inequality have marginally been on the decline in rural areas, slow reduction in urban poverty and rising urban inequality in almost all the states have become the major feature of development in India in recent decades.*

The purpose of the present paper is to investigate the inter and intra-state purchasing power differentials across the expenditure classes in each of the states in a comparable set up and over time during the last four large sample rounds of NSS surveys from 1987-88 to 2004-05. To study the changes in the levels of living of the people, 1993-94 comes naturally as the threshold point between the pre-reform and post-reform era. Given the nature of complex development across and within the states in post-reform period, the following questions become unavoidable:

1. Whether better off states have necessarily lower number of people in the bottom stratum and more people in the middle and top layer?

2. Whether better off states have lower rural urban divide?

3. Where are the people in major expenditure classes spiraling over time?

It is observed that there has indeed been some real growth in the level of living of people in both rural and urban areas but the rate of change differs widely between these two areas as also from pre-reform to post-reform period. Although there is some reduction in poverty across board, unaccounted and disperse prosperity especially in post-reform era, which has not percolated to all corners of society, calls for in-depth investigation for understanding the rising inequality in purchasing power within the states. The significance of rural urban divide becomes very important in view of the fact that rural and urban balance is a necessary condition for overall development of the regions of any country.

Besides examining state wise Lorenz ratio for both rural and urban areas, attempt is also made to derive the share of state population and their entitlement corresponding to all India lowest 30 percentile class (whom we designate as 'the poor'), the next 20 percentile class up to 50% ('vulnerable middle class'), the 'upper middle class' corresponding to 50 – 80 percentile class and the top 20 percentile class ('the rich'). This has helped us to understand the intra-state disparity between different expenditure classes both in terms of their share of population as also in their endowment share in rural and urban sectors.

It has come out from the study that counting the poor alone while leaving a substantial proportion of people, who live marginally above the conventional poverty line but much below the decent level of income, from the core of analysis would inevitably make any policy intervention ineffective. The question of vertical mobility of limited group of people versus horizontal rift across different expenditure classes within the states has come out as a dominant feature of post-reform India where rural urban divergence in terms of population composition and endowment share has been intensified. Thus, there is urgent need to review the existing strategies to tackle rural and urban poverty and inequality syndrome in a simultaneous framework, and not in isolation from each other.

Key Words: Inequality, Lorenz Ratio, Poverty Line, Convergence Theory and Trade Openness.

I. Introduction: It took about four decades to understand that the issues relating to poverty, inequality and growth have been inextricably linked together in India. So targeting one in isolation from the others became the 'conventional wisdom' till only very recently.[1] This has made the role of policy darker than ever before even with sincere efforts from the top planning authorities; yet widespread horizontal rift and limited vertical mobility of various economic classes carried intense and complex asymmetries not only across the states but also within the states, particularly between rural and urban areas.

There is no lack of consensus, among others, about the urgent need to fight poverty and inequality, but the diagnosis of the malaise must precede the medicines to mitigate them. Innumerable researches done

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during last 60 years, show that the problem is not linear either. In the post-reform period, the Government tried to maximize economic growth with the hope that 'the trickle down' process would percolate down among different classes of the society across all the states. Quite naturally, 'State' as a homogeneous unit of analysis has been assumed as the basic geographical unit upon which social and economic policies are based. The issue of balanced regional growth beyond the 'state' has been the unfortunate casualty of this thinking process.

Existing literature **(Deaton & Dreze, 2002**; **Sen & Himansu, 2004**; **Bhanumurthy & Mitra, 2004**; **Ghosh, Marjit and Neogi, 1998**; **Krishna, 2004 and others)** bears enough testimony to the fact that states with higher income have grown relatively faster and vice versa during recent period thereby meaning that the poorer states have failed to catch up with their richer counterparts.[2] Although continuous concern by the analysts and related policy changes have played some positive role in controlling poverty across board, unaccounted and disperse prosperity due to open economic policies (particularly since 1991) have not percolated to all corners of the society. We would like to address the following questions with the help of the consumer expenditure data obtained from the four large sample rounds of NSS surveys during the period 1987-88 to 2004-05.

(**1**) **Who are the better-off states and does their growth experience over the last two decades corroborate the divergence theory?**

(2) Do the better off states have lower rural-urban divide and are the gaps widening over time?

(3) Do the better off states necessarily have lesser number of people in the bottom stratum and more in both the middle and top layers?

(4) Where are the people in the major expenditure classes spiraling over time?

So the question of intra-state disparity needs meticulous scrutiny as it has serious direct and indirect implications for future policy under the present market economy in India, which was hitherto uncalled for. What is much more pressing is that counting the poor alone and leaving a large proportion of people who live marginally above the conventional poverty line but much below the decent level of income from the core of analysis would inevitably make any policy intervention ineffective. Again if there are perceptible differences among different expenditure classes even within each of the states, the conventional state level aggregate analysis becomes to a large extent redundant in the present context. Under such a backdrop, purpose of the present enquiry is to understand the inter-and intra-state purchasing power differentials in rural and urban areas corresponding to the proportion of people thereof in each of the states in a comparable set up from 1987-88 to 2004-05.

The paper proceeds as follows. Section II deals with the changes in the level of living in Indian states over the last two decades. Section III concentrates on the analysis of rural urban divides in terms of purchasing power, poverty and inequality. The question of vertical mobility versus horizontal rift of the major expenditure classes is discussed in Section IV. Section V records the major observations of the study, limitations and future directions.

II. Level of living in Indian States & its Divergence: To study the pattern of real growth in the level of living in Indian states we take average monthly per capita consumer expenditure (MPCE) at constant prices (1993-94 prices) from all the four large sample rounds of survey taken up by NSSO in 1987-88, 1993-94, 1999-00 and 2004-05 (Table 1). For identifying the better-off or impoverished states we take only one set of combined MPCE i.e. the weighted average of rural and urban MPCE, with their estimated populations as weights. The relative positions of each of the fifteen major states have been studied in detail. We have also examined the average annual rate of growth in real MPCE for the individual states during the said period vis-à-vis their base year values to verify whether or not it corroborates the divergence theory.

However it needs to be reiterated that the estimates for the three states, i.e. Bihar, Madhya Pradesh and Uttar Pradesh are not strictly comparable in 2004-05 as three new states (Jharkhand, Chattisgarh and Uttaranchal respectively) have been curved out of them in recent years.

The following features are worth noting here (Table 1).

First, the best five states in terms of MPCE level in 1987-88 were Punjab, Haryana, Kerala, Maharashtra and Tamil Nadu while the most impoverished states were Bihar, Orissa, U.P., M.P. and Assam. The other states remained more or less close to the national average. In 2004-05 the best five retained their lead

position though Kerala has emerged as the new leader. Karnataka slipped down to the group of worst five and the newly recognized state of U.P. improved its position substantially and crossed the country average. In general, relative rankings of the states according to real values of MPCE have not changed from the pre-reform to the post-reform period. Values of SRC (Spearman rank correlation) of real MPCE of a state with respect to that of its previous round have remained very high: 0.97, 0.95 and 0.93 through 1993-94, 1999-2000 and 2004-05 respectively. The Eastern states including West Bengal have usually lagged behind the Western, Southern and Northern states.

Table 1: Pattern of Real MPCE (at 1993-94 prices) for States & their Ranks over Large Sample NSS Rounds									
State(R & U)	Average MPCE (R & U Combined) at constant (1993-94) prices in								Average annual rate of growth (Jul'87-Jun,'05)
	(Jul'87-Jun'88)		(Jul'93-Jun'94)		(Jul'99-Jun'00)		(Jul'04-Jun'05)		
	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank
Andhra Pradesh	325	9	320	9	347	9	382	9	1.05%	7
Assam	312	11	279	13	300	12	332	12	0.36%	12
Bihar	258	15	235	15	266	14	249	15	-0.21%	14
Gujarat	341	7	353	5	418	6	420	6	1.35%	4
Haryana	415	2	409	3	491	3	517	3	1.45%	3
Karnataka	313	10	314	10	391	7	364	11	0.96%	9
Kerala	400	3	416	2	518	1	598	1	2.92%	1
Madhya Pradesh	297	12	289	12	297	13	300	13	0.07%	13
Maharashtra	378	4	369	4	428	4	431	4	0.83%	10
Orissa	261	14	243	14	265	15	250	14	-0.26%	15
Punjab	445	1	456	1	504	2	546	2	1.34%	5
Rajasthan	344	6	346	6	386	8	372	10	0.48%	11
Tamil Nadu	349	5	345	7	425	5	424	5	1.27%	6
Uttar Pradesh	295	13	297	11	328	11	395	7	2.01%	2
West Bengal	326	8	325	8	346	10	383	8	1.04%	8
All India	328		326		369		375		0.85%	
Rank Correlation with previous large sample surveys	0.97		0.95		0.93					
Rank Correlation of base year MPCE & its growth rate									0.60	

Second, average real MPCE at all-India level being too low further dropped in absolute terms from 1987-88 to 1993-94 after which it has increased at an average rate of only 1.4% per annum. Except Gujarat, Kerala and Punjab none of the states experienced any real growth between 1987-88 and 1993-94. Since then the states have been growing at widely varying rates. While the two poorest states of Orissa and Bihar did actually experience a fall in level of living since 1987-88, the already better-off states like Kerala, Haryana and Punjab had the bests of annual rates of growth. Also, the rank correlation coefficient between the state-wise MPCE values in 1987-88 and its growth rates till 2004-05 has come out to be significantly positive (0.60).

Note that in **Figure 2** on the left bottom block of the diagram (low base, low growth) are the states like Bihar, Orissa, MP. Assam, Karnataka, AP and WB, while on the top right are the states Kerala, Punjab, Haryana, TN and Gujarat. Only three states are slightly dispersed: UP on top left (low base year value but high growth rate), Maharashtra and Rajasthan on bottom right (low GR but moderately high base year value). **Therefore it is clear that the states with higher expenditure level in 1987-88 are largely the states, which have achieved higher growth rates during 1987-88 to 2004-05. Thus, divergence is the general trend among Indian states in recent times in terms of level of living.**
Now we would like to see whether the assumption of states as a homogeneous unit of analysis is really tenable in the light of expenditure data for the last twenty years or so. In other words we would examine how wide are the rural-urban divides within the states in respect of level of living, poverty and inequality.

Fig. 2 Statewise Average MPCE of Base Year(1987-88) vis-à-vis average annual growth rate
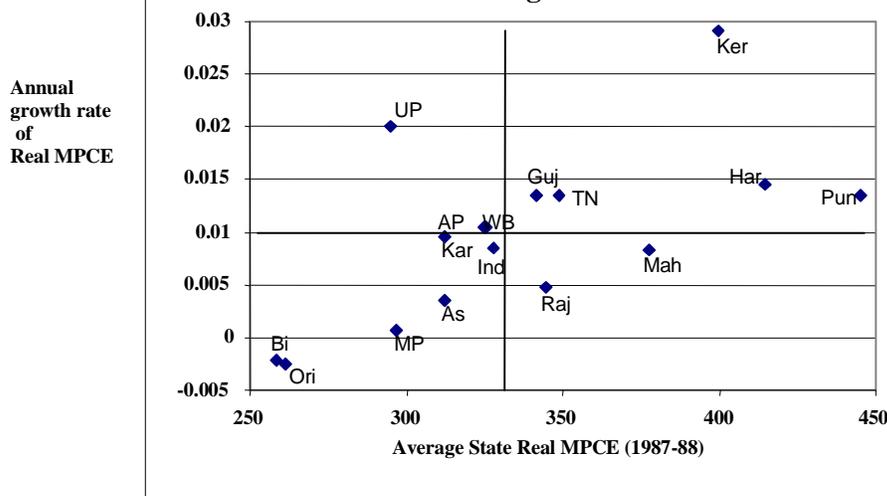
III. The Rural-Urban Divide:

a) Within State Rural & Urban Divide in MPCE: There are reasons to believe that perceptible differences exist between the rural and urban areas of a state in terms of not only the prevailing prices, but also the expenditure patterns of the two. The significance of the rural urban divide becomes very important in view of the fact that rural and urban balance is a necessary condition for overall development of the regions of any country. We would like to address the issue as to whether the better-off states have better rural to urban average expenditure ratio or not. Another purpose is to get an idea of the real growth in the level of living of the people separately for the rural and urban areas and to see if the rate of growth differs widely between the two as also from pre-reform to post-reform period. For this purpose we take the average real MPCE at constant prices (1993-94 prices) using consumer price indices CPI-AL and CPI-UNME for the rural and urban areas respectively.

Table 3.1 presents rural and urban real MPCE for all the four rounds. In the last five columns, we present rural to urban ratio of MPCE for the last four rounds and the ranking of the states on the basis of the ratio for the latest round (i.e. 2004-05). The lower the ratio, the higher is the relative backwardness of the rural areas within the state.

The important observations from the table are noted below.

(1) In any round there is hardly any state, which records higher rural MPCE than the mean Indian urban MPCE. Again we observe that the minimum urban state MPCE is invariably higher than the corresponding rural average. Prevailing price difference between rural and urban areas alone may not explain this disparity wholly. Thus even at such level of aggregation, urban India on an average has always been better off than the rural areas of even the most developed states.

(2) It is also noteworthy that the growth rate of MPCE was much lower in rural India compared to urban India both in pre-reform and post-reform periods. The average annual growth rate of all-India rural real MPCE has improved from 0.1% to 1.2% during the pre-reform (1987-88 to 1993-94) and the post-reform (since 1993-94) period but the increase in urban real MPCE was always higher at 1.3% and 1.6% respectively.

(3) Average Rural consumption expenditure is less than 75% of urban expenditure in all the states except Kerala and Haryana in 2004-05, which are also the best MPCE states. At the other extreme we find in seven relatively poor states the ratio hovers around 54% to 60%. Also **for the country as a whole this ratio is only 59.3% in 2004-05 and it had continuously deteriorated even in real terms from 65.8% in 1987-88 to 61.5% in 1993-94 and so on.**

Table3.1: State-wise Rural Urban Ratio of Average Real MPCE(at 1993-94 price) over Large Sample NSS Rounds

State/ UT	(Jul'87- Jun'88)		(Jul'93- Jun'94)		(Jul'99- Jun'00)		(Jul'04- Jun'05)		Rural/Urban MPCE Ratio				
									(1987- 88)	(1993- 94)	(1999- 00)	(2004- 05)	Rank
	R	U	R	U	R	U	R	U					
An.Pr.	283	398	289	409	295	472	335	522	71.1	70.7	62.5	64.1	7
Assam	272	467	258	459	278	497	310	542	58.2	56.3	55.8	57.2	11
Bihar	242	323	219	353	250	368	238	356	74.9	61.9	68.1	66.8	6
Gujarat	285	416	304	455	359	545	340	571	68.5	66.8	65.9	59.6	9
Haryana	380	498	386	474	465	557	492	585	76.3	81.3	83.5	84.2	2
Kar.	264	385	270	424	326	557	290	529	68.5	63.7	58.6	54.8	14
Kerala	374	461	391	494	499	570	578	660	81.3	79.1	87.7	87.6	1
M.P.	251	408	252	409	261	423	251	462	61.6	61.8	61.7	54.2	15
Mah.	285	484	273	530	324	595	324	588	58.8	51.5	54.5	55.2	13
Orissa	226	390	220	403	243	378	228	388	57.9	54.6	64.4	58.8	10
Punjab	432	467	434	511	484	549	484	679	92.5	84.8	88.1	71.2	4
Raj.	315	412	323	425	358	486	337	494	76.5	76.0	73.6	68.4	5
Tamil	273	430	294	439	335	593	344	553	63.5	67.0	56.5	62.2	8
U.P.	263	375	274	389	304	422	369	501	70.2	70.4	72.1	73.8	3
W.B.	265	432	279	475	296	529	321	575	61.5	58.8	55.9	55.8	12
All-India	**280**	**426**	**282**	**458**	**317**	**522**	**319**	**539**	**65.8**	**61.5**	**60.6**	**59.3**	
Annual Growth Rate in Average MPCE /R-U ratio	0.1%	1.3%					1.2%	1.6%		-1.1%		-0.3%	

(4) **O**nly three states (i.e. Kerala, Haryana and UP) have recorded improvement in the proportion of rural to urban MPCE from the pre-reform (1987-88) to post-reform period (2004-05). But it has drastically fallen in Punjab from 92.5% in 1987-88 to 71.2% in 2004-05. In Orissa and Bihar, the absolute values of rural and urban MPCE are so low that it may not be sensible to talk on the percentage in terms of urban MPCE.

We have seen that **states with relatively more developed rural sector have achieved higher overall development.** But, it can also be concluded that **during the period from 1987-88 to 2004-05, there is adequate evidence towards widening gap between rural and urban level of living across the states**. This trend has been moving against rural society, which may be a reason for large scale exodus of rural people to already crowded urban agglomerations. Given the fact that cities have crossed the sustainable limits in all the major states, there is urgent need to tackle the problem in a simultaneous framework and not in isolation from each other.

a) **Trajectory of Rural and Urban Poverty:** It took 40 years from Independence for national poverty ratio to reach at such level as 39% in 1987-88, beyond which it took just 17 years to get reduced to 28.3% for rural and 25.7% for urban areas. By any standard, it is not a mean achievement.

Let us briefly note the salient features of state level poverty in rural and urban parts of the states over last four large sample rounds of expenditure survey. We hardly refer to 1999-2000 in view of non-comparability of its reference period, the argument often raised by the analysts.

The most striking observation(Table 3.2) is that in majority of the cases urban head-count ratio (HCR) has been higher than the corresponding rural one during the period except for the eastern states, namely Assam, WB, Bihar and Orissa. We find that the rate of poverty reduction is much higher in rural India (-2.1%) compared to urban areas (-1.9%) in the post-reform period.

In 1987-88, seven states were above and eight states were below the all-India rural poverty ratio (39%). The states with lesser number of poor were Punjab, Haryana, AP, Gujarat, Kerala, Rajasthan and Karnataka. The states having HCR higher than national level were: Orissa, Bihar, West Bengal, Tamil Nadu, U.P., Maharashtra and M.P.

In 1993-94, one additional state entered the league of less poor states. TN did exceptionally well to lift her rural position while, HCR increased in absolute percentage terms in Bihar to 56.6% in 1993-94.

In 2004-05 nine states have lifted their rural HCR above all-India rural ratio of 28.3%. The new entrant is Assam. Note that the relative positions of the states in terms rural poverty are quite sticky in 2004-05 with the significant Spearman's Rank Order Correlation (0.90) between 1993-94 and 2004-05.

Table 3.2: State-wise Percentage of Population below Poverty Line - Rural & Urban

State / UT	Rural						Urban					
	1987-88		1993-94		2004-05		1987-88		1993-94		2004-05	
	% Poor	Rank	% Poor	Rank	% Poor	Rank	% Poor	Rank	% Poor	Rank	% Poor	Rank
Andhra Pr.	21	3	15.9	2	11.2	2	41.1	10	38.8	10	28	8
Assam	39.4	8	45.2	13	22.3	8	11.3	1	7.9	1	3.3	1
Bihar	54.2	14	56.6	15	42.1	14	63.8	15	40.7	14	34.6	13
Gujarat	28.3	4	22.2	3	19.1	6	38.5	6	28.3	6	13	3
Haryana	15.3	2	28.3	6	13.6	4	18.4	3	16.5	3	15.1	5
Karnataka	32.6	6	30.1	7	20.8	7	49.2	13	39.9	11	32.6	11
Kerala	29.3	5	25.4	4	13.2	3	38.7	7	24.3	5	20.2	6
Madhya Pr.	40.1	9	39.2	10	36.9	13	50	14	49	15	42.1	14
Maharashtra	40.9	10	37.9	9	29.6	11	40.5	9	35	8	32.2	10
Orissa	58.7	15	49.8	14	46.8	15	42.6	11	40.6	13	44.3	15
Punjab	12.8	1	11.7	1	9.1	1	13.7	2	10.9	2	7.1	2
Rajasthan	33.3	7	26.4	5	18.7	5	37.9	5	31	7	32.9	12
Tamil Nadu	46.3	12	32.9	8	22.8	9	40.2	8	39.9	11	22.2	7
Uttar Pr.	43.3	11	43.1	12	33.4	12	46.4	12	36.1	9	30.6	9
West Bengal	48.8	13	41.2	11	28.6	10	33.7	4	22.9	4	14.8	4
All India	39		37.2		28.3		38.7		32.6		25.7	

Notes:

1. SRC of HCR between Rural and Urban areas in 1987-88 = 0.46 (1.87)
2. SRC of HCR between Rural and Urban areas in 2004-05 = 0.66 (3.14)
3. SRC of HCR between Rural areas in 1993-94 and 2004-05 = 0.90 (7.44)
4. SRC of HCR between Urban areas in 1993-94 and 2004-05 = 0.93 (7.25)
5. Figures in brackets are values of t-statistics.

What is the trend of urban HCR?

Notice that the Spearman Rank Correlation between urban HCR of the states in 1993-94 and 2004-05 remained as high as 0.93. That is, there is no change in relative rankings of the states in terms of urban HCR.

There were seven states in 1987-88 who had lower HCR in urban areas compared to the all-India urban average of 38.7%. These states were as per ranking: Assam, Punjab, Haryana, WB, Rajasthan, Gujarat and Kerala. The worst urban poverty, on the other hand, can be found in Bihar, MP, Karnataka, UP, Orissa, AP, Maharashtra and TN.

Interestingly, in 1993-94, there was no change in the list of states performing better than the all-India average urban HCR of 32.6% though huge improvement took place in HCR values for some states. The most significant improvement however took place for Bihar whose urban HCR came down to 40.7% in 1993-94 from 63.8% in 1987-88.

In 2004-05, all-India urban HCR has come down to 25.7%. Rigidity of state level performance is again confirmed here with the exception of Tamil Nadu replacing Rajasthan in the group of low HCR states. As before, eight states have remained below the all-India level with a much higher dispersion in their urban poverty in 2004-05.

Further, during the earlier rounds of 1987-88 and 1993-94, no significant statistical correlation was found between rural and urban level of poverty within each of the states. **But 2004-05 gives some different signals: least poor states who achieved relatively better performance in rural poverty reduction have**

followed suit in urban areas as well. In general, poverty got reduced in all the states from pre- to post-reform period with the exception of urban Orissa.

To address the question as to whether the states with higher MPCE are necessarily the ones with lower poverty and vice versa, we have found that in both rural and urban areas, **rank correlation coefficients between MPCE and HCR remained more than 0.75 till 1993-94 after which there is some reduction in these values (0.70).** Thus, **generally speaking, better off states have lower poverty in both rural and urban areas.**

c) Inequality within Rural and Urban Areas of the States: Although there is some reduction in poverty across board, unaccounted and disperse prosperity especially in post-reform era, might not have percolated to all corners of society. This calls for in-depth investigation for understanding the rising inequality in purchasing power within the states.

We have estimated state level as well as all-India level Lorenz Ratio for all the four successive large sample rounds separately for rural and urban areas. But will discuss only the findings for the terminal rounds.

In 1987-88, the rural inequality was least in Assam, Gujarat, West Bengal, Bihar and Orissa. In 2004-05, these states still managed to be among top seven states with least rural inequality. Urban Lorenz ratio was lowest in Punjab, Gujarat, Bihar, Orissa and U.P. in 1987-88, though Punjab and U.P. have failed to retain the lead in 2004-05. Gujarat has maintained a fair combination of rural and urban equality in both 1987-88 and 2004-05. The performance of Maharashtra in terms of equality in distribution is consistently poor in both rural and urban areas. In sharp contrast to popular belief, Kerala has ranked the worst in both rural and urban inequality in both 1987-88 and 2004-05. The inequality scenario in both Punjab and Haryana has been highly inconsistent between rural and urban areas. However, the poorer performance of the developed states like Kerala, Punjab or Haryana in terms of inequality relates to the people living much above the conventional poverty line. Higher inequality in the developed states may be the outcome of their economic performance and also the faster speed of lifting the larger proportion of people toward the upper bracket of expenditure class. Unless more disaggregated district level studies are initiated, these discrepancies cannot be captured.

Table 3.3: State wise Lorenz Ratio over NSS Large Sample Surveys separately for Rural & Urban Sector							
State	**Lorenz Ratio (1987-88)**				**Lorenz Ratio (2004-05)**		
	Rural		**Urban**		**Rural**		**Urban**	
	Value	Rank	Value	Rank	Value	Rank	Value	Rank
An.Pr.	0.301	11	0.361	13	0.288	11	0.370	10
Assam	0.222	1	0.337	8	0.197	1	0.314	2
Bihar	0.264	4	0.297	3	0.205	2	0.330	3
Gujarat	0.233	2	0.285	2	0.268	6	0.304	1
Haryana	0.281	7	0.375	14	0.323	14	0.360	6
Kar.	0.292	9	0.334	7	0.264	5	0.365	7
Kerala	0.323	13	0.387	15	0.341	15	0.400	15
M.P.	0.291	8	0.331	6	0.263	4	0.394	14
Mah.	0.329	15	0.352	11	0.309	12	0.370	11
Orissa	0.268	5	0.324	4	0.281	9	0.347	4
Punjab	0.295	10	0.278	1	0.278	8	0.392	13
Raj.	0.303	12	0.346	9	0.248	3	0.367	9
T.N.	0.324	14	0.349	10	0.315	13	0.358	5
U.P.	0.279	6	0.329	5	0.287	10	0.367	8
W.B.	0.252	3	0.354	12	0.272	7	0.376	12
All-India	**0.298**		**0.354**		**0.297**		**0.372**	
Rank correlation of LR & MPCE	-0.41		-0.42		-0.60		-0.36	
Rank Correlation of Rural & Urban LR	0.43				0.33			

The rank correlation coefficient between rural and urban Lorenz ratio have fallen from 0.43 in 1987-88 to 0.33 in 2004-05. **This means that states with lower urban inequality are not necessarily the states with lower rural inequality and vice versa.** The foregoing analysis makes it convincingly clear that **there are strong symptoms of imbalance between rural and urban inequality within each of the states in India in the latest NSS Round of 2004-05.** Also there is a hint of potential trade off between growth and inequality in rural areas although the same does not hold good for the urban part. For the country as a whole the rural inequality has not changed much over the two decades though significant changes did occur in some of the states. Urban inequality has increased significantly between 1987-88 and 2004-05 in the majority of the states and also for the country in general.

It can be seen that the rank correlation between LR and MPCE was equally insignificant in both the rural and urban areas in 1987-88. But in 2004-05 we find quite a different scenario. In rural area the negative correlation has become more significant (-0.60) while in urban areas it got further weak (-0.36). Therefore we may examine the state wise Lorenz ratio vis-à-vis their average MPCE separately for rural and urban areas in 2004-05.

Fig.3a Statewise Lorenz Ratio vis-a-vis Average MPCE Rural (2004-05)
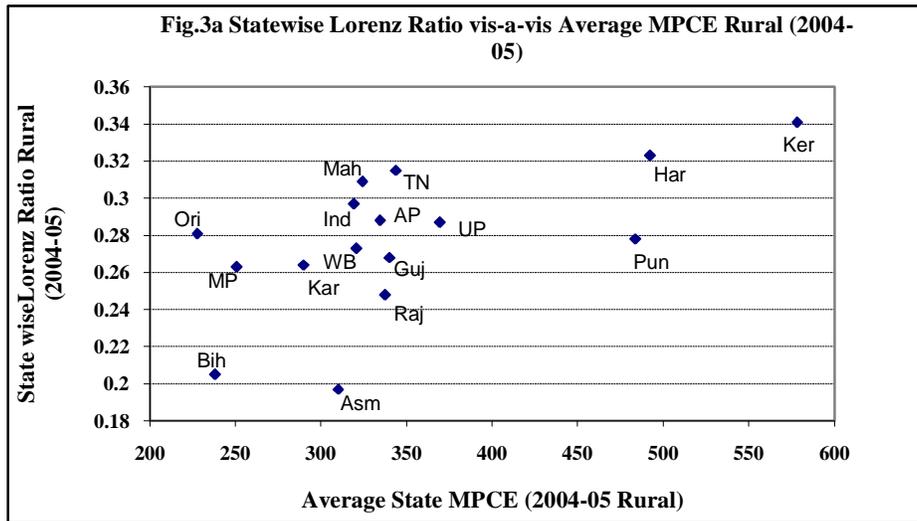
It is quite obvious from **Figure 3a** that Kerala, Haryana and Punjab form a group with high inequality and high MPCE; Bihar and Assam with low inequality and low MPCE, and rest of the states more or less represent high inequality with low to moderate MPCE in rural areas in 2004-05.

Fig.3b Statewise Lorenz Ratio vis-a-vis Average MPCE Urban (2004-05)
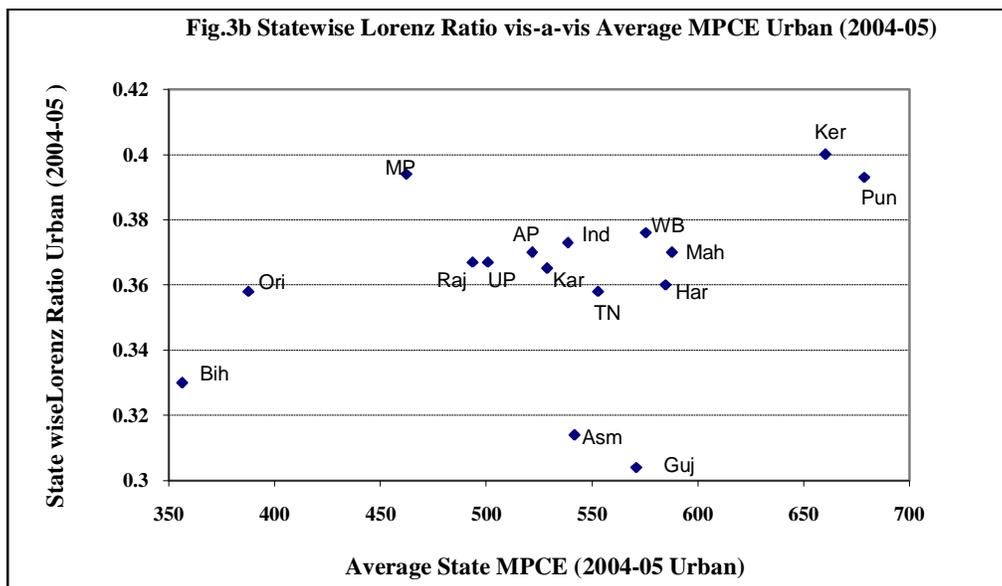
The picture is quite different in urban areas (**Figure 3b**): there is no clear pattern with an impoverished state like M.P. having as high LR as the rich states of Kerala or Punjab. Similarly Orissa and Haryana have same level of inequality though average MPCE of the former is almost half that of the latter.

Thus, it can not generally be said that poorer states have been able to maintain equality, or richer states have failed to do so especially in urban areas. More in-depth and disaggregated analyses are needed in order to understand the 'within state' growth and distribution phenomena beyond 'state' as a unit of analysis. In view of the above, the task of the policy makers becomes much more difficult, because in a situation where rural urban divide and inequality within a state have been rising, the relationship between growth of MPCE and inequality does not produce any apparently suggestive results. So the time has come for analyzing estimates pertaining to more disaggregated classes or obtaining district level estimates within each state.

The questions we would attempt to answer next are: how are different economic classes surviving separately in rural and urban areas in each of the states? And what shares these MPCE classes command in the state's total purchasing power?

IV. Vertical Mobility *versus* Horizontal Rift: Intra-State Population Distribution across MPCE Classes & Their Share in State Purchasing Power

In order to understand the changes in the distribution of population across different MPCE classes over the period from 1987-88 to 2004-05 in different states and their relative shares in the state purchasing power the following exercise is taken up.

We have taken three cut-off points corresponding to all-India 30th, 50th and 80th percentile classes of MPCE for each of the four large sample NSS surveys undertaken during the period. **Thus, for each of the surveys, we get four broad MPCE classes, which correspond to lowest 30 percentile class** (whom we designate as **'the poor'**), **the next 20 percentile class up to 50%** (the **'vulnerable middle class'**), the **'upper middle class'** corresponding to **50 – 80 percentile** class and the **top 20 percentile** class who can be termed as **'the rich'**. **Hereafter we refer them as MPCE class P (bottom 30%), M (between lowest 30% and 50%), U (between lowest 50% and 80%) and R (remaining top 20%) respectively.** This would help us to understand the disparity over these four broad all-India expenditure classes both in terms of the state's share of population as also in their respective endowment shares.[3] Since the MPCE classes are determined separately for the rural and the urban sectors we would take up this exercise for them separately.

To study the changes in the levels of living of the people, 1993-94 comes naturally as the threshold point between the pre-reform and post-reform era. We present here the results of only two rounds, viz.1993-94 and 2004-05, for the rural and urban parts in table 4R and 4U respectively and examine the changes over this ten year time period. For ease of understanding, let us use the following symbols in conformity with Table 4R and 4U:

> P= proportion of state population whom we designate as 'the poor';
>
> M= proportion of state population in the 'vulnerable middle class';
>
> U= proportion of state population in the 'upper middle class'
>
> R= proportion of state population whom we designate as 'rich';
>
> CE_P, CE_M, CE_U and CE_R denote the share of state's total consumer expenditure enjoyed by those in the P, M, U and R class respectively.

While examining the distribution across the states and over time, the predominant shares of P and M class indicate overall impoverishment of a state while higher share of R or U class gives the impression of their relatively better solvency. Again, any significant reduction in the proportion P or M with increase in the proportion of better-off classes (U or R) during this ten year period can be termed as overall improvement in the level of living in the state. The comparison of relative shares of endowment enjoyed by these classes (CE_P, CE_R etc.) reflects the real extent of inequality within the states and the changes therein over the period. If the reduction in the share CE_P is more than that of P or if the increase in proportion of R falls short of consequent rise in CE_R, we can conclude that inequality in the state has worsened. On the other hand, higher proportion of people in the middle class (M or U) or their higher share indicates an egalitarian distribution in a state, relatively speaking. Further, the vulnerable middle class (M) consisting of (30-50)% population need as much attention as the poor (P) in the sense that they

may be marginally better-off but still lack decent level of living and any sudden economic shock can push them far below at any point of time. So we must consider the combined proportion of both P and M as a critical component of our analysis.

With this backdrop, let us first examine the rural scenario. We find that while rural poor were concentrated in states like Orissa, Bihar and M.P., rural rich were more localized in the three states of Punjab, Kerala & Haryana in 1993-94. Moreover, the already lop-sided distribution of purchasing power across states gets still more polarized in 2004-05.

If we look at the combined proportion of P and M in the states we find that in most of the states it has gone down in rural part in 2004-05 while it had increased substantially in Karnataka, Gujarat and U.P. besides the already impoverished states of Orissa, Bihar and M.P. But again it is in these states that the share of these two classes in the state CE (i.e. CEP + CEM) has marginally increased than in other states.

Table 4R: Statewise Percent Population Belonging to All India Percentile Classes
and their Share in Total Consumer Expenditure of the State (Rural)

	MPCE Class	1993-94				2004-05			
		lowest 30%	(30-50)%	(50-80)%	Top 20%	lowest 30%	(30-50)%	(50-80)%	Top 20%
Andhra Pr.	% population	28	20	32	20	25	19	34	23
	% share in CE	15	15	31	39	12	13	32	43
Assam	% population	21	26	42	12	17	20	45	18
	% share in CE	13	22	46	20	10	15	46	29
Bihar	% population	47	21	25	7	46	23	25	6
	% share in CE	32	20	32	15	32	23	32	13
Gujarat	% population	18	17	40	25	21	19	34	26
	% share in CE	9	12	38	41	11	13	32	45
Haryana	% population	13	16	32	40	7	12	34	47
	% share in CE	5	9	24	62	2	6	23	69
Karnataka	% population	32	19	32	18	32	26	29	13
	% share in CE	17	15	33	34	19	21	31	28
Kerala	% population	11	13	35	42	7	9	28	57
	% share in CE	4	7	26	63	2	4	15	79
M.P.	% population	39	20	26	15	47	20	23	11
	% share in CE	23	16	30	31	29	19	28	24
Maharashtra	% population	36	17	29	18	30	19	30	21
	% share in CE	19	13	30	37	15	14	29	42
Orissa	% population	47	23	22	8	57	17	17	9
	% share in CE	31	22	28	19	37	17	24	22
Punjab	% population	5	8	36	52	4	11	34	51
	% share in CE	2	4	24	70	2	5	23	70
Rajasthan	% population	17	17	37	29	17	19	42	22
	% share in CE	8	11	33	47	9	13	40	38
Tamil nadu	% population	30	19	31	20	26	21	32	21
	% share in CE	15	14	30	41	13	14	30	43
U.P	% population	33	18	30	19	33	21	29	17
	% share in CE	18	14	31	37	18	16	30	36
W.B.	% population	25	22	36	17	24	22	36	18
	% share in CE	14	17	36	32	13	16	35	36
All India	% population	30	19	31	20	30	20	30	20
	% share in CE	16	14	32	38	16	14	30	40

At the other extreme, the share of the rural rich class in state CE has increased in general with the exception of Karnataka, Rajasthan, M.P. and Bihar. The change in distribution across the classes over time is least in Punjab and most in Kerala.

If we analyze state by state, we observe that in rural A.P., there is some improvement over the period through marginal reduction in the proportion of P and M and their share along with increase in U, R and CE_U & CE_R. In Assam the changes have occurred in the same direction, though they are more pronounced with M & U class experiencing fall in their relative shares.

In Bihar no major changes are observed in the proportions of people and their shares. Quite unexpectedly, the proportion of P and M has increased over the period in Gujarat, while that of upper middle class (U) actually declined. Haryana exhibits both improvement in the level of living and increase in inequality in the state with major reduction in P & M with similar fall in their share, besides considerable increase in proportion of Rich and their relative command over state CE.

Similar is the case of Kerala with 57% of state rural population in the R class in 2004-05 enjoying 79% of state CE. In Karnataka we find some improvement in the entitlement of poor and middle class while U, R and CE_U, CE_R actually experienced some fall. The relative position of M.P. has worsened with the proportion of 'poor' soaring to almost half the state's population together with reduction in the shares of U and R. More impoverished is the neighbouring state of Orissa having 57% of rural poor. The middle class (M and U) has dwindled while rich class has clinched a better share in 2004-05. Maharashtra experienced some reduction in P and CE_P and in 2004-05 and the proportion of all the four classes has closely followed the national percentile pattern (30%, 20%, 30% and 20%).

Punjab having the best distribution with more than 50% population in the rural Rich class and another 35% in upper middle class in 1993-94 did not experience any major change in 2004-05. In Rajasthan, we find more egalitarian distribution in 2004-05 with vulnerable and upper middle class consolidating their command at the instance of reduction in R and CE_R. Both Tamil Nadu and U.P. followed the national percentile distribution closely in 1993-94 but TN reduced its proportion of poor subsequently while U.P. saw some reduction only in U & R class.

West Bengal maintained rigidity in the proportion of these four classes and their shares during last one decade with marginally higher endowment share by the rural rich class in 2004-05. For the country as a whole the only point to be noted is the marginal increase in the entitlement of the rich class clinched from that of the Upper middle class. However overall rise in inequality in rural sector appears to be limited .

We move on to the urban sector next. Here(Table 4U) we find that proportion of urban 'poor' or 'rich' were more evenly distributed in 1993-94 as compared to that in the rural part. But the distribution gets lopsided in 2004-05. The relative deprivation in terms of entitlement of the 'poor' and 'vulnerable middle' classes is more pronounced in urban areas of most of the states, where they are often left with substantially lower proportion of total urban consumption expenditure. The 'rich' on the other hand are enjoying more than double their proportionate share. Even in the impoverished states like Orissa, Bihar, M.P. and U.P., the R class, though smaller in size, enjoys about three times their due entitlement.

In states like Gujarat and Tamil Nadu, the proportion of the deprived urban people (P and M class taken together) got reduced substantially in 2004-05 but the fall in their share of state CE had been more than proportionate. It is disturbing to note that in poor states like Orissa, Bihar, Rajasthan, MP, UP as also in better-off states like Kerala, Haryana, Punjab, Maharashtra, there is significant increase in the combined proportion of 'poor' and 'vulnerable middle class' people with a reduced relative share. In Orissa, Punjab, M.P., Karnataka and Haryana, the 'upper middle class' got reduced proportion of population. The concentration of 'rich' people has either increased or remained more or less same in most of the states, with the exception of Orissa, Bihar, and Maharashtra. Again, their relative share in the state purchasing power has invariably increased further. This is because of unaccounted prosperity in the post reform era which has not percolated to all corners of the society.

Let us take up the urban parts of each state one by one. In urban Andhra Pradesh, share of Rich class and their entitlement has increased in 2004-05 at the cost of the other three classes. There is only marginal reduction in proportion of Poor. Assam did not experience much change while Bihar had significant increase in poverty and inequality in these ten years. Gujarat has lesser proportion of poor and higher rich people in 2004-05, but it also witnessed still higher entitlement for the Rich.

In urban Haryana both poverty and inequality have worsened since 1993-94 with a whipping rise in the CE_R of the Rich without major increase in R. In Kerala both vulnerable and upper middle class have suffered setback in terms of their share in CE while the Rich class has gained strength in both R and CE_R. In M.P. poverty and inequality have increased considerably. In Maharashtra the size and the command of the U and the R class over the state consumer expenditure have suffered marginal setback. Urban Orissa has deteriorated in 2004-05 on all counts; there has been major increase in both poverty and inequality. Punjab did not experience much change except for swelling prosperity of the 'rich' at the cost of other three classes. In Rajasthan proportion of poor increased substantially as against reduced 'upper middle'

and 'rich' class. In Tamil Nadu the wave of change is in the opposite direction where middle class has remained more or less static; there is a fall in P class and a rise in R class with proportionately higher increase in the endowment share of the latter. Urban U.P. has seen increase in both poverty and inequality. West Bengal did not experience any major change except for marginal fall in the entitlement of the P and M and some increase in the share of the 'rich'. Thus in an overwhelming large number of states we find increasing proportion of deprived population (P and M) together with increasing inequality in 2004-05.

Table 4U: Statewise Percent Population Belonging to All India Percentile Classes and their Share in Total Consumer Expenditure of the State (Urban)

	MPCE Class	1993-94				2004-05			
		lowest 30%	(30-50)%	(50-80)%	Top 20%	lowest 30%	(30-50)%	(50-80)%	Top 20%
Andhra Pr.	% population	35	21	29	15	33	21	29	18
	% share in CE	17	16	32	35	14	14	29	43
Assam	% population	21	23	34	21	23	20	37	21
	% share in CE	10	15	34	41	10	13	35	42
Bihar	% population	45	22	24	11	55	17	21	7
	% share in CE	25	19	30	26	31	17	29	22
Gujarat	% population	21	22	40	18	16	22	39	23
	% share in CE	10	15	40	36	7	13	36	44
Haryana	% population	18	20	42	21	22	21	35	22
	% share in CE	8	13	40	39	9	12	31	48
Karnataka	% population	32	19	32	18	31	22	27	21
	% share in CE	15	14	34	37	13	14	27	46
Kerala	% population	20	23	36	20	22	19	32	28
	% share in CE	8	14	33	44	8	10	26	57
M.P.	% population	34	24	29	14	43	18	25	14
	% share in CE	17	18	32	33	20	14	28	39
Maharashtra	% population	22	18	31	29	25	18	34	23
	% share in CE	8	11	27	54	10	11	30	50
Orissa	% population	33	21	30	16	50	17	25	8
	% share in CE	17	17	34	33	26	15	36	24
Punjab	% population	14	20	40	26	18	20	35	27
	% share in CE	6	12	36	45	7	10	27	56
Rajasthan	% population	26	23	34	16	36	23	27	15
	% share in CE	13	17	37	33	17	16	29	38
Tamil nadu	% population	31	23	30	17	26	23	30	22
	% share in CE	14	16	30	39	11	14	29	47
U.P	% population	37	22	28	13	44	19	25	12
	% share in CE	19	18	32	31	22	15	29	34
W.B.	% population	27	20	30	23	29	19	29	24
	% share in CE	12	13	29	46	11	11	27	51
All India	% population	28	21	31	20	30	20	30	20
	% share in CE	12	14	31	43	12	13	30	45

To summarize, the above exercise helps us investigate the inter and intra-state purchasing power differentials across the expenditure classes in each of the states in terms of their share of population as also in their endowment share in rural and urban sectors in a comparable set up and over time. **It can be seen that like rural poor, rural rich population is also concentrated mainly in a few states.** But the proportion of rural rich people in states did not increase much during the decade except for in Assam, Haryana and Kerala. Moreover here we have not seen any major disproportionate increase in the endowment share of the 'rich' across the states as has happened in their urban part. All these taken together do not indicate any untoward increase in inequality of distribution across major expenditure classes in rural society.

One of the most disturbing observation on the urban scenario is that over the last one decade, the proportion of people deprived of decent level of living (P and M combined), is increasing in not only in the so-called poor states (Orissa, Bihar, MP etc.) but also in the already better-off states like Kerala, Punjab and Haryana, which are enjoying the best of the annual rates of growth in real MPCE. **There appear to have more than adequate symptoms towards simultaneous increase in level of living,**

deprivation and inequality over time across rural and urban areas of Indian states. What is more, in most of the states urban parts are experiencing prosperity, which is not reaching the majority.

V. Major observations, limitations and future directions: We have posed a set of questions at the beginning regarding level of living, poverty, inequality and growth in the states of India. Let us first briefly note down the major observations of the study.

It is observed that there has indeed been some real improvement in the average level of living of the people in India, especially in the post-reform period. But the rate of change varies widely among the states in the last two decades. While for the two most impoverished states of Bihar and Orissa there has rather been a fall in the average level of living, the consumption expenditure in real terms has grown by more than 25% for the three most prosperous states, namely Kerala, Haryana and Punjab. This also corroborates the divergence outcome as propagated by the analysts in this field. The country as a whole experienced only 15% increase in the average real expenditure over the last two decades.

As against such limited vertical mobility, there has been widening horizontal disparity in many layers of the consumption scale both within and across the states. The rural-urban divide is assuming a serious proportion not only in average level of living, but also in terms of poverty and inequality. It has been observed that the better-off states are the ones with relatively developed rural sector and with narrow rural-urban gap in average expenditure. But in majority of the states the rate of growth in rural purchasing power has failed to keep pace with its urban counterpart. For the country as a whole rural-urban MPCE ratio has deteriorated considerably over time in real terms much against the interest of the rural people. Thus barring Kerala and Haryana there is adequate evidence of increasing disparity between rural and urban levels of living across the states.

In terms of poverty, the better-off states in general have lesser number of poor in both rural and urban areas. The HCR has been reduced in both the areas in post-reform period except for urban Orissa. Nevertheless, during 1987-88 to 1993-94 no significant statistical correlation was found between rural and urban poverty position within each state. In 2004-05 however, the scenario has changed to some extent and the states with lower HCR in rural areas have relatively lower HCR in urban areas too.

While examining the inequality within rural or urban part of a state, we observe that the states having lower urban inequality do not have lower rural inequality in general. There are strong symptoms of imbalance between rural and urban inequality within each of the states of India in 2004-05. For most of the states, the already high urban inequality got further deteriorated in 2004-05. For the country as a whole the rural inequality remained more or less same (LR=0.298) while urban inequality increased substantially from 0.354 in 1987-88 to 0.372 in 2004-05.

In order to examine whether or not there is a potential trade off between growth and inequality, we study the correlation between average MPCE and the Lorenz ratio of the states separately for rural and urban areas. In 1987-88 the correlation was equally insignificant in both the rural and urban areas. But in 2004-05 in rural areas the inequality was lower in poorer states as compared to the richer ones where inequality was much higher in general. In urban areas, it is a mixed scenario with some of the impoverished states like M.P. having as high inequality as the front runner states like Kerala or Punjab.

It has also been observed that there is widespread and intense rural-urban divide in level of living, poverty and inequality in almost all the states and the gap has been widening further in recent period.

In order to get a better understanding of the intra-state inequality within their rural or urban part, we study the proportion of people in the broad MPCE classes and their entitlement in the state purchasing power. It can be seen that like poor, rich people also are concentrated in a few states and the distribution gets more polarized from 1993-94 to 2004-05 both within and across the states. But the deprivation of the poorer sections or the unbound prosperity of the 'rich' people does not assume a menacing trend in rural parts of the states as has happened in their urban areas. In majority of the states the proportion of poor has marginally got reduced in rural and urban sector but their endowment share has dwindled further, more so in urban areas. Again in the urban part, the proportion of rich has increased considerably in some of the states while the relative share of the Rich class has increased over time in almost all the states. Thus we find unaccounted prosperity for a few in urban areas while the already deprived people are getting more and more relatively impoverished. Such conclusion could be made only with the help of state level 'endowment share' and 'population share' across four crucial expenditure classes, bottom 30%, (30-50)%, (50-80)% and above 80% separately for rural and urban areas of the states.

Talking on limitations of the present exercise, we could have used state specific price indices to arrive at consumer expenditure at constant prices. These would have given a more realistic picture of the changes over the years. But this would not in any way change the basic conclusions of the present study. The high dimension of intra-state inequality as a whole and the disparity across MPCE classes within rural and urban areas demand more in-depth study of the parameters at sub-state level. At least 'district' as the unit of analysis should be more appropriate than 'state' for such a diverse country like India. Again, we have attempted together both the time series as well as the cross section analysis of the expenditure data which have occasionally complicated the issues as well as the findings. In future, we intend to attempt a complete analysis of variance taking into consideration the possible sources of variances indicated here. There are also some scopes for utilizing this limited database for specific parametric study for capturing the intense polarization process at work in Indian states, and we would like to explore them in future.

To summarize, while overall poverty and inequality have marginally been on the decline in rural areas, slow reduction in urban poverty and rising urban inequality in almost all the states have become the major feature of development in India in recent decades. Amid widespread but biased prosperity as a result of globalization, a polarization process has set in our economic society, which is manifest in all corners of the country in terms of varied outbursts.

The question of limited vertical mobility versus horizontal rift across different expenditure classes within the states has come out as a dominant feature of post-reform India where rural urban divergence in terms of population composition and endowment share has been intensified. Under the present complexity, it is not the conventional poverty alone, which should be the sole focus of the policy makers. The time has come for researching on how to cope with rising and complex forms of inequality across the rural and urban areas of all the states with the help of new policy instruments. Also, it is high time that conventional concept of poverty should be modified in the light of other social matrices which have been proved to be inseparably linked to the cause and effect of economic poverty and inequality. Therefore, there is urgent need to review the existing strategies to tackle rural and urban poverty and inequality syndrome in a simultaneous framework, and not in isolation from each other.

Notes:

1. Eswaran and Kotwal (1999) have brilliantly shown in a general equilibrium framework basing on Lewis theory and in layman's language the fundamental economic causes of persistence of poverty in India, despite laudable performance in many spheres since Independence.

2. Unlike the theory of convergence as tested across various constitutional regions of the developed countries **(Barro and Sala-I-Martin, 1995),** the Indian states ostensibly behaved quite differently **(Ghosh, Marjit and Neogi, 1998; Ghosh and De, 1998, 2000, 2005; Dubey and Gangopadhyay, 1998; Krishna, 2004; Dholakia, 1994; Ahluwalia, 2000).** In connection with the on-going research project of the Ministry of Statistics and Programme Implementation (undertaken by Indian Statistical Institute, Kolkata), "Construction and Analysis of Social Development Indices in Indian States and Districts" the second author as Principal Investigator has deplorable experiences of what constitutes (including people's expectation) 'development' in wide spectrum of areas- rural and urban- in most of the states including Orissa, Bihar, Jharkhand, Chhatisgarh, Maharashtra, AP, Karnataka, Madhya Pradesh, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal. Despite high inequality, spread of what is meant by 'development' is quite obvious even in remote areas of Kerala, Punjab, Haryana and partly Gujarat except the regions of Kuchchh and Dangs.

3. Sen (2005) in his recent book has expressed serious concern about who essentially belong to similar category. These groups, according to **Amartya Sen (2005)**, are:
- "the category of low- or- middle-income people (say, the bottom 60% of the population);
- the class of non-owners of much capital;
- the group of rural Indians;
- the people who do not work in the organized industrial sector; and
- Indians who are against religious persecution" (p. 55).

For more detailed analysis, see **Ghosh (2006).**

Bibliography

Ahluwalia, Montek S. (2000): "Economic Performance of States in Post-Reform Period," Economic and Political Weekly, May 6.

Barro, R.J. and Sala-i-Martin, X. (1995): Economic Growth, McGraw Hill, New York.

Bhanumurthy, N.R. and Mitra, A. (2004): "Economic Growth, Poverty and Reforms in Indian States", DEG, Working Paper Series No. E/247/2004.

Deaton, A. and Dreze, J. (2002): "Poverty and Inequality in India: A Re-examination", Economic and Political Weekly, September 3.

Dholakia, R. H. (1994): "Spatial Dimension of Acceleration of Economic Growth in India", Economic and Political Weekly, August 27, pp. 2303-2309.

Dubey, A. and Gangopadhyay, S. (1998): Counting the Poor? Where are the Poor in India? Sarvekshana Annual Report No. 1, Dept. of Statistics, GOI, New Delhi.

Eswaran, M. and Kotwal, A. (1999): Why Poverty persists in India? An Analytical Framework for Understanding the Indian Economy, OUP, New Delhi.

Ghosh, B. (2006): "India's Intellectual Past through Amartya Sen's Lenses", South Asia Economic Journal, Vol. 7, No. 2, pp.301-316.

Ghosh, B. and De, P. (1998): "Role of Infrastructure in Regional Development: A Study of India over the Plan Period," Economic and Political Weekly, vol.33, Nos.47 and 48.

Ghosh, B. and De, P. (2000): "Linkage Between Infrastructure and Income Among Indian States: A Tale of Rising Disparities since Independence", Indian Journal of Applied Economics (An International Quarterly), A Special Issue in Honour of Paul Samuelson, Vol.8, Part IV, 2000, 391-431.

Ghosh, B. and De, P. (2005): "Investigating the linkage between infrastructure and regional development in India: era of planning to globalization", *Journal of Asian Economics*, Vol. XXX, No. 1, 2005, pp. 1-28.

Ghosh, B., Marjit, S. and Neogi, C. (1998): "Economic Growth and Regional Divergence in India, 1960 to 1995," Economic and Political Weekly, vol.33, No.26.

Ghosh, B. and Gupta, N. (2007): "Horizontal Rift versus Vertical Mobility: Economic Conditions of People in Rural and Urban Areas of Indian States in Post-Reform Period till NSS 61st Round (2004-05)", submitted to Economic and Political Weekly.

Himanshu (2007): "Recent Trends in Poverty and Inequality: Some Preliminary Results", Economic and Political Weekly, February 10.

Krishna, K.L. (2004): "Patterns and Determinants of Economic Growth in Indian States", ICRIER, Discussion Paper No. 144, New Delhi.

Sen, A. (2005): The Argumentative Indian: Writings on Indian History, Culture and Identity, Penguin Books, New Delhi.

Sen, Abhijit and Himanshu (2004): "Poverty and Inequality –I and II," Economic and Political Weekly, September 18, 25, 2004.

Sundaram, K. and Tendulkar, S. D. (2003a): "Poverty in India in the 1990s – An Analysis of changes in 15 major states", Economic and Political Weekly, April 5.

Sundaram, K., and Tendulkar, S.D. (2003b): "NAS-NSS estimates of private consumption for poverty estimation: a further comparative examination," Economic and Political Weekly, Jan.25, 376–384.

Gender Bias in Intra-Household Allocation as Measured through Indian National Sample Survey[1]

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Abstract: *The household consumer expenditure survey collects information on consumption/expenditure of the selected household almost on all items where household is the reference unit. The expenditure of each person is not collected, and it is not possible either as many of the items consumed jointly. But using the Engel curve approach, the outlay equivalent of various age-sex combinations can be derived and the intra-household allocation among the various age-sex compositions can be measured. And from this the existence of any bias (i.e., unequal allocation between two sexes of given age-groups) can be captured even from household survey data where no information of consumption of individual member is available. This study uses Indian NSS data of household consumer expenditure for 61st round (2004-05) and finds out the outlay equivalent ratios (π -ratios) of an adult good for some specific demographic categories comprising young children and tested for difference of π -ratios between boys and girls. In order to find out the reliability, the variances of difference of π -ratios are calculated and presented. In this paper, six Indian States are chosen from different parts of the country from North to South and from East to West. The estimates showed that the existence of gender bias is prevalent in almost all the States. In some States it was more, and less in some other.*

I. Introduction: In any society, one of the ultimate objectives of the economic system is to provide goods and services to its members. The success of an economy can be measured by its ability to provide for its people, to feed them, to clothe and shelter them, and to offer them access to good health, to education and to a wide range of consumer goods and services. On such things depends the material welfare of individuals, so that to measure material welfare, we must measure what and how much individuals consume. Also there is a growing debate on the role of women in economic development. The gender equality has been set as one of the Millennium Development Goals (MDGs) by United Nations and it is felt by the development economists that the reduction of this inequality is the only way to effectively combat poverty, hunger and disease and to have sustainable development. Now the issue is whether or not there exists any discrimination between men and women and between boys and girls. To see whether there exists any such discrimination between sexes, the commonly used indicators are i) Ratios of girls to boys enrolled at primary, secondary and tertiary levels, ii) Youth literacy gender parity index (the ratio of female to male youth literacy rates for the age group 15 to 24), etc. But, it is clear that these indicators are very crude in nature. To find out the gap between the two genders, the welfare-level reached by each gender has to be identified and the difference therein would give the extent of bias. This could possibly be done if information on material welfare of each individual is available.

To find out the existence of differential treatment received by genders, the usual method is to use information on health, education, etc. conduct from household surveys in which information for each member of the household is collected. But, since these surveys are carried out separately, it involves lots of expenditure in the form of money, time, etc. Even in this case also there are joint expenditures for more than one member and almost impossible to separate out for individual members. A survey may tell us how much the head of household spent on purchase of exercise books for his children but not who "consumed" how much of these exercise books. Again, the household may purchase a science magazine which is used (consumed) by both son and daughter, and it is really impossible to find out who actually consumes how much, as it is consumed jointly.

Many countries conduct household expenditure surveys. In these surveys, expenditures on almost all items of food and non-food are recorded for each selected household along with its age-sex composition and other socio-economic characteristics. But no attempt has been made to collect information on who actually consumes what. Actually, as many commodities are consumed jointly, such as, housing, sanitation, water supply, and other durable goods; it is almost impossible to obtain a person-wise break-up of the household's consumption. Even then it is possible to compare the consumption pattern of the households with different demographic composition and to see whether there exists any

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discrimination or favour in treatment of various age sex categories. The exercise has been carried out applying econometric tool on household survey data of the 61st round (2004 – 05) of NSS[2]. The analysis has focussed on the allocation to children and whether there exists any discrimination in favour of boys.

There are a few studies on gender bias using survey data. Kausik Chaudhuri and Susmita Roy (2006)[3] tried to examine the gender gap in educational expenditure for two States of India, viz., Uttar Pradesh and Bihar, using Living Standard Measurement Study (1997) (LSMS) data, where household expenditure on the subject for each member of the household was available along with other demographic particulars such as age, sex, etc. Similar analysis on intra-household allocation and existence of discrimination was done by A.S Deaton and others[4] in a series of papers in the 80s and early 90s through "outlay equivalent ratios". Deaton (1987), using household expenditure data (1985) of Cote d'Ivoire, showed that households were treating girls of ages 0-4 years more favourably than boys of the same age-group. He also studied the same phenomenon using 1980-81 data for Thailand. Deaton, Castillo and Thomas (1989) tried to answer two different but related questions: 1) whether or not the commodities can be classified as adult-commodities or child-commodities depending on their use as measured by outlay equivalent ratio and 2) whether there exists any discrimination in allocation within the household after the commodities are identified.

II. Methodology: This is an empirical study following the procedure laid down by Deaton, Castillo and Thomas (1989), using Indian NSS data on household consumer expenditure of 61st round (2004-05). It is assumed that there exist some goods which are child goods and some other goods which are adult goods. The child goods are those that are mostly consumed by children whereas adult-goods are those mostly consumed by adults - milk may be an example of a child good whereas tobacco, alcohol may be examples of adult goods. Now imagine three households, the first consisting of a married couple with no children, the second, a married couple with a male child and the third, a married couple with a female child. The two children are of the same age and the households are otherwise identical in respect of income, occupation, social group, and so on. If we compare expenditure on adult goods by the three households, we should expect the first to spend more on adult goods than the other two. The children require food, clothing and other items, and the money income to provide them are the same for all three households. To satisfy the requirements of children, there will be reduction in available resources to purchase adult goods. Now to determine the existence of gender bias, one can examine whether the reduction in adult good expenditure is larger for the households with male children or those with female children. If the former is true systematically, it would seem that households are diverting more resources to male children than to female children.

Let us start with the household' budget equation:

$$(p_i q_i) = f(x, n, z, u) \ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

where $p_i q_i$ is the expenditure on good i, *x* is the household's total expenditure or 'outlay', *n* is a vector of demographic composition of the household, z is a vector of other household characteristics, and u is a random disturbance term representing unobservable variation in taste, preference, etc. In this study, the vector '*n*' will be taken as a list of number of people in different age-sex compositions, such that n_r denotes the number of people in the rth age-sex category. The term $\dfrac{\partial(p_i q_i)}{\partial n_r}$ is the effect of an additional person of type '*r*' on expenditure of the ith item, holding all other things constant. The term $\dfrac{\partial(p_i q_i)}{\partial x}$ is the marginal propensity to spend on the ith item (can also be referred as income effect). The term $\dfrac{\partial(p_i q_i)/\partial n_r}{\partial(p_i q_i)/\partial x}$ explains how much of the total budget would have to be increased to generate the same additional

[2] The Indian National Sample Survey.

[3] Chaudhuri, K and Susmita Roy (2006), "Do Parents Spread Educational Expenditure Evenly Across Two Genders? Evidence from Two North Indian States" Economic and Political Weekly, No. 51.

[4] Angus S. Deaton (1987), "Allocation of goods within the household: Adult, Children and Gender" World Bank, USA. Angus S. Deaton, Javier Ruiz-Castillo and Duncan Thomas (1989) "The Influence of Household Composition on Household Expenditure Patterns: Theory and Spanish Evidence" Journal of Political Economy, vol. 97 No.1.

expenditure on good i as would the addition to the household of one or more person of type 'r'. If i is an adult good and r is a child, then, expectedly, the ratio will be negative; as if additional children will act as decrease in income available for spending on adult goods. In order to work with 'dimensionless' ratio, Deaton defined 'outlay equivalent ratio', π_{ir}, by

$$\pi_{ir} = \frac{\partial(p_i q_i)/\partial n_r}{\partial(p_i q_i)/\partial x} \div \frac{x}{n} = \frac{\partial(p_i q_i)/\partial n_r}{\partial(p_i q_i)/\partial x} \times \frac{n}{x} \dots\dots\dots\dots(2)$$

These π-ratios indicate the change in expenditure equivalent to the additional person expressed as a ratio of total household expenditure per person. These π - ratios can be used to measure the extent of gender bias, besides identifying whether a good is an adult good. When a child comes into the household, the need for child goods rises and as a result, given the total income constant, this will reduce the expenditure on adult goods such as tobacco or entertainment, as if income has been reduced and these reductions in adult goods ought to be in proportion of the marginal propensity to spend. If 10 percent of additional income is spent on entertainment and 5% on tobacco, the reduction will be in the ratio 2:1. The interpretation of π - ratio can be as follows: suppose π_{ir} = - 0.2 where i is tobacco and r is a girl child, then it means that the addition of a girl to the household has the same effect on tobacco expenditure as a 20% reduction in total household expenditure per person.

The procedure followed in this paper will be like this: I will identify a few adult goods and child goods on the basis of perception; then calculate the π - ratios for each category for these goods and try to see whether the ratios are the same for boys and girls of specific age groups.

To calculate the π-ratios we need to calculate the marginal propensity to spend and the effect of demographic composition on expenditure and this is done using the Working-Leser form of Engel curve originally proposed by Working[5] :

$$w_{ih} = \frac{p_{ih} q_{ih}}{x_h} = \alpha_i + \tau_i \ln\frac{x_h}{n} + \eta_i \ln n_h + \sum_{j}^{J-1} \gamma_{ij}\left(\frac{n_{jh}}{n_h}\right) + \delta_i z_h + u_{ih} \dots.(3)$$

where w_{ih} is the budget share of the ith commodity of the hth household, x_h is total household expenditure of the hth household, n is household size of hth household , n_{jh} is the number of household members belonging to the jth socio-demographic category in the hth household, z_h stands for the other socio-economic variables of the hth household, u_{ih} is the random disturbance term. In his original paper Working proposed a linear relation between budget share of each good and logarithm of total outlay. The ingenuity of this form of Engel curve is that it satisfies the "adding-up" property, i.e., if all commodities are considered, the $\sum \alpha_i = 0$ and $\sum \tau_i = 1$. The demographic composition of the household is explained through the ratios (n_j/n), where n is the total number of household members. It is to be noted that if there are J categories of people, the demographic structure of the household can be explained by only J – 1 ratios, 1 being the reference category. The household size, n, appears both in ln(x/n) and in ln n. The vector z includes a number of dummy variables to capture the effects of other household characteristics, such as household occupational type, social group, etc.

Now, $\pi_{ir} = \frac{\partial(p_i q_i)/\partial n_r}{\partial(p_i q_i)/\partial x} \times \frac{n}{x}$ can be calculated from equation (3). The numerator and denominators can

be calculated from eq.(3) and we have the following expression for the π-ratios.

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[5] Working, H. (1943) "Statistical Laws of Family Expenditure", *Journal of the American Statistical Association*, Vol. 38, No. 221. pp. 43-56.

$$\pi_{ir} = \frac{(\eta_i - \tau_i) + \gamma_{ir} - \sum_j^{J-1} \gamma_{ij}(\frac{n_j}{n})}{\tau_i + w_i} \cdots\cdots (4)$$

Eq.(4) holds for J – 1 categories and for the Jth category the expression will be:

$$\pi_{iJ} = \frac{(\eta_i - \tau_i) - \sum_j^{J-1} \gamma_{ij}(\frac{n_j}{n})}{\tau_i + w_i} \cdots\cdots ..(4')$$

After calculating these π-ratios, the following hypothesis will be tested[6].

$$H_0 : \pi_{ir} = \pi_{ir'} \text{ against alternative } H_1 : \pi_{ir} \neq \pi_{ir'}$$

where i is an adult/child good and r is a boy and r´ a girl of same age group. The above hypothesis will actually mean $H_0 : \pi_{ir} - \pi_{ir'} = 0$. As the estimates π_{ir} are basically non-linear functions of parameters of least squares estimates, the variance of π_{ir} cannot be calculated directly. This is done using 'delta method'[7]. In this method, the π_{ir}'s are expanded by Taylor's approximation and variance can be calculated ignoring higher order derivatives of π_{ir} with respect to its parameters. After having the estimates of variances of π_{ir} and $\pi_{ir'}$, the variance of $(\hat{\pi}_{ir} - \hat{\pi}_{ir'})$ can be estimated.

Now the following statistic is used:

$\dfrac{\hat{\pi}_{ir} - \hat{\pi}_{ir'}}{s.e.(\hat{\pi}_{ir} - \hat{\pi}_{ir'})}$ asymptotically follows normal distribution with parameters (0,1).

In matrix notation the equation (3) can be written as:

$W = X\beta + \varepsilon$, where W is the column vector of budget shares, X is the matrix of explanatory variables, β is the vector of parameters and ε is the vector of random disturbance term. The weighted least square estimates[8] of β is:

$$\hat{\beta}_{wls} = (X^T M X)^{-1} X^T M W \cdots\cdots(5)$$

where W is [n×1] vector of budget shares, X is [n × (k+1)] matrix of explanatory variables and M is [n × n] diagonal matrix of weights. The variance of $\hat{\beta}_{wls}$ is:

$Var(\hat{\beta}_{wls}) = \sigma_{ii}(X^T M X)^{-1}$, where $\sigma_{ii} = \frac{1}{n-k} e'e$. Now $\hat{\pi} = f(\hat{\beta})$, where $f(.)$ is a non-linear function. The variance of $\hat{\pi}$ can be written as:

$Var(\hat{\pi}_{ir}) = \sigma_{ii} J_{ir}^T (X^T M X)^{-1} J_{ir}$, where J_{ir} is the matrix of Jacobians.

Now for given i, $Var(\hat{\pi}_{ir} - \hat{\pi}_{ir'}) = Var(\hat{\pi}_{ir}) + Var(\hat{\pi}_{ir'}) - 2\text{cov}(\hat{\pi}_{ir}, \hat{\pi}_{ir'})$ and this can be derived from the variance-covariance matrix of π_{ir}.

III. Data and Results: The data set considered for this analysis is Indian National Sample Survey data on household consumer expenditure conducted in 61st round covering period July 2004 to June 2005. A stratified multi-stage design was adopted for the 61st round survey. The first-stage units (FSU) were the

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[6] The analysis is done following model-based approach, which allows using complex survey data for such hypothesis testing, etc.
[7] The details of delta method is available in Davidson and MacKinnon, (2004): Econometric Theory and Methods, Oxford University Press, New York, pp- 202 – 208.
[8] The details of weighted least squares can be found in Judge, Hill, Griffiths, Lutkepohl and Lee, (1988): Introduction to Theory and Practice of Econometrics, John Wiley & Sons, Inc., USA.

2001 Census villages in the rural sector and Urban Frame Survey blocks in the urban sector. The ultimate stage units, in both sectors, were households. In the case of large villages/ blocks requiring formation of hamlet-groups (hg)/ sub-blocks (sb), the selection of two hg's/ sb's from each FSU formed an intermediate stage of sampling. *For the rural sector,* the list of 2001 Census villages (*panchayat* wards for Kerala) constituted the sampling frame. *For the urban sector*, the list of latest available Urban Frame Survey (UFS) blocks was considered as the sampling frame. A total of 7999 rural FSU's and 4602 urban FSU's were selected[9]. A total of 79298 rural households and 45346 urban households were surveyed during this period.

For the purpose of this paper, I will discuss only six States of India. Those States are chosen which are having sufficient number of sample households and representing more-or-less all types of geographical regions. The State Punjab is representing the north, West Bengal is the east, Madhya Pradesh the middle, Kerala the south, and Andhra Pradesh and Maharashtra are south-east and south-west respectively.

In table 1, the information of the level of living measured through MPCE (monthly per capita consumer expenditure, i.e., per capita consumer expenditure per 30 days), sex ratio and the population are presented. The sex ratio is the number of females per 1000 males. Table 1R depicts the portrait of rural part of the selected States and Table 1U provides the urban counterpart.

Table 1R: Average MPCE, Population and sex ratio in these selected States in rural India

State	MPCE (in Rs)	Population (in 00)	Sex ratio*
(1)	(3)	(4)	(6)
Andhra Pradesh	603.82	542271	999
Kerala	1030.95	235672	1113
Madhya Pradesh	461.07	460184	909
Maharashtra	596.65	551215	955
Punjab	905.26	157073	897
West Bengal	575.65	596168	948

* Sex ratio is the number of females per 1000 males.

Table 1U: Average MPCE, Population and sex ratio in these selected States in urban India

State	MPCE (in Rs)	Population (in 00)	Sex ratio*
(1)	(3)	(4)	(6)
Andhra Pradesh	1091.40	186423	951
Kerala	1353.83	72303	1140
Madhya Pradesh	893.29	140692	903
Maharashtra	1228.45	372186	913
Punjab	1306.07	74496	823
West Bengal	1158.97	193200	907

* Sex ratio is the number of females per 1000 males.

In this study, a total of eight demographic categories are formed, viz., male with age 0 to 4 years, female with age 0 to 4 years, male aged 5 to 14, female aged 5 to 14, male aged 15 to 59, female aged 15 to 59, male with age 60 and above and female with age 60 and above. Three dummy variables are used for broad household occupational types and three social groups separately for rural and urban areas. The household occupational type dummy variables were: self-employed in agriculture, agricultural labour, self-employed in agriculture in rural and self-employed, regular wage/salary earning and casual labour in urban area. The social group dummies were scheduled tribe, scheduled caste and other backward classes in both rural and urban data. The Engel curves specified in equation (3) were estimated for one child good, milk, and one adult good, entertainment for the six States separately.

The estimated values of π-ratios are presented in Tables 2R and 2U for milk and Tables 3R and 3U for entertainment respectively, separately for rural and urban areas. The eight rows in each of these tables indicate the π ratios in six States for each specific demographic category. To see the pattern of π-ratios in each State, one should read the figures in column-wise fashion. For example, column (2) in Table 2R gives the figures for Punjab. Thus, pi_m0_4 is the outlay equivalent ratio (π-ratio) for children aged 0

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[9] The details of sampling design and estimation procedure can be found in the NSS Report No. 508 "Level and Pattern of Consumer Expenditure, 2004-05", Government of India, December 2006.

to 4 years and the estimated value is '+0.211'. The positive sign indicates as an increase in one member in this demographic category in rural Punjab, the expenditure on milk consumption would increase. The magnitude '0.211' implies that the extent of increase in milk consumption as a result of an additional member of age 0 to 4 will be same as the increase in milk consumption had there been 21.1% increase in total budget. It is quite natural to expect that the π-ratios will have positive sign for child-goods. And if π-ratio of any particular age-sex composition of children for child-good is found to be negative, then one may doubt the existence of aversion towards that group. Such has happened in case of age 0-4 girls in rural area of some States like Punjab, Andhra Pradesh and Madhya Pradesh (See e.g., Table 2R). But if we see the urban part of the same item (i.e., milk) in these States (See Table 2U), it can be seen that all π-ratios are positive, as expected and this shows that children are not ill-treated as is the case when π-ratios are negative.

Table 2R: The estimated pi-values for milk in rural part of selected States

State	Punjab	West Bengal	Madhya Pradesh	Maha-rashtra	Andhra Pradesh	Kerala
(1)	(2)	(3)	(4)	(5)	(6)	(7)
pi_m0_4	0.211	0.437	-0.112	0.227	0.193	0.530
pi_f0_4	-0.268	0.474	-0.137	0.065	-0.092	0.214
pi_m5_14	0.209	-0.392	-0.185	0.022	-0.218	-0.123
pi_f5_14	-0.008	-0.467	-0.368	-0.279	-0.348	-0.279
pi_m15_59	0.435	-0.365	-0.444	0.003	-0.161	-0.349
pi_f15_59	0.267	-0.273	-0.364	-0.181	-0.170	-0.031
pi_m60plus	0.460	-0.330	-0.471	0.053	0.059	0.149
pi_f60plus	0.126	-0.243	-0.250	-0.099	-0.268	0.036

Table 2U: The estimated pi-values for milk in urban part of selected States

State	Punjab	West Bengal	Madhya Pradesh	Maha-rashtra	Andhra Pradesh	Kerala
(1)	(2)	(3)	(4)	(5)	(6)	(7)
pi_m0_4	0.643	1.622	0.207	0.727	0.154	0.718
pi_f0_4	0.311	0.608	0.035	0.324	0.395	0.153
pi_m5_14	0.089	0.130	-0.040	0.055	-0.030	0.117
pi_f5_14	0.152	0.153	0.025	-0.100	-0.246	0.134
pi_m15_59	0.291	-0.221	-0.185	-0.097	-0.051	-0.157
pi_f15_59	0.664	-0.148	0.186	0.301	0.197	-0.006
pi_m60plus	0.362	-0.032	0.588	0.059	0.349	0.059
pi_f60plus	0.690	-0.152	0.124	0.561	0.350	0.084

But the existence of bias in treatment between the two sexes of children can be examined with π-ratios for adult goods. For entertainment, an adult good, the π-ratios are calculated for rural and urban in these selected States and presented in Table 3R and 3U below.

Table 3R: The estimated pi-values for entertainment in rural part of selected States

State	Punjab	West Bengal	Madhya Pradesh	Maha-rashtra	Andhra Pradesh	Kerala
(1)	(2)	(3)	(4)	(5)	(6)	(7)
pi_m0_4	-0.269	0.064	0.209	0.423	-0.297	-0.028
pi_f0_4	0.730	-0.173	-0.031	-0.459	-0.301	-0.418
pi_m5_14	-0.590	-0.424	-0.150	-0.428	-0.305	-0.804
pi_f5_14	-0.178	-0.565	-0.387	-0.408	-0.310	-0.613
pi_m15_59	-0.426	-0.332	-0.134	-0.552	0.084	0.143
pi_f15_59	-0.328	-0.368	-0.298	-0.248	-0.416	-0.310
pi_m60plus	-0.192	-0.123	-0.501	-0.391	-0.771	-0.284
pi_f60plus	-1.156	-0.479	-0.444	-0.629	-0.574	-0.635

The negative sign in π-ratio indicates the reduction in expenditure of that adult good due to an increase in child member. As a child member comes to the family, as expected, the expenditure on child good will rise and that increase in expenditure of child good is adjusted from reduction in adult good expenditure and hence the sign of π-ratio will be negative. Now if one sees the π-ratio of entertainment for male children aged 0-4 years of Punjab rural (Table 3R, column (2), row shown against 'pi_m0_4'), it is '- 0.269'. This indicates as an increase of one member in the age group 0-4 in rural Punjab, household will reduce its entertainment expenditure to that extent as if there is a reduction of 26.9% of total expenditure or outlay. So, it can be viewed as more the reduction in expenditure, more the favourable treatment towards that group. Now in some States, these π-ratios of entertainment for children of different sexes in rural areas have been found to be positive, which shows those sexes in those States in rural areas are not favourably treated. Those are males in Madhya Pradesh, Maharashtra and West Bengal. The figure for West Bengal is 0.064 which is not far away from zero in comparison to Maharashtra (0.423) and Madhya Pradesh (0.209). However, to see whether it is equal to zero or not, then it should be tested statistically. The positive π-ratios of entertainment for girl child aged 0-4 years in rural areas is observed for Punjab (0. 730), which is very high and it explains that the girl child is, in general, not preferred in rural Punjab. But the situation in urban area is much different from rural as it is from Table 3U.

Table 3U: The estimated pi-values for entertainment in urban part of selected States

State	Punjab	West Bengal	Madhya Pradesh	Maha-rashtra	Andhra Pradesh	Kerala
(1)	(2)	(3)	(4)	(5)	(6)	(7)
pi_m0_4	-0.768	-0.565	-0.043	-0.323	-0.043	-0.119
pi_f0_4	-0.701	-0.697	0.354	-0.553	-0.238	-0.054
pi_m5_14	-0.420	-0.577	-0.240	-0.603	-0.176	-0.232
pi_f5_14	-0.337	-0.270	-0.544	-0.144	-0.106	-0.466
pi_m15_59	-0.211	-0.308	0.098	-0.429	0.186	0.348
pi_f15_59	0.135	0.023	0.041	-0.157	-0.303	-0.239
pi_m60plus	0.240	-0.326	-0.253	-0.393	-0.389	-0.466
pi_f60plus	-0.273	-0.404	0.396	0.345	-0.475	-0.165

In Table 3U, excepting girls of 0-4 years in Madhya Pradesh, all others are showing negative value indication people's concern over young children and they reduce the entertainment expenditure. Now whether boys are treated favourably than the girls can only be tested with more negative value of π-ratios of adult good for children of a given age group. Those are presented in table 4R and 4U and Tables 5R and 5U below.

Table 4R: Estimate of pi-values and the variance of their differences for entertainment in rural areas of selected states

State	Punjab	West Bengal	Madhya Pradesh	Maha-rashtra	Andhra Pradesh	Kerala
(1)	(2)	(3)	(4)	(5)	(6)	(7)
pi_m0_4	-0.269	0.064	0.209	0.423	-0.297	-0.028
pi_f0_4	0.730	-0.173	-0.031	-0.459	-0.301	-0.418
pi_m5_14	-0.590	-0.424	-0.150	-0.428	-0.305	-0.804
pi_f5_14	-0.178	-0.565	-0.387	-0.408	-0.310	-0.613
$\pi_1 - \pi_2$*	-0.999	0.237	0.240	0.882	0.004	0.390
$\mathrm{var}(\pi_1 - \pi_2)$	4.0950E-05	3.620E-06	6.830E-06	5.340E-06	2.430E-06	1.576E-05
z-value	-156.113	124.564	91.833	381.679	2.566	98.240
p-value	0.000	0.000	0.000	0.000	0.010	0.000
$\pi_3 - \pi_4$*	-0.412	0.141	0.237	-0.020	0.005	-0.191
$\mathrm{var}(\pi_3 - \pi_4)$	1.675E-05	1.510E-06	3.300E-06	2.340E-06	9.100E-07	7.090E-06
z-value	-100.668	114.744	130.464	-13.074	5.241	-71.732
p-value	0.000	0.000	0.000	0.000	0.000	0.000

$*\pi_1 = pi\_m0\_4, \pi_2 = pi\_f0\_4, \pi_3 = pi\_m5\_14, \pi_4 = pi\_f5\_14.$

102

In Table 4R, the π-ratios for entertainment, the difference in π-ratios of entertainment between two sexes of the same age-group, variance of the difference in π-ratios, z-values* and corresponding p-values* are calculated and presented for two age groups 0 to 4 and 5 to 14 for the selected six States of rural India. In all the States, difference between π-ratios is significant showing the existence of differential treatment between the two sexes. The negative value in (πboys – πgirls) for adult goods shows favourable treatment in favour of boys. Very high negative value (-0.999) is observed in rural areas of Punjab for children with 0 to 4 years. In rural areas of others States, out of six States selected, show favourable treatment toward girls for age 0 to 4 years.   For 5-14 age group, more or less similar pattern is observed for rural areas of Punjab. But the magnitude of difference is reduced significantly for this age group (-0.412). Besides, rural areas of Kerala (-0.191) and Maharashtra (-0.020) also showed favourable treatment against girls.

Table 4U: Estimate of pi-values and the variance of their differences for entertainment in urban areas of selected states

State	Punjab	West Bengal	Madhya Pradesh	Maha-rashtra	Andhra Pradesh	Kerala
(1)	(2)	(3)	(4)	(5)	(6)	(7)
pi_m0_4	-0.768	-0.565	-0.043	-0.323	-0.043	-0.119
pi_f0_4	-0.701	-0.697	0.354	-0.553	-0.238	-0.054
pi_m5_14	-0.420	-0.577	-0.240	-0.603	-0.176	-0.232
pi_f5_14	-0.337	-0.270	-0.544	-0.144	-0.106	-0.466
$\pi_1 - \pi_2$**	-0.067	0.132	-0.397	0.230	0.195	-0.065
$\text{var}(\pi_1 - \pi_2)$	3.000E-05	1.000E-05	1.600E-05	4.000E-06	6.000E-06	5.300E-05
z-value	-12.160	41.868	-98.092	116.316	76.722	-8.912
p-value	0.000	0.000	0.000	0.000	0.000	0.000
$\pi_3 - \pi_4$**	-0.083	-0.307	0.304	-0.459	-0.070	0.234
$\text{var}(\pi_3 - \pi_4)$	1.200E-05	4.000E-06	7.000E-06	2.000E-06	3.000E-06	2.900E-05
z-value	-23.695	-159.818	112.825	-368.678	-42.135	43.566
p-value	0.000	0.000	0.000	0.000	0.000	0.000

$**\pi_1 = pi\_m0\_4, \pi_2 = pi\_f0\_4, \pi_3 = pi\_m5\_14, \pi_4 = pi\_f5\_14$.

Now if we see the urban counter part in Table 4U below, the difference between π-ratios is also observed to be significant explaining the existence of differential treatment between the two sexes. The scenario in Punjab urban is much better than that in rural. In Punjab (urban) the estimate of (πboys – πgirls) of entertainment for age group 0-4 years, is '-0.067', which is much better than its rural counter part (-0.999). For 0-4 age group, Madhya Pradesh has shown high negative value in the estimate of difference (-0.397). Other than Madhya Pradesh, only Kerala   (-0.065) and Punjab (-0.067) has shown negative values indicating bias against girls although the figures are very less. The rest of the States show the favourable treatment toward girls. However, urban areas of Punjab, West Bengal, Maharashtra and Andhra Pradesh showed not favourable treatment toward girls of 5-14 years.

The π-ratios for milk (a child good) consumption, the difference in π-ratios of milk consumption between two sexes of the same age-group, variance of the difference in π-ratios, z-values and corresponding p-values are calculated and presented for two age groups 0 to 4 and 5 to 14 for the selected six States of rural and urban India are presented in Table 5R and 5U. Although the clear picture of bias against girls (or boys) would be reflected from adult good, the π- ratio for child good (milk) is also to have the better feeling of nature of allocation. In case the commodity-type is child-good and the demographic category is also child, then π-ratio of this commodity for child is expected to be positive. If it is not the case for any age-sex composition of children, then that group of children may be considered as 'not treated favourably'. Hence, if the difference between π- ratios of two sexes (i.e., πboys – πgirls) is positive, then one can conclude the boys are treated favourably,

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* If X follows normal distribution with mean 0 and variance 1, here p-value and z- value are p and z in the equation $\Pr[X \leq |z|] = 1 - (\frac{p}{2})$ as the test is two-tailed test.

whereas if it is negative, girls are considered to have better treatment in comparison to boys. It is also possible to have both π_{boys} and π_{girls} are negative and $\pi_{boys} > \pi_{girls}$ making $\pi_{boys} - \pi_{girls}$ positive. In that case, it can be viewed as relatively better treatment is received by the boys compared to girls. Such has happened in rural Madhya Pradesh for milk consumption (refer Table 5R). Here both the π-ratios of girl aged 0 to 4 years as well as of boys aged 0 to 4 years are negative, but $\pi_{boys} > \pi_{girls}$ indicating relatively favourable treatment received by the boys as far as allocation of milk is considered. The results presented in Table 5R give overall picture of rural areas of these selected States of Indian subcontinent. The favourable treatment toward girls of age 0 to 4 is observed in West Bengal. In all others, viz., Punjab, Kerala, Andhra Pradesh, Maharashtra and Madhya Pradesh have shown opposite picture of treating boys more favourably than girls. In case of children aged 5-14 years, all the selected States have treated boys favourably. But the extent of treatment is less unequal in descending order, viz. West Bengal, Andhra Pradesh, Kerala, Madhya Pradesh, Punjab and Maharashra.

Table 5R: Estimate of pi-values and the variance of their differences for milk in rural areas of selected States

State	Punjab	West Bengal	Madhya Pradesh	Maharashtra	Andhra Pradesh	Kerala
(1)	(2)	(3)	(4)	(5)	(6)	(7)
pi_m0_4	0.211	0.437	-0.112	0.227	0.193	0.530
pi_f0_4	-0.268	0.474	-0.137	0.065	-0.092	0.214
$\pi_1 - \pi_2$**	0.479	-0.037	0.025	0.162	0.285	0.316
$var(\pi_1 - \pi_2)$	4.820E-06	1.610E-06	1.430E-06	1.690E-06	1.300E-06	7.030E-06
z-value	218.179	-29.160	20.906	124.615	249.962	119.182
p-value	0.000	0.000	0.000	0.000	0.000	0.000
pi_m5_14	0.209	-0.392	-0.185	0.022	-0.218	-0.123
pi_f5_14	-0.008	-0.467	-0.368	-0.279	-0.348	-0.279
$\pi_3 - \pi_4$**	0.217	0.075	0.183	0.301	0.130	0.156
$var(\pi_3 - \pi_4)$	2.050E-06	6.700E-07	6.900E-07	7.700E-07	4.800E-07	3.180E-06
z-value	151.559	91.627	220.306	343.021	187.639	87.480
p-value	0.000	0.000	0.000	0.000	0.000	0.000

$**\pi_1 = pi\_m0\_4, \pi_2 = pi\_f0\_4, \pi_3 = pi\_m5\_14, \pi_4 = pi\_f5\_14..$

Table 5U: Estimate of pi-values and the variance of their differences for milk in urban areas of selected States

State	Punjab	West Bengal	Madhya Pradesh	Maha-rashtra	Andhra Pradesh	Kerala
(1)	(2)	(3)	(4)	(5)	(6)	(7)
pi_m0_4	0.643	1.622	0.207	0.727	0.154	0.718
pi_f0_4	0.311	0.608	0.035	0.324	0.395	0.153
$\pi_1 - \pi_2$**	0.332	1.014	0.172	0.403	-0.241	0.565
$var(\pi_1 - \pi_2)$	1.290E-05	9.600E-06	5.800E-06	2.500E-06	4.600E-06	2.010E-05
z-value	92.436	326.587	71.296	252.865	-112.735	126.149
p-value	0.000	0.000	0.000	0.000	0.000	0.000
pi_m5_14	0.089	0.130	-0.040	0.055	-0.030	0.117
pi_f5_14	0.152	0.153	0.025	-0.100	-0.246	0.134
$\pi_3 - \pi_4$**	-0.063	-0.023	-0.065	0.155	0.216	-0.017
$var(\pi_3 - \pi_4)$	5.200E-06	3.500E-06	2.600E-06	1.000E-06	2.000E-06	1.090E-05
z-value	-27.601	-12.224	-40.705	155.000	154.286	-5.152
p-value	0.000	0.000	0.000	0.000	0.000	0.000

$**\pi_1 = pi\_m0\_4, \pi_2 = pi\_f0\_4, \pi_3 = pi\_m5\_14, \pi_4 = pi\_f5\_14.$

In urban areas, Andhra Pradesh is showing better situation, if better indicates favourable treatment toward girl child of 0 to 4 years. In all other States, it is the boys who got favourable treatment (Please see Table 5U below). But for the age group 5-14, boys are favoured in Maharashtra and Andhra Pradesh. All other States for this age group of 5-14, showed to have preferential treatment towards girls.

IV. Conclusion: The estimates of outlay equivalent ratios and the estimate of difference between outlay equivalent ratios of boys and girls of same age group are presented along with the variance of difference between estimates of outlay equivalent ratios of boys and girls (i.e., $\pi_{boys} - \pi_{girls}$) and their z-values and p-values in tables 4 and 5. In drawing conclusion, these z-values and or p-value may be consulted (one is not independent of other). From these tables, it is clear that the biased treatment is prevalent in all the States. There may be conflicting results for different goods in question. For some goods, allocation may be favourable to boys while for some other allocation may be favourable to girls. However, to arrive upon concrete conclusion, it is always better to see the outlay equivalent ratio of adult good when bias among children is the object of study.

The outlay equivalent ratio's (π-ratios) for six States each for rural and for urban areas showed that there exists differential treatment between boys and girls of the same age group in the form of allocation of resources. One limitation of the study may be that this analysis is treating each member equally regardless of his/her need. The actual allocation may depend on the actual need of the person in the household. If the need of any particular demographic category is less, less will be allocated to this group and thus, the estimate of outlay-equivalent ratio (π- ratio) will indicate the existence of discriminatory allocation against that demographic category. But the demographic categories are framed in such a way that for each sex has similar age group. For example, male of age 0 to 4 is compared with females of age 0 to 4, and the need between these two sexes is not supposed to be very different within the same age group. However, the study was made with specific objective that not only to see whether there exist of differential treatment between boys and girls, but also to show that household survey data on consumer expenditure can be used to measure the differential treatment between two genders. To see whether there exist gender bias among different demographic composition, one need not conduct special survey only for this purpose, e.g., conducting education survey or health survey to gain idea about intra-household allocation of resources. The household consumer expenditure survey which is conducted almost in all countries could provide the basic ingredients to measure intra-household allocation and one can estimate outlay equivalent ratios for different age-sex compositions and get the idea of existence of gender equality.

V. References:

1.   Angus S. Deaton (1987), "Allocation of goods within the household: Adult, Children and Gender" World Bank, USA.

2.   Angus S. Deaton, Javier Ruiz-Castillo and Duncan Thomas (1989) "The Influence of Household Composition on Household Expenditure Patterns: Theory and Spanish Evidence" Journal of Political Economy, vol. 97 No.1.

3.   Chaudhuri, K and Susmita Roy (2006), "Do Parents Spread Educational Expenditure Evenly Across Two Genders? Evidence from Two North Indian States" Economic and Political Weekly, No. 51.

4.   Davidson and MacKinnon, (2004): Econometric Theory and Methods, Oxford University Press, New York.

5.   Judge, G. W., R.C. Hill, W.E. Griffiths, H. Lutkepohl and T. Lee, (1988), Introduction to Theory and Practice of Econometrics, John Wiley & Sons, Inc.

6.   National Sample Survey Organisation (2006), "Level and Pattern of Consumer Expenditure, 2004-05", NSS Report No. 508, Government of India, December 2006.

7.   SPSS, Inc. "SPSS 15.0 Command Syntax Reference".

8.   Working, H. (1943) "Statistical Laws of Family Expenditure", Journal of the American Statistical Association, Vol. 38, No. 221. pp. 43-56.

Differentials in the Conditions of Informal Employment In India- Experience of NSS 61st Round

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1. Introduction

1.1 In the NSS 61st Round, an all-India survey of the situation of employment and unemployment in India was carried out during the period July 2004 - June 2005. In this nation-wide enquiry, conducted to provide estimates on various characteristics pertaining to employment and unemployment in India at the national and state levels, a set of probing questions were asked to usual status workers regarding some features of the enterprises in which they worked, in order to study the characteristics of the workers particularly in the unincorporated enterprises that were largely considered as constituting *informal sector.*

1.2 Before this round, since 1955 i.e NSS 9th round a number of surveys on employment and unemployment have been conducted. In the year 1970, an "Expert Committee on Unemployment Estimates", popularly known as the Dantwala Committee was set up to give a firm conceptual framework for conducting such surveys. Largely based on the recommendations of this Committee, quinquennial surveys on Employment and unemployment was proposed. In its seventh quinquennial survey on employment and unemployment in its 61st round (July 2004 – June 2005), on the basis of the suggestions made by the Working Group, apart from the information usually collected in the quinquennial rounds, information on some new items has been collected. Along with several other new items, in this round, attempt has been made to assess the quality of self-employment in terms of the earnings through certain probing questions. From the self-employed persons according to the usual status, information on two items viz. 'whether earning from self-employment was remunerative' and 'what amount per month was considered remunerative' was also collected.

1.3 As per the general practice, in this round also, NSSO collected data on employment and unemployment, in terms of three basic approaches, viz., usual status, current weekly status and current daily status. The reference periods for these approaches differ - these being 365 days preceding the date of survey for "usual status", 7 days preceding the date of survey for "current weekly status" and each day of the 7 days preceding the date of survey for "current daily status". Data were collected on the activity status of all persons, i.e., for workers, for those seeking or available for work and also, for those reporting out of labour force. A worker could be self-employed or enjoy regular wages/salaries or be employed on casual wage basis. Data on this aspect, along with the industry of work of the worker and his/her occupation, were collected in this survey. An effort was also made to collect information on the qualitative aspects of employment like changes in activity status, occupation /industry, existence of trade unions/associations, nature of employment, etc. Data were also collected for workers engaged in non-agricultural sector as well as in the agricultural sector excluding only growing of crops, market gardening, horticulture and growing of crops combined with farming of animals about their detailed activity status, location of work place, type of enterprises where they worked, use of electricity for production, number of workers in the enterprise where they worked, and some more details for the wage employees relating to type of job contract, eligibility for paid leave, social security benefits, method payment, etc.

1.4 By collecting the information about the condition of employment such as existence of written job contracts, paid leave, availability of social security, existence of association, etc, some information about informal employment can be obtained. In the NSS 61st Round, such information was collected. This paper presents selected information about the condition of employment of the workers - engaged in non-agricultural sector as well as in the agricultural sector excluding only growing of crops, market gardening, horticulture and growing of crops combined with farming of animals. Therefore, data presented in this paper related to both formal and informal sectors. For the purpose of understanding the *informal sector* and *informal employment* comprehensively, the conceptual framework of *informal sector* and

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informal employment was obtained from the resolutions of the 15th and 17th International Conference of Labour Statisticians (ICLS).

2. Concepts regarding the Informal Sector and Informal Employment adopted in the NSS 61st Round

2.1 In the Fifteenth International Conference of Labour Statisticians (January 1993) a resolution concerning statistics of employment in the informal sector was adopted. According to that resolution, the informal sector may be broadly characterized as consisting of units engaged in the production of goods or services with the primary objective of generating employment and incomes to the persons concerned. These units typically operate at a low level of organization, 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 and social relations rather than contractual arrangements with formal guarantees. Also, Production units of the informal sector have the characteristic features of household enterprises. The fixed and other assets used do not belong to the production units as such but to their owners. The units as such cannot engage in transactions or enter into contracts with other units, nor incur liabilities, on their own behalf. The owners have to raise the necessary finance at their own risk and are personally liable, without limit, for any debts or obligations incurred in the production process. Expenditure for production is often indistinguishable from household expenditure. Similarly, capital goods such as buildings or vehicles may be used indistinguishably for business and household purposes.

2.2 The population employed in the informal sector comprises all persons who, during a given reference period, were employed in at least one informal sector unit, irrespective of their status in employment and whether it is their main or a secondary job.

2.3 In November-December 2003, the Seventeenth International Conference of Labour Statisticians (ICLS), acknowledging that the relevance of informal employment varies among countries recommended for developing the mechanism of collecting statistics on it by national circumstances and priorities. As the term 'informal economy' is used by the ILO including the informal sector as well as informal employment, and also as a supplement to the System of National Accounts, 1993 an international conceptual framework for measurement of the non-observed economy already exists, which distinguishes the informal sector from underground production, illegal production, and household production for own final use, keeping in mind the existing international standards on statistics of employment in the informal sector contained in the Resolution concerning statistics of employment in the informal sector adopted by the Fifteenth ICLS, the recommendation made by the Expert Group on Informal Sector Statistics (Delhi Group) and the methodological work, which the International Labour Office and a number of countries have already undertaken in this area, a framework was built, which complement the Resolution concerning statistics of employment in the informal sector of the Fifteenth ICLS, and encourages countries to test the conceptual framework on which they are based emphasizing the importance of consistency and coherence in relating the enterprise-based concept of employment in the informal sector to a broader, job-based concept of informal employment. The International Labour Conference in its Resolution concerning decent work and the informal economy during its 90th Session in 2002 suggested that the International Labour Office should assist countries in the collection, analysis and dissemination of statistics on the informal economy, recognizing that the considerable diversity of informal employment situations to the extent to which statistics on informal employment can be harmonized across countries the international comparability can be enhanced.

2.4 As per the guidelines the concept of informal sector refers to production units as observation units, while the concept of informal employment refers to jobs as observation units. *Informal sector enterprises* and e*mployment in the informal sector* are defined according to the Resolution concerning statistics of employment in the informal sector adopted by the Fifteenth ICLS. For the purpose of statistics on informal employment, households employing paid domestic workers from informal sector enterprises should be excluded and to treat them separately as part of a category named 'households'. *Informal employment* comprises the total number of informal jobs as defined below, whether carried out in formal sector enterprises, informal sector enterprises, or households, during a given reference period. Such jobs are (i) own-account workers employed in their own informal sector enterprises; (ii) employers employed in their own informal sector enterprises; (iii) contributing family workers, irrespective of whether they work in formal or informal sector enterprises; (iv)members of informal producers' cooperatives; (v) employees holding informal jobs in formal sector enterprises, informal sector enterprises, or as paid

domestic workers employed by households ; (vi) own-account workers engaged in the production of goods exclusively for own final use by their household.

2.5 Own-account workers, employers, members of producers' cooperatives, contributing family workers, and employees are defined in accordance with the latest version of the International Classification of Status in Employment (ICSE), Producers' cooperatives are considered informal, if they are not formally established as legal entities and also meet the other criteria of informal sector enterprises specified in the Resolution concerning statistics of employment in the informal sector adopted by the Fifteenth ICLS. Employees are considered to have informal jobs if their employment relationship is, in law or in practice, not subject to national labour legislation, income taxation, social protection or entitlement to certain employment benefits (advance notice of dismissal, severance pay, paid annual or sick leave, etc.). The reasons may be the following: non-declaration of the jobs or the employees; casual jobs or jobs of a limited short duration; jobs with hours of work or wages below a specified threshold (e.g. for social security contributions); employment by unincorporated enterprises or by persons in households; jobs where the employee's place of work is outside the premises of the employer's enterprise (e.g. outworkers without employment contract); or jobs, for which labour regulations are not applied, not enforced, or not complied with for any other reason. The operational criteria for defining informal jobs of employees are to be determined in accordance with national circumstances and data availability and for purposes of analysis and policy-making, it may be useful to disaggregate the different types of informal jobs listed above, especially those held by employees. Such a typology and definitions should be developed as part of further work on classifications by status in employment at the international and national levels. Where they exist, employees holding formal jobs in informal sector enterprises should be excluded from informal employment.

2.6 Informal employment outside the informal sector comprises the following types of jobs:

(i) Employees holding informal jobs in formal sector enterprises or as paid domestic workers employed by households;
(ii) Contributing family workers working in formal sector enterprises;
(iii) Own-account workers engaged in the production of goods exclusively for own final use by their household, if considered employed according to paragraph 9 (6) of the Resolution concerning statistics of the economically active population, employment, unemployment and underemployment adopted by the Thirteenth ICLS.

Countries, which do not have statistics on employment in the informal sector, or for which a classification of employment by type of production unit is not relevant, may develop statistics on informal employment, if desired, in specifying appropriate definitions of informal jobs of own-account workers, employers and members of producers' cooperatives. Alternatively, they may limit the measurement of informal employment to employee jobs. Countries, which exclude agricultural activities from the scope of their informal sector statistics, should develop suitable definitions of informal jobs in agriculture, especially with respect to jobs held by own-account workers, employers and members of producers' cooperatives.

3. Survey Particulars of NSS 61st Round

3.1 The survey covered the whole of the Indian Union *except* (i) Leh and Kargil districts of Jammu & Kashmir, (ii) interior villages of Nagaland situated beyond 5 kilometres of the bus route and (iii) villages in Andaman and Nicobar Islands which remained inaccessible throughout the year. All the sample first stage units of the districts of Poonch and Rajouri of Jammu & Kashmir, all rural samples of the district of Doda of Jammu & Kashmir, and all rural samples of the district of Nicobar of Andaman and Nicobar Islands became a causality and therefore, these areas are outside the survey coverage. The fieldwork of the 61st round of NSSO started on 1st July, 2004 and continued till 30th June, 2005. As usual, the survey period of this round was divided into four sub-rounds, each of a duration of three months, the 1st sub-round period ranging from July to September 2004, the 2nd sub-round period from October to December 2004 and so on. An equal number of sample villages/blocks (FSUs) were allotted for survey in each of these four sub-rounds. The survey used the interview method of data collection.

3.2 In the 61st round survey, a stratified multi-stage sampling design was adopted for selection of the sample units for rural and urban areas. The first stage units (FSUs) were the census villages (panchayat

wards for Kerala) for rural areas and the NSSO Urban Frame Survey (UFS) blocks for urban areas. The ultimate stage units (USUs) were the households for both rural and urban areas. Hamlet-groups/sub-blocks constituted the intermediate stage whenever these were formed in the sample FSUs.

3.3 For rural areas, the list of 2001 census villages constituted the sampling frame for selection of sample FSUs for most of the states. For the rural areas of Kerala, however, the list of panchayat wards was used as the sampling frame for selection of panchayat wards. For the urban areas, the latest lists of UFS blocks constituted the sampling frame for selection of sample FSUs. Within each district of a State/UT, two separate basic strata were formed for rural areas and urban areas. All rural areas of the district comprised rural stratum and all the urban areas of the district comprised urban stratum.

3.4 At the all-India level, a total number of 12788 FSU's (8128 villages and 4660 urban blocks) was allocated for the survey and this was allocated to the different States and UTs in proportion to population as per census 2001 which was then allocated between rural and urban sectors in proportion to population as per *population census 2001* with 1.5 weight to urban sector. Within each of the rural and urban sector of a State/UT, the respective sample size was allocated to the different strata in proportion to the stratum population as per census 2001.

3.5 Within a district, if 'r' number of FSUs were allocated for a rural stratum, a total number of 'r/2' sub-strata were formed within that rural stratum. From each sub-stratum of the rural stratum of a district, two FSUs were selected with probability proportional to size with replacement (PPSWR), size being the population as per Population Census 2001. Within a district, if 'u' number of FSUs were allocated for a urban stratum, a total number of 'u/2' sub-strata were formed within that urban stratum. From each sub-stratum of the urban stratum of a district, two FSUs were selected with simple random sampling without replacement (SRSWOR). Within each sub-stratum, samples were drawn in the form of two independent sub-samples in both the rural and urban sectors. All households listed in the selected village/block/ hamlet-groups/sub-blocks were stratified into three second-stage strata (SSS). A total of 10 households were selected from each sample village/block for canvassing the employment and un-employment schedule. The sample households from each of the second stage strata were selected by SRSWOR.

3.6 Out of the total number of 12788 FSU's (8128 villages and 4660 urban blocks) selected for survey for the central sample, 12601 FSU's (7999 villages and 4602 urban blocks) could be surveyed at the all-India level for canvassing NSS Schedule 10. The number of households surveyed was 1,24,680 (79,306 in rural areas and 45,374 in urban areas) and number of persons surveyed was 6,02,833 (3,98,025 in rural areas and 2,04,808 in urban areas).

4. Important Results of the NSS 61st Round regarding the Conditions of Informal Employment

4.1 In this paper we have considered the workers, in the usual status, in broadly two major groups. Group I is consisting of those in the **ag**ricultural sector **e**xcluding only **g**rowing of **c**rops, *market gardening, horticulture and growing of crops combined with farming of animals* (AGEGC) i.e. industry groups/divisions 012, 014, 015, 02, 05 and Group- II consist of those engaged in the non-agriculture sector i.e. industry group/division 10 -99.

4.2 Before discussing the important results, it will be good to have an idea about the reliability of the estimates in terms of sample sizes. Table 1 gives the number of sample workers engaged in the industry groups/divisions 012, 014, 015, 02, 05 i.e group –I and industry divisions 10-99 i.e. group-II, separately for males and females in the rural and urban areas in respect to status of employment with further classified by status of employment. It can be seen that sample size for the females in group-I are very small for the rural sector and even smaller for the urban sector even at all India level. Also it may be noted that , in the AGEGC sector in the urban areas, there are only 6 samples for female regular wage / salaried workers and 38 samples for female casual labours. Considering the limitations that the sample sizes for different categories impose for drawing valid inference at the state/u.t. level , the discussions in this paper are restricted to the findings at the all-India level.

4.3 To capture the condition of employment, information on six major aspects namely, a) whether there was any written job contract in the employment, b) whether employees were eligible for the paid leave, c) whether employees were covered under social security benefits (PF/ pension, gratuity, health care and

maternity benefit.), d) method of payments, e) existence of union or association and f) paid leave were considered.

4.4 In the survey, information was collected for the employees about whether there was any written contract or agreement regarding duration of employment with the employer for the job they were engaged. Written agreements are treated as a legal document so far the rights of the employees are concerned. Detailed results are presented in Table 2.

4.5 Information on whether the employment was permanent or temporary was collected for all wage /salary employees and casual labourers in the survey. Nature of employment was defined to be *permanent* if the person was, in normal course, likely to continue in the same employment. Table 3 presents the detailed findings on this aspect of informal employment.

4.6 Paid leave is considered as another important component of service condition. For the purpose of this survey, paid leave included the cases of leave during sickness, maternity or such leaves as the employee was eligible to take without loss of pay as per the conditions of employment. Detailed results from the survey are given in Table 4.

4.7 Information on eligibility of the regular wage/salaried employees and casual labourers for different social security benefits was collected in the survey. It was ascertained from the employees whether they were covered under any of the specified social security benefits or a combination of them. The different social security benefits covered in the survey were Provident Fund (PF) scheme, gratuity and, health care & maternity benefits. The term Provident Fund (PF) included General Provident Fund, Contributory Provident Fund, Public Provident Fund, Employees Provident Fund, etc. It may be mentioned that coverage under any of these social security schemes would mean that the employer contributed/arranged/paid in implementing the social security benefits for the worker. If an employee operated, in his/her individual capacity, a PPF account and the employer was not contributing to that account, it was not considered a social security benefit. On the contrary, a scheme, in which both the employee and the employer contributed, was considered a social security benefit. Similarly, in case an employee was eligible for paid leave for a specified period of pre-natal/childbirth/post-natal stages or if the expenditure for maternity care or childbirth was born by the employer as per the conditions of employment, then such benefits were considered to be social security benefits. Detailed results of the survey on this aspect may be seen in Table 5.

4.8 Mode of payment in terms of regular weekly, daily, and piece rate basis was also collected for the employees. It was found that daily wages were the predominant mode of payment. Detailed results on this aspect are presented in Table 6.

4.9 In this survey, union/ association meant any registered/ recognized body whose membership was open to a section of those engaged in a specific activity or trade and whose main objective was to look after the interests of its members. Existence of union/ association in enterprises in which the persons work is often recognized as to give them collective bargaining power in respect of their common interests. In the case of workers these interest are conditions of employment, wage rates, social security, job security, safety in work place, etc. The findings included in this paper about the existence of union/ association, pertain to not only employees but also self-employed workers in all the industry divisions of NIC-98, i.e., NIC –98 codes 01 to 99. Table 7 presents the proportion of usual status workers (including self-employed) of age 15 years and above, who reported non-existence of union/ association in the enterprises in which they were engaged. Detailed results of the survey on this aspect may be seen in Table 7.

4.10 Rather than discussing the data on individual aspect of the informal employment, attempts have been made in this paper to discuss below four types of differentials , namely, gender differentials, rural-urban differentials, status of employment differentials and industry group wise (non-agriculture-AGEGC) differentials.

4.11 **Gender-differentials**: In terms of Gender differentials, this condition of employment was found to marginal for wage/salaried employees, - while in the rural areas nearly 59 per cent of the male workers had written job contract, for females the corresponding proportion was 57 per cent and in the urban areas the proportion of males with no written job contract was 59 per cent as compared to 61 per cent for females. In terms of Gender differentials, this condition of employment was found to marginal for wage/salaried employees, - while in the rural areas nearly 59 per cent of the male workers had written

job contract, for females the corresponding proportion was 57 per cent and in the urban areas the proportion of males with no written job contract was 59 per cent as compared to 61 per cent for females. Among the regular wage / salaried workers, a larger proportion of females was employed in jobs which were of temporary in nature compared to the corresponding proportion of male workers. It may be noted that for urban female regular wage/ salaried employees, the sample size was only six under industry groups/ divisions 012, 014, 015, 02, 05 i.e group-I and all reported as eligible for paid leave. The gender differential did not appear to be significant in non-agricultural sector. In the rural areas in the non-agriculture sector, among the regular wage/salaried employees, while 56 per cent of male employees were not covered by any of the social security benefits, in case of females it was nearly 61 per cent. In the urban areas, the proportions of regular wage/salaried employees, who were not covered under any social security benefit, were 60 per cent for females and 52 per cent for males. Though in the urban areas not significant gender differential was observed in this respect, in the rural areas a higher proportion of males (87 per cent) received regular monthly salary compared to the females (81 per cent). . It is seen that though a lower proportion of female casual labourers received daily payment compared to their male counterparts, a higher proportion of them had regular weekly payment or piece rate payment. It was observed that while 38 per cent of the female casual labourers received daily payment as against nearly 54 per cent of males, nearly 22 per cent of the females received regular weekly payment compared to 18 per cent of males. Again nearly 22 per cent of the females received piece rate payment against 12 per cent of the males. A distinguished feature is that a higher proportion of female regular wage/salaried workers had no union/association in their enterprises compared to their male counterparts; in the rural areas nearly 53 per cent of female workers had no union/association in their enterprises compared to 51 per cent of males and in the urban areas nearly 61 per cent of females had no union/association in their enterprises compared to 52 per cent of males.

4.12 Rural-urban differentials: in the non-agricultural sector, about 79 per cent of employees in rural areas and 68 per cent in urban areas had no written job contract with their employer. In the rural areas, among the regular wage/ salaried workers, nearly 65 per cent of female workers had no written job contract compared to 72 of male workers, while in the urban areas nearly 42 per cent female workers had no written job contract compared to 77 per cent of male workers. When all types of employees were considered together, the proportion was 50 per cent for the rural areas and 42 per cent for the urban areas. The rural-urban difference in respect of this condition of employment was also very large. It was seen that 74 per cent of the rural workers were not eligible for paid leave, whereas about 58 per of urban workers were not eligible for paid leave. Among the regular wage / salaried employees engaged in the non-agricultural sector, nearly 48 per cent in the rural areas and 46 per cent in the urban areas were not eligible for paid leave. In the urban areas, a higher proportion of regular wage/salaried employees received regular monthly salary compared to their rural counterparts – 90 per cent (urban) and 86 per cent (rural). The rural-urban difference was of the order of 7 percentage points with 53 per cent of the casual wage labourers getting daily payment in the rural areas and 46 per cent in the urban areas. It is observed that a lower proportion of regular wage/salaried workers in the rural area had no union/association in their enterprises (51 per cent) compared to those in the urban areas (54 per cent).

4.13 Status of employment differentials: It was found that among the casual labourers more than 95 per cent in the rural areas and about 97 per cent in the urban areas had no written job contract. In contrast, a lower proportion of the regular wage/salaried employees had no written job contract: both rural and urban areas reflect figures of 59 per cent. A comparative study on this condition of employment reveal that while nearly 32 per cent of the non-agricultural regular wage/ salaried employees had temporary nature of employment the corresponding proportion for the casual labourers was 66 per cent. Among the regular wage / salaried workers, a larger proportion of females was employed in jobs which were of temporary in nature compared to the corresponding proportion of male workers. It shows that the proportion of workers not eligible for paid leave is much higher among the casual wage labourers (96 per cent) compared to the regular wage /salaried employees (46 per cent). Though, among the casual labourers, it is expected that a very higher proportion of them would be outside the social security net, even for the regular wage/salaried employees, the proportion of workers left out of the coverage of the social security benefits was considerable. While, almost none among the casual wage labourers (96 per cent) were covered under any of the specified social benefits, the proportion for the regular wage/salaried employees not covered by any of the social security benefits was also nearly 55 per cent. It is observed that the proportion of casual labourers in India, who had no union/ association in their enterprises is very high(nearly 79 per cent). It is followed by the self-employed workers (nearly 73 per

cent) whereas the regular wage/salaried employees displayed a distinct feature with a smaller proportion (53 per cent) of them reporting non-existence of union/ association in their enterprises.

4.14 Industry group differentials: The incidence of jobs without written job contract was more prevalent in activity group-I i.e. agriculture, hunting and forestry, except agriculture, hunting and related service activities. It is seen that this incidence rate is 87 per cent in the rural areas and 83 per cent in the urban areas. In this group also, the proportion of the regular wage/salaried employees with no written job contract was lower (72 per cent in the rural areas and 76 per cent in the urban areas) than the corresponding proportion for casual labourers (91 per cent in the rural areas and 89 per cent in the urban areas). The proportion of temporary employees was higher in the AGEGC sector (55 per cent) than that in the non-agricultural sector (45 per cent). the proportion of workers not eligible for paid leave is found to be higher in the AGEGC sector (81 per cent) than that in the non-agricultural sector (66 per cent). Since the regular wage / salaried employees are expected to enjoy paid leave, this aspect has been studied only for them. It was noted that as high as 71 per cent of the employees in the non-agricultural and AGEGC sectors were not covered by any social security benefit.

5. Observation and Conclusion

5.1   It is evident from the data presented in this paper that a significant proportion of regular wage/salaried employees and casual labourers in the country are engaged in informal employment. About 46 per cent of all such workers were temporary. Proportion of employees without any social security benefit was as high as 71 per cent. As against the general perception, about 69 per cent of the employees do not have the existence of union/association in their activities. The situation of casual labour was much worse as compared to regular wage/salaried employees with respect to all the indicators. As mentioned in previous sections, the sample size for the AGEGC sector even at the all-India level is too small and this poses severe limitation in drawing valid inferences on the basis of the estimates for such category of employees even at the all India level. To draw any specific conclusion more intense study is needed focusing on these factors. Therefore, results presented in this paper for this sector may be viewed in this perspective.

References

International Labour Organisation (1993): Resolution on the Statistics of Employment in the Informal Sector – 15th International Conference of Labour Statisticians, Geneva

International Labour Organisation (2003): Report of the 17th International Conference of Labour Statisticians, Geneva

National Sample Survey Organisation, Government of India (2007): NSS Report No 519, Informal Sector and Conditions of Employment in India, New Delhi

		Table 1: Sample number of employees (i.e., regular wage/ salaried workers, casual labourers) according to usual status (ps+ss) engaged in the non-agricultural and AGEGC sectors surveyed during 2004-05			
Sector	Status of employment	Industry groups/ divisions	Male	Female	Person
Rural	Regular wage/ salary	Group I	296	27	323
		Group II	13723	2987	16710
		All	**14019**	**3014**	**17033**
	Casual labour	Group I	537	203	740
		Group II	10207	1905	12112
		All	**10744**	**2108**	**12852**
	All workers	Group I	833	230	1063
		Group II	23930	4892	28822
		All	**24763**	**5122**	**29885**
Urban	Regular wage/ salary	Group I	122	6	128
		Group II	20605	5652	26257
		All	**20727**	**5658**	**26385**
	Casual labour	Group I	180	38	218
		Group II	7680	1861	9541
		All	**7860**	**1899**	**9759**
	All workers	Group I	302	44	346
		Group II	28285	7513	35798
		All	**28587**	**7557**	**36144**
Rural + Urban	Regular wage/ salary	Group I	418	33	451
		Group II	34328	8639	42967
		All	**34746**	**8672**	**43418**
	Casual labour	Group I	717	241	958
		Group II	17887	3766	21653
		All	**18604**	**4007**	**22611**
	All workers	Group I	1135	274	1409
		Group II	52215	12405	64620
		All	**53350**	**12679**	**66029**

Sector	Status of employment	Industry groups/ divisions	Male	Female	Person
Rural	**Regular wage/ salary**	Group I	722	653	717
		Group II	594	568	589
		All	**598**	**568**	**592**
	Casual labour	Group I	890	939	906
		Group II	957	963	958
		All	**953**	**960**	**954**
	All workers	Group I	845	921	865
		Group II	792	769	788
		All	**794**	**780**	**792**
Urban	**Regular wage/ salary**	Group I	765	417	756
		Group II	586	612	591
		All	**587**	**612**	**592**
	Casual labour	Group I	874	950	889
		Group II	968	967	968
		All	**966**	**967**	**966**
	All workers	Group I	823	908	834
		Group II	680	693	682
		All	**681**	**694**	**683**
Rural + Urban	**Regular wage/ salary**	Group I	731	636	725
		Group II	589	596	591
		All	**591**	**597**	**592**
	Casual labour	Group I	889	940	904
		Group II	960	964	961
		All	**957**	**962**	**958**
	All workers	Group I	842	920	861
		Group II	734	728	733
		All	**737**	**736**	**737**

Table 2: Proportion (per 1000) of employees who had no written job contract among employees according to usual status (ps+ss) engaged in the non-agricultural and AGEGC enterprises for different status of employment during 2004-05

Source: NSS Report No 519, Informal Sector and Conditions of Employment in India, National Sample Survey Organisation, Ministry of Statistics & Programme Implementation, Government of India, April 2007

Sector	Status of employment	Industry groups/ divisions	Male	Female	Person
Rural	Regular wage/ salary	Group I	454	534	460
		Group II	321	355	460
		All	**324**	**357**	**331**
	Casual labour	Group I	555	612	573
		Group II	630	668	637
		All	**626**	**661**	**632**
	All workers	Group I	528	607	548
		Group II	489	515	494
		All	**491**	**522**	**497**
Urban	Regular wage/ salary	Group I	453	52	443
		Group II	308	373	321
		All	**308**	**373**	**321**
	Casual labour	Group I	644	513	618
		Group II	711	688	707
		All	**710**	**685**	**705**
	All workers	Group I	555	477	545
		Group II	406	445	414
		All	**408**	**445**	**415**
Rural + Urban	Regular wage/ salary	Group I	454	498	457
		Group II	313	367	323
		All	**314**	**367**	**325**
	Casual labour	Group I	564	606	577
		Group II	656	675	659
		All	**652**	**669**	**655**
	All workers	Group I	532	599	548
		Group II	447	477	453
		All	**449**	**482**	**455**

Table 3: Proportion (per 1000) of temporary employees among employees according to usual status (ps+ss) engaged in the non-agricultural and AGEGC enterprises during 2004-05

Table 4: Proportion (per 1000) of employees not eligible for paid leave among employees according to usual status (ps+ss) engaged in the non-agricultural and AGEGC enterprises for different status in employment during 2004-05					
Sector	Status of employment	Industry groups/ divisions	Male	Female	Person
Rural	Regular wage/ salary	Group I	646	503	635
		Group II	473	487	476
		All	**478**	**487**	**480**
	Casual labour	Group I	860	877	865
		Group II	960	965	961
		All	**953**	**954**	**954**
	All workers	Group I	803	853	816
		Group II	738	731	737
		All	**741**	**740**	**741**
Urban	Regular wage/ salary	Group I	596	-	582
		Group II	448	480	455
		All	**449**	**480**	**455**
	Casual labour	Group I	875	1000	900
		Group II	973	955	970
		All	**972**	**956**	**969**
	All workers	Group I	746	923	768
		Group II	577	588	579
		All	**578**	**589**	**580**
Rural + Urban	Regular wage/ salary	Group I	635	466	624
		Group II	458	483	462
		All	**460**	**483**	**464**
	Casual labour	Group I	861	885	868
		Group II	964	962	964
		All	**959**	**955**	**958**
	All workers	Group I	795	858	810
		Group II	655	654	655
		All	**659**	**662**	**660**

Note: In the AGEGC sector in the urban areas, of the 6 sample female regular wage / salaried workers all reported as eligible for paid leave, and of the 38 sample female casual labourers none were eligible for paid leave.

Table 5: Proportion (per 1000) of employees not eligible for any social security benefit* among employees according to usual status (ps+ss) engaged in the non-agricultural and AGEGC enterprises for different status in employment during 2004-05

Sector	Status of employment	Industry groups/ divisions	Male	Female	Person
Rural	Regular wage/ salary	Group I	729	653	723
		Group II	555	608	565
		All	**560**	**609**	**569**
	Casual labour	Group I	886	928	899
		Group II	958	963	959
		All	**954**	**959**	**955**
	All workers	Group I	844	910	861
		Group II	775	789	777
		All	**778**	**798**	**782**
Urban	Regular wage/ salary	Group I	717	417	710
		Group II	519	596	534
		All	**520**	**595**	**535**
	Casual labour	Group I	820	1000	856
		Group II	964	966	964
		All	**961**	**967**	**962**
	All workers	Group I	772	955	796
		Group II	628	680	638
		All	**629**	**681**	**639**
Rural + Urban	Regular wage/ salary	Group I	726	636	720
		Group II	532	600	545
		All	**535**	**600**	**547**
	Casual labour	Group I	879	932	895
		Group II	960	964	961
		All	**956**	**961**	**957**
	All workers	Group I	834	913	853
		Group II	699	731	705
		All	**703**	**737**	**709**

*: For the purpose of the survey, the social security benefits considered were PF/ pension, gratuity, health care and maternity benefit.

Source: NSS Report No 519, Informal Sector and Conditions of Employment in India, National Sample Survey Organisation, Ministry of Statistics & Programme Implementation, Government of India, April 2007

Table 6: Per 1000 distribution of regular wage/salaried employees and casual labourers engaged in the non-agricultural and AGEGC enterprises by method of payment during 2004-05

Category of persons	Sector	Method of payment	Male	Female	Person
Regular wage /	*Rural*	Regular monthly salary	869	805	857
		Regular weekly payment	43	81	50
		Daily payment	23	9	20

Salaried employees		Piece rate payment	19	65	28
		Others	25	20	24
		All (incl. n.r.)	**1000**	**1000**	**1000**
	Urban	Regular monthly salary	896	916	900
		Regular weekly payment	40	43	41
		Daily payment	14	4	12
		Piece rate payment	28	11	25
		Others	13	17	14
		All (incl. n.r.)	**1000**	**1000**	**1000**
	Rural + Urban	Regular monthly salary	886	877	884
		Regular weekly payment	41	56	44
		Daily payment	17	6	15
		Piece rate payment	25	30	26
		Others	18	18	18
		All (incl. n.r.)	**1000**	**1000**	**1000**
Casual labourers	*Rural*	Regular monthly salary	65	67	65
		Regular weekly payment	158	199	165
		Daily payment	561	405	533
		Piece rate payment	129	241	149
		Others	52	63	54
		All (incl. n.r.)	**1000**	**1000**	**1000**
	Urban	Regular monthly salary	97	190	114
		Regular weekly payment	241	260	244
		Daily payment	492	310	459
		Piece rate payment	110	167	120
		Others	42	52	44
		All (incl. n.r.)	**1000**	**1000**	**1000**
	Rural + Urban	Regular monthly salary	75	106	80
		Regular weekly payment	184	218	190
		Daily payment	539	376	510
		Piece rate payment	123	218	140
		Others	49	59	51
		All (incl. n.r.)	**1000**	**1000**	**1000**

Table 7: Proportion (per 1000) of workers with non-existence of union/ association in their activity among usual status (ps+ss) workers of age 15 years and above during 2004-05				
Category of persons	**Status in employment (code*)**			
	Self-employed (11-21)	*Regular wage/ salaried employees (31)*	*Casual labours (41 & 51)*	Total (11-21)
(1)	(2)	(3)	(4)	(5)
rural				
Male	763	509	790	713
Female	837	529	790	797
Person	795	513	790	740
urban				

Male	596	524	784	591
Female	767	609	807	707
Person	632	541	788	615
Rural + urban				
Male	689	519	788	655
Female	821	581	795	768
Person	734	531	789	685
Person	734	531	789	685

Informal Employment in the Non-Agriculture sector in India

- Asis Roy & Manik Lal Rakshit[*]

1. Introduction

1.1 The 15th International Conference of the Labour Statisticians (ICLS) endorsed a set of guidelines to measure employment in the informal sector. Later, the 17th ICLS gave a framework for identification of informal employment. In order to provide an estimate of employment in the informal sector from a household survey, the National Sample Survey organization (NSSO) of India, for the first time, made an attempt to collect some specific information through its 55th round (1999 – 2000) survey on Employment and Unemployment. The NSSO in its 61st round survey on Employment and Unemployment survey has collected some more specific information relating to the conditions of employment of the employees which provide a scope to get a direct measure of informal employment in India following the conceptual framework of informal employment as laid down in the 17th ICLS.

1.2 Several attempts have been made so far to measure informal employment in India using Employment and Unemployment survey data of NSS 55th Round. Main works among them are of Shastri (2000), Reveendran & Manna (2002), Saha & Kar (2004) and Giri *et. al.* (2006). To arrive at the estimate, Saha & Kar (2004) and Giri *et. al.* (2006) considered jobs as observation units while Shastri (2000), Reveendran and Manna (2002), considered workers according to usual principal and subsidiary statuses taken together as observation units. However, since the NSS 55th round survey did not provide necessary information to get a direct estimate of informal employment as per the guideline of 17th ICLS, all these estimates were subject to certain assumptions.

1.3 This paper uses the data of employment and unemployment survey of NSS 61st round and attempts to measure the magnitude of informal employment in the Non-Agriculture sector in India keeping the basic framework of the 17th ICLS in view.

2. Conceptual framework of Informal Employment

2.1 The informal sector defined in the 15th ICLS comprises household enterprises or, equivalently, unincorporated enterprises owned by households in the non-agriculture sector. The enterprises may be owned and operated by individual household member or by two or more members of the same household or by members of different households. In other words, the informal sector may be regarded as a group of proprietary and partnership enterprises. While the concept of informal sector refers to production units as observation units, the concept of informal employment according to the 17th ICLS refers to jobs as observation units. Since, a person can have multiple job holdings, all jobs held by persons either in the principal capacity or in the subsidiary capacity are to be taken as observation units rather than considering the employed persons only.

2.2 The informal employment is to be identified by cross classifying (i) the status of employment of the workers holding the jobs and (ii) the types of production units in which the jobs are performed. The different types of production units are (a) formal sector enterprises, (b) informal sector enterprises, and (c) households that produce goods for their own final use and/or those employ domestic workers. The status of employment of the workers performing the jobs may be (a) own account workers (b) employers (c) contributing family workers, (d) employees or (e) member of informal producers' co-operatives. All the jobs of own account workers/ employers/member of informal producers' co-operatives in the informal production units are considered as informal jobs. The jobs held by the employees are treated as informal if the nature of their work is informal, say, not protected by any social security. All jobs of contributing family workers are informal. The Conceptual Framework of Informal Employment in the line of 17th ICLS is shown in Chart 1.

Chart 1: Conceptual Framework of Informal Employment[@]					
type of production unit	status of employment				
	own account workers	employers	contributing family workers	member of informal producers' co-operatives	employees with informal jobs
formal			a		b
informal	c	d	e	f	g
household	h				i

@ Informal employment = (a + b + c + d + e + f + g + h + i)

3. Scope for Measurement:

3.1 The following information, collected in NSS 61st round, has been considered for deriving estimates of informal jobs in the non- agriculture sector:
   a) status in employment according to usual principal activity and usual subsidiary activity,
   b) industry of work
   c) type of enterprise
   d) type of job contract
   e) eligibility for paid leave
   f) availability of social security benefits

These items have been described in Annexure-II.

4. Approach for Measurement:

4.1 First identify all the jobs by status of employment of the employed persons and type of enterprise in which they are working by considering usual principal activity and usual subsidiary activity separately. The sum total of all jobs held by persons either in their principal capacity or in their subsidiary capacity, that is, the number of persons working in their principal status and the number of persons working in the subsidiary status (irrespective of whether they are working in their usual principal statues or not) together accounts for the total number of jobs in the economy.

4.2 After identifying all the jobs by status of employment and type of enterprise, the following jobs have been classified as informal jobs:

   (i) Jobs of own account workers and employers in the proprietary & partnership enterprises
   (ii) all contributing family workers
   (iii) Jobs of regular wage/ salaried employees and casual labours which are protected neither by written job contract nor by eligibility of paid leave nor by availability of social security benefits

Jobs satisfying condition (i) above account for the total of the cell values 'c', 'd', 'h' and 'f' of the Chart 1 of the conceptual framework. Since the employment and unemployment schedule of NSS 61st round did not aim to obtain separate estimate for the cell values 'h' and 'f', at the stage of data collection, 'own-account workers engaged in the production of goods exclusively for their own final use' and 'members of informal producers' co-operatives' have automatically been classified as own-account workers in the 'proprietary & partnership enterprises'. Jobs satisfying condition (ii) account for the total of the cell values 'a' and 'e'. Jobs satisfying condition (iii) account for the total of the cell values 'b', 'g' and 'i' of Chart 1.

4.3 The 'type of enterprise' could not be recorded for some enterprises. In such cases where the type of enterprise was 'not recorded', the ratio of 'proprietary & partnership enterprises' to all the enterprises has been applied to the 'not recorded' enterprises to get the number of 'proprietary & partnership enterprises' among the enterprises for which 'type of enterprise' was 'not recorded'.

4.4 Information on certain conditions of employment like existence of written job contract, eligibility for paid leave, availability of some specified social security benefits viz. PF/pension/gratuity/health care & maternity benefits etc. was collected in the 61st round from each of the regular wage/salaried and casual labours working in the non-agriculture sector. This information was collected for each of the principal jobs and the subsidiary jobs. In the NSS report number 519 (Informal Sector and Conditions of

Employment in India), results based on this information have been presented for only (i) usual principal activity and (ii) usual principal & subsidiary activity taken together. The informal jobs of regular wage/salaried and casual labours are identified as per the procedure stated in para 4.2. In order to get the dimension of informal jobs held by the regular wage/salaried and casual labours in their subsidiary capacity, the ratio of informal jobs to the total jobs obtained for the employees worked 'only in the subsidiary capacity' has been applied to 'all the regular wage/salaried and casual labour jobs held by the employees in the subsidiary capacity'.

5. Measurement of Informal Employment in non-agriculture sector :

5.1 **Total number of jobs:** The survey results of NSS 61st round reveals that as on 01.01.05, total number of workers in the country was about 408 million and total number of jobs held by these workers was about 500 million of which 74 per cent were principal jobs and the remaining 26 per cent were subsidiary jobs.

5.2 Table 1 presents the number of worker and jobs per 100 persons by category of persons. At the all-India level, the number of workers per 100 person is 42.0 where as the number of jobs per 100 person is 51.5. The corresponding figures for the rural persons are 43.9 & 55.9, respectively and those for the urban persons are 36.5 & 38.6, respectively. This indicates that multiple jobs holding in the rural areas are very common. Among the principal status workers, about 31% in the rural areas and about 6 % in the urban areas did some subsidiary work.

Table 1: Number of jobs per 100 persons in India as on 01.01.05

category of persons	percentage distribution of persons	number per 100 persons				
		employed (ps +ss)	job (ps)	job (ss)	all jobs	jobs in non-agriculture
rural male	38.0	54.6	53.5	17.9	71.3	21.6
rural female	36.5	32.7	24.2	15.7	39.9	6.2
rural person	74.5	43.9	39.1	16.8	55.9	14.1
urban male	13.3	54.9	54.1	3.9	58.0	53.2
urban female	12.2	16.6	13.5	3.9	17.4	14.0
urban person	25.5	36.5	34.6	3.9	38.6	34.4
rural+urban male	51.3	54.7	53.6	14.3	67.9	29.8
rural+urban female	48.7	28.7	21.5	12.8	34.2	8.2
rural + urban person	100.0	42.0	38.0	13.5	51.5	19.3

employed (ps +ss): workers according to principal & subsidiary status taken together
job (ps): jobs held by persons in the principal capacity (say, principal jobs);
job (ps): jobs held by persons in the subsidiary capacity (say, subsidiary jobs);
all jobs: job(ps) + job(ss)

5.3 Jobs in non-agriculture sector: Table 2 shows that about 37.4 per cent of the jobs in India are in the non-agriculture sector (industry division 10 – 99 as per NIC 1998). The majority of the jobs in the rural areas are in the agriculture sector while the majority of jobs in the urban areas are in the non-agriculture sector - among the jobs in the urban areas, about 89.2 per cent are in the non-agriculture sector where as only 25.2 per cent of the jobs in the rural areas are in the non-agriculture sector. Principal jobs are more in non-agriculture sector as compared to the subsidiary jobs – about 43.9 per cent of principal jobs are in non-agriculture sector while only about 19.3 per cent of subsidiary jobs are in the non-agriculture sector. This indicates that subsidiary jobs are mainly in the agricultural sector.

Table 2: Percentage of jobs in non-agriculture

category of persons	number per 100 jobs

	job (ps)	job (ss)	all jobs
rural male	33.8	20.1	30.3
rural female	18.6	11.0	15.6
rural person	29.2	15.9	25.2
urban male	94.0	59.5	91.7
urban female	85.3	63.2	80.3
urban person	92.4	61.3	89.2
rural+urban male	49.5	22.9	43.9
rural+urban female	29.1	15.0	23.8
rural + urban person	43.9	19.3	37.4

Jobs in non-agriculture sector by status in employment : Table 3 shows that about 47 % of the non-agriculture jobs are held by the self-employed and the remaining 53 % are held by the regular wage/salaried employees and casual labours. While more than 40 % of the jobs in the urban areas are held by regular wage/salaried employees, only 20 % are held by them in the rural areas. The proportion of self-employment jobs in the subsidiary capacity (57.5 %) is considerably higher than that among the principal capacity jobs (45.4 %). Among the subsidiary capacity jobs, only about 7.2 % are held by regular wage/salaried employees.

Table 3: Percentage distribution of non-agriculture jobs by status in employment

category of persons	status in employment								
	self-employed	regular wage/ salaried	casual labour	self-employed	regular wage/ salaried	casual labour	self-employed	regular wage/ salaried	casual labour
	principal activity jobs			subsidiary activity jobs			all jobs		
rural male	46.9	24.3	28.9	48.5	5.4	46.1	47.1	21.1	31.7
rural female	55.4	22.8	21.8	65.8	4.7	29.5	58.3	17.8	23.9
rural person	48.5	24.0	27.5	54.0	5.2	40.9	49.5	20.4	30.0
urban male	43.0	43.1	13.9	60.0	17.2	22.8	43.8	42.0	14.3
urban female	38.1	49.0	12.9	78.2	9.8	12.0	45.2	42.1	12.7
urban person	42.2	44.1	13.7	69.0	13.5	17.5	44.1	42.0	14.0
rural+urban male	45.0	33.6	21.4	50.6	7.6	41.8	45.6	30.8	23.7
rural+urban female	47.4	34.9	17.7	69.8	6.4	23.8	52.7	28.2	19.1
rural+ urban person	45.4	33.8	20.7	57.5	7.2	35.3	47.0	30.2	22.7

5.5 Informal jobs held by the self-employed: Among the workers in the non-agriculture sector, about 74 per cent in their principal capacity and about 84 per cent in their subsidiary capacity are engaged in the proprietary and partnership enterprises. Considering all the jobs of contributing family workers and the jobs of own account workers/employers in the proprietary & partnership enterprises as informal jobs, it is observed from Table 4 that about 99 per cent of the jobs held by the self-employed in the non-agriculture sector are informal. This is true for the principal jobs as well as for the subsidiary jobs.

Table 4: Percentage of informal jobs among the self-employed jobs in non-agriculture

category of persons	% of informal jobs		
	job (ps)	job (ss)	all jobs

rural male	98.3	98.2	98.3
rural female	98.9	99.2	99.0
rural person	98.4	98.6	98.4
urban male	98.7	97.9	98.6
urban female	98.9	99.7	99.1
urban person	98.7	98.9	98.7
rural+urban male	98.4	98.1	98.4
rural+urban female	98.9	99.4	99.0
rural + urban person	98.5	98.7	98.6

5.6 Informal jobs held by regular wage/salaried employee and casual labour: It has already been observed that the regular wage/salaried employees and casual labours hold 52.9 per cent of the jobs in the non-agriculture sector. It is observed from Table 5 that about 63.1 per cent of the jobs of regular wage/ salaried employees and casual labours are informal. The corresponding percentages in the rural and urban areas are about 71.9 and 53.6, respectively. For the jobs held by the employees, about 60.5 per cent of the principal jobs and more than 80 per cent of the subsidiary jobs are of informal nature.

Table 5: Percentage of informal jobs among the jobs held by regular wage/salaried employee and casual labour in non-agriculture

category of persons	% of informal jobs		
	job (ps)	job (ss)	all jobs
rural male	69.8	86.1	72.4
rural female	64.6	87.1	69.7
rural person	68.9	86.3	71.9
urban male	52.9	74.3	53.5
urban female	52.2	74.2	53.8
urban person	52.8	74.2	53.6
rural+urban male	61.1	84.3	63.4
rural+urban female	57.9	84.0	61.8
rural + urban person	60.5	84.2	63.1

5.7 Informal jobs in non-agriculture: It has already been noticed that about 37.4 per cent of the jobs in the country are in the non-agriculture sector. Table 6 shows that about 80 % of these non-agriculture jobs are informal. Giri *et. al.* (2006), based on the employment and unemployment survey data of NSS 55th round, measured that about 82 % of the non-agricultural jobs are informal. As obtained from NSS 61st round, about 78 % of the principal jobs and about 93 % of the subsidiary jobs in India are informal. The percentage of informal jobs is much higher in the rural areas (about 85 %) than that in the urban areas (about 74 %). Among the different categories of persons, proportion of informal jobs in non-agriculture in the principal capacity is the highest for rural female (about 84 %) and the lowest for urban female (about 70 %).

Table 6: Percentage of informal jobs among jobs in non-agriculture

category of persons	% of informal jobs

	job (ps)	job (ss)	all jobs
rural male	83.2	91.9	84.6
rural female	83.6	95.1	86.7
rural person	83.2	92.9	85.1
urban male	72.6	88.4	73.3
urban female	70.0	94.1	74.3
urban person	72.2	91.2	73.5
rural+urban male	77.9	91.3	79.3
rural+urban female	77.3	94.7	81.4
rural + urban person	77.8	92.5	79.8

5.8 Distribution of informal jobs in non-agriculture sector by status in employment: Table 7 shows that the share of rural persons in the informal jobs was about 58.1 per cent while their share in the non-agricultural jobs was about 54.5 per cent. Among the different categories of persons, the rural males hold the highest share of informal jobs (about 45 %) while the urban females hold the lowest share (about 8.3 %). It is found from Table 7 that about 58.1 per cent of the informal jobs are shared by the self-employed while their share in the non-agricultural jobs was about 47.0 per cent only. Informal jobs for females are more in the self-employment capacity as compared to the males – about 64.1 per cent of the informal jobs of the females and about 56.5 per cent of the informal jobs of the males are in the self-employment capacity. Among the informal jobs in the self-employment capacity, the largest part was shared by the

Table 7: Percentage distribution of informal jobs in non-agriculture sector by status in employment

category of persons	% distribution		employment status					
	non-agriculture jobs	informal jobs	self-employed				regular wage/salaried & casual labour	all
			own account workers	emp-loyers	contributing family workers	all		
rural male	42.7	45.3	45.0	0.9	8.8	54.7	45.3	100.0
rural female	11.8	12.8	32.9	0.2	33.4	66.5	33.5	100.0
rural person	54.5	58.1	42.3	0.8	14.2	57.3	42.7	100.0
urban male	36.6	33.7	44.3	3.7	10.9	58.9	41.1	100.0
urban female	8.9	8.3	34.4	0.7	25.3	60.4	39.6	100.0
urban person	45.5	41.9	42.4	3.1	13.7	59.2	40.8	100.0
rural+urban male	79.3	78.9	44.7	2.1	9.7	56.5	43.5	100.0
rural+urban female	20.7	21.1	33.5	0.4	30.2	64.1	35.9	100.0
rural + urban person	100.0	100.0	42.4	1.8	14.0	58.1	41.9	100.0

own-account workers – about 73 per cent of the informal jobs in the self-employment capacity.

5.9 Number of jobs by category of persons, number of informal jobs as well as all jobs in the non-agriculture sector by status of employment, as obtained from NSS 61st round, has been placed in annexure 1 as Table A. Absolute figures given in 'Table A' can be used for combining the ratios presented in this paper. But since the NSS estimate of population is on the lower side, instead of using the absolute numbers given in 'Table A', the ratios presented in this paper may be applied on the census projected population as on 01.01.05 to arrive at the absolute numbers of any category at the all-India level.

6 This paper finds that about 80 per cent of the employments in the non-agriculture sector of India are of informal nature. It has also been observed that, in the non-agricultural sector, about 78 per cent of the principal jobs and 93 per cent of the subsidiary jobs are informal. Persons holding these jobs are protected neither by any labour laws nor by any social security. This informal nature of employment is very common in the agriculture sector and the magnitude is obviously much higher than the non-agriculture sector. As a result, quality of employment in India as a whole is very poor. This issue is a matter of concern for the country and needs proper attention for overall development of the nation.

References:

1. NSS Report no. 515 (Part I and Part II) on Employment and Unemployment Situation in India, 2004-05.
2. NSS Report no. 519 (Part I and Part II) on Informal Sector and Conditions of Employment in India, 2004-05.
3. B.K.Giri, Asis Roy, Salil Kumar Mukhopadhyay: Informal Employment in India – An attempt to measure through Employment - Unemployment Survey of NSSO
4. Sastry N.S.: Estimating Informal Employment - Poverty in India.
5. Reveendran G. and Manna G.C. (2002): Testing the conceptual framework of informal employment – A case study of India.
6. Hussmanns Ralf (2005): Questionnaire on employment by selected characteristics.

Saha, V., Kar A. and Baskaran T.: Contribution of Informal Sector and Informal Employment in Indian Economy (2004).

India

Table A: Jobs by status in employment as obtained from NSS 61st round

category of persons	status in employment									no of workers according to ps & ss	no. of persons
	informal jobs			non-agricultural jobs			all jobs				
	self-employed	regular wage/ salaried & casual labour	all	self-employed	regular wage/ salaried & casual labour	all	self-employed	regular wage/ salaried & casual labour	all		
rural male	370193	305992	676185	376619	422406	799025	1605265	1028497	2633762	2016659	3691933
rural female	127201	64149	191350	128506	92091	220597	914581	501069	1415651	1161510	3551527
rural person	497224	370160	867384	505125	514498	1019623	2519846	1529567	4049413	3178168	7243460
urban male	296017	206451	502468	300174	385562	685735	346100	402033	748134	707470	1289592
urban female	74385	48848	123233	75030	90819	165849	101027	105576	206603	196830	1185916
urban person	370480	255435	625915	375204	476381	851586	447127	507611	954738	904300	2475514
rural+urban male	665864	512154	1178019	676793	807968	1484760	1951365	1430530	3381896	2724129	4981525
rural+urban female	201600	112995	314594	203536	182910	386446	1015608	606645	1622254	1358340	4737443
rural + urban person	867655	625344	1492999	880329	990879	1871209	2966973	2037178	5004151	4082468	9718974

Concepts of some terms used in Employment – Unemployment Survey, NSS 61ˢᵗ Round

Economic activity: Any activity resulting in production of goods and services that add value to national product was considered as an economic activity. Such activities included production of all goods and services for market (market activities), i.e. production for pay or profit, and, the production of primary commodities for own consumption and own account production of fixed assets, among the non-market activities.

Usual principal activity status: The usual activity status relates to the activity status of a person during the reference period of 365 days preceding the date of survey. The activity status on which a person spent relatively longer time (i.e. major time criterion) during the 365 days preceding the date of survey is considered as the *principal usual activity status* of the person.

Usual subsidiary economic activity status: A person whose principal usual status was determined on the basis of the major time criterion could have pursued some economic activity for a relatively shorter time throughout the reference period of 365 days preceding the date of survey or for a minor period, which is not less than 30 days. The status in which such economic activity was pursued was the subsidiary economic activity status of that person.

Usual activity status considering principal and subsidiary status taken together: This is written as usual status (ps+ss). According to the usual status (ps+ss), workers are those who perform some work activity either in the usual principal activity status or in the subsidiary activity status.

Self-employed: Self-employed are those who operated their own farm or non-farm enterprises or were engaged independently in a profession or trade. Self-employed persons are categorized as own-account workers, employers and helpers in household enterprises.

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

Employers: These self-employed persons worked on their own account or with one or a few partners and, during the reference period, by and large, ran their enterprise by hiring labour.

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

Regular wage/salaried employee: These were persons who worked in others' farm or non-farm enterprises (both household and non-household) and, in return, received salary or wages on a regular basis (i.e. not on the basis of daily or periodic renewal of work contract). This category included not only persons getting time wage but also persons receiving piece wage or salary and paid apprentices, both full time and part-time.

Casual wage labour: A person who was casually engaged in others' farm or non-farm enterprises (both household and non-household) and, in return, received wages according to the terms of the daily or periodic work contract, was a casual wage labour.

Industry of work: The industry divisions are as per the National Industrial Classification (NIC) -1998

Enterprise type: An enterprise is a production unit which is engaged in the production and/or distribution of some goods and/or services meant mainly for the purpose of sale, whether fully or partly. The enterprise may be owned and operated by a single household or by several households jointly, or by an institutional body. In the 61ˢᵗ round, the type of enterprise in which the household member was working was recorded in terms of codes as given below:

proprietary: male 1

female 2

partnership: with members from same hh. 3

with members from different hh. ……. …........... 4

Government/public sector... 5

Public/Private Limited company................................ 6

Co-operative societies/trust/other non profit institutions..   7

Employer's households (i.e., private households

Employing maid servant, watchman, cook etc.) ……   …   …8

others 9

Type of job contract : This information was collected from each employee in terms of 4 codes viz.

no written job contract 1

written job contract for 1 year or less …............................... 2

written job contract for more than 1 year to 3 years 3

written job contract for more than 3 years . ……..…............. 4

Eligibility for paid leave: Paid leave included leave during sickness, maternity, or such leave, as an employee was eligible to take without loss of pay, as per the conditions of employment. Employees were classified as those with eligible for paid leave and those without eligibility for paid leave.

Availability of social security benefits: It was ascertained from the employees whether they were covered under any of the specified social security benefits or a combination of them which are arranged or for which contribution was made by the employer. The following schemes were considered:

(i)   only PF/pension (i.e., GPF, CPF, PPF, pension etc.);

(ii) only gratuity

(iii) only health care & maternity benefits

(iv) only PF/pension and gratuity

(v)   only PF/pension and health care & maternity benefits

(vi) only gratuity and health care & maternity benefits

(vii) PF/pension, gratuity and health care & maternity benefits

Employment - Unemployment Situation In Million Plus Cities of India
A Critical Analysis

DR. B.K.Sharma & N.T.Krishna [*]

Employment – Unemployment is a hotly debated subject among academicians, government circles as this is viewed as one of the important outcomes of ultimate success or otherwise of public policies. This aspect is of great concern for the public at large because standard of living, disposable income, savings, education, health and overall psyche of the society is determined by current levels of employment and un-employment. Social behavioural analysts, of late, hold the view that unrest among the youth in the present day highly lop sided society is mainly due to high levels of un-employment which in turn leads to insecurity and related consequences thereof. Such a conclusion calls for the study of this sensitive issue with care, as factual position will serve as an eye opener for policy makers/administrators to initiate suitable measures to remedy the situation.

Generation of gainful employment both skilled and unskilled has been one of the important target areas vigorously pursued under the planning process both by central/state governments. However, the wide gap between the job seekers and avenues of employment has become the thing of the bygone era as the economy is firmly looking up at present. According to a recent press release by the Prime Miniser's Economic Advisory Council (EAC) (Economic Outlook 2004-05) that attainment of 8% GDP growth rate by 2010 will lead to a situation where in work force is expected to equal labour force (Dr.Rangarajan) which may mean that unemployment will be at very low levels irrespective of the quality of employment and quantum of remuneration.

FOCUS OF THE PAPER

The main focus of this paper is to analyse the changing trends in employment-unemployment situation of million *plus cities/towns of India (As per population census 2001list at annexure)* and also give meaningful inputs to policy makers/administrators and enhance the vision and readiness to tackle the situation.

WORKER POPULATION RATIOS (WPR)

In the first instance analysis of the trends in worker- population proportions in the million *plus* cities of India was taken up for study. These cities have been further grouped under metros and other million *plus* cities as former ones possess certain distinctive features from that of the later.

SINKING WPRs IN METROPOLITAN CITIES

The proportion of usually employed persons (15+ aged) in the population of metropolitan cities of the country has shown a definite slide with the sole exception of Mumbai city which had exhibited booming trends amply justifying the commercial capital tag attached to it.

Statement 1 : Number of usually employed(ps+ss) per 1000 persons aged 15 years & above during 1993-94, 1999-2000 and 2004-05 in four Metros

S.No	Item	Male			Female		
		61st (2004-05)	55th (1999-00)	50th (1993-94)	61st (2004-05)	55th (1999-00)	50th (1993-94)
	Metropolitan cities						
	Delhi	714	743	796	112	147	132
	Kolkata	751	780	803	190	187	183
	Mumbai	786	753	773	267	174	221
A	Chennai	749	764	773	168	260	227
B	**All class 1 cities**	762	745	767	198	176	181
C	**Urban India**	763	752	768	227	197	223

[*] The authors are working in , DES,N.C.T.Delhi* . The views expressed in this paper are those of the authors and not of the institutions to which they belong.

The percentage of usually employed male persons of Delhi which was 79.6% during 1993-94 crashed to 71.4% by 2004-05 thereby loosing more than eight percentage points in a span of a more than a decade period In case of females the situation was not any different as the percentage of usually employed female persons decreased from 13.2% to11.2% during the same period .In fact the proportion of employed both male and female was least in case of Delhi among the 4 metros.

The negative trends may clearly mean low level of employment generation or creation of fewer jobs which is a matter of concern to the job seekers who look to the national capital as natural destination for better/bright prospects. In fact there are a number of readily available reasons to support this trend exhibited by the successive sample surveys carried out under quinquennial   rounds on employment. The closure of polluting industries etc., during the later part of 90s at the instance of the directives of highest judiciary had probably upset the growth tempo of the manufacturing sector as a whole and also dampened the prospects of the related economic activities and triggered the collapse .Moreover, the fast growing sectors of the present century ,namely, IT and telecom sectors did not have strong roots to generate sufficient   levels of employment to sustain the loss of mass employment due to closure of industries. Coming to the case of kolkatta (male only) and Chennai (both male &female) the decreasing trends were not as sharp as it was in case of Delhi. Mumbai on the other hand though recorded an increased proportion of persons employed during 1993-94 and 2004-05 in both male and female ,the growth was marginal. Further, the wprs of Delhi, Kolkatta and Chennai both for male and female during 2004-05   were observed to be low when compared to the over all average wprs of all class 1cities of the country and for that mater the whole of urban India .

These results have in fact raised a few basic questions namely, Is this the end of the road for Metros as far as employment generation is concerned? Are metro cities still the favorite destinations for the job hunting public? The foregoing analysis might help to answer some of these aspects.

Number of Persons usually employed (PS+SS) per 1000 population (15 yrs. +) in Mumbai

Number of persons usually employed (PS+SS) per 1000 population (15 yrs. +) in Chennai
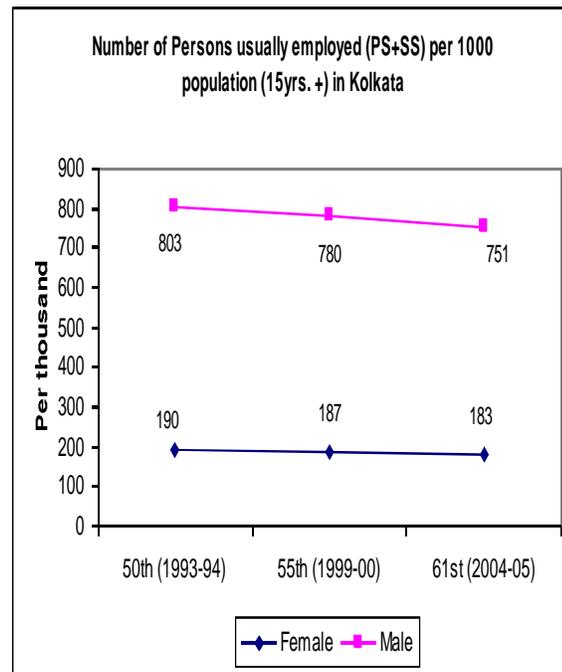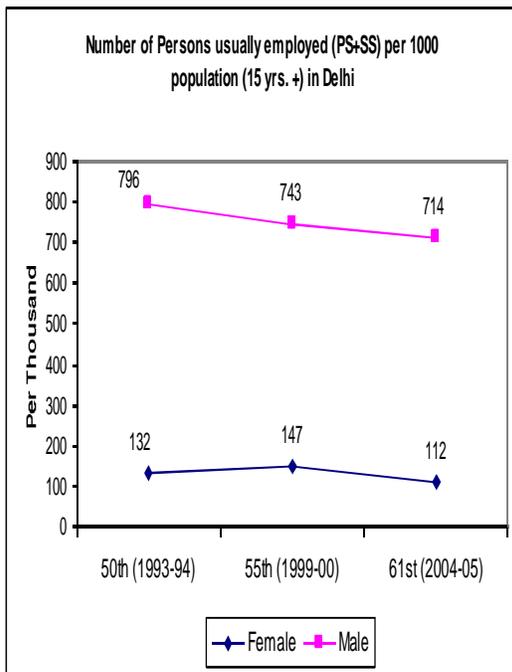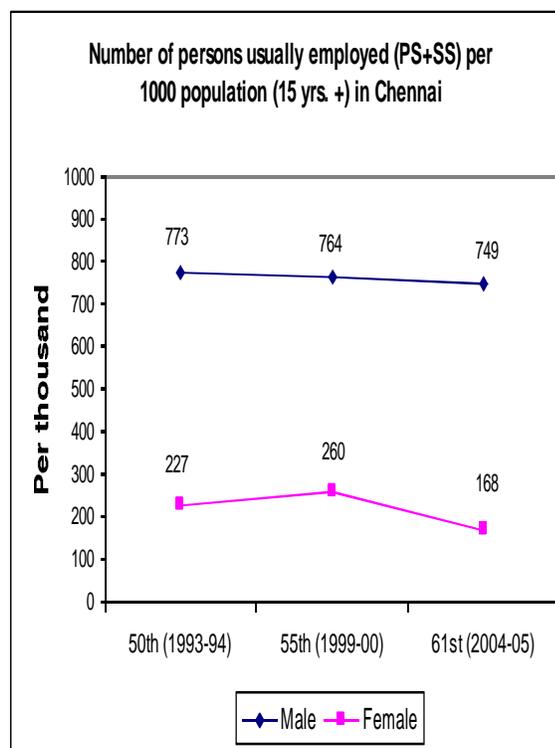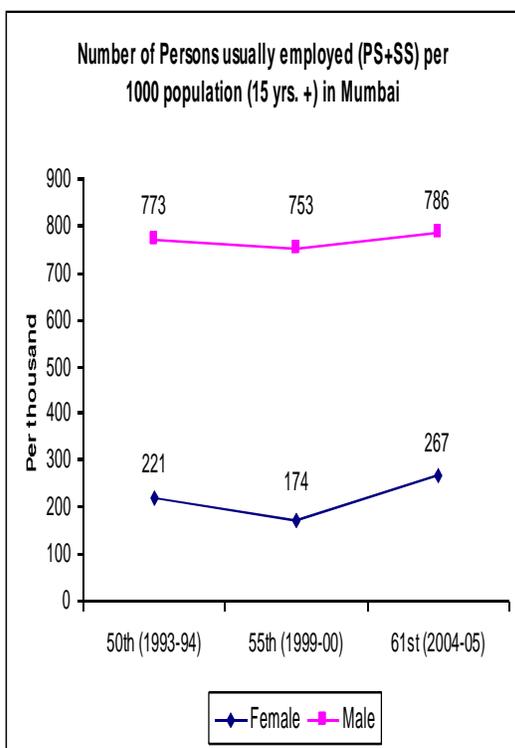
CHANGING EMPLOYMENT SCENARIO OF OTHER MILLION PLUS CITIES

It is not an exaggerated statement that newly emerged metros and other million plus Cities/Towns will occupy centre stage when it comes to generation of gainful employment in the urban sphere due to entrepreneur friendly environment in the rest of the cities / towns coupled with stagnation levels appeared to have reached in big metros owing to shortage of land , high density of population, poor infrastructure /maintenance, increased costs etc.,

Statement 2 : Number of usually employed (ps+ss) per 1000 persons aged 15 years & above   during 1993-94, 1999-2000 and 2004-05 in select million plus Cities/Towns

S.No	Other million +cities	Male			Female		
		61st (2004-05)	55th (1999-00)	50th (1993-94)	61st (2004-05)	55th (1999-00)	50th (1993-94)
	Sothern Region						
	Bangalore	841	747	763	202	232	162
A	Hyderabad	770	682	750	190	155	164
	Western Region						
	Ahmedabad	795	777	764	214	204	196
	Jaipur	766	701	720	377	108	128
	Surat	876	765	773	182	55	231
B	Pune	712	726	699	291	220	261
	Central Region						
	Bhopal	782	722	685	151	151	176
C	Indore	835	761	753	283	199	235
	Northern Region						
	Kanpur	776	699	558	77	154	131
D	Agra	833	806	n. a.	147	106	n. a.

The worker-population ratios in select million plus Cities/Towns (Refer Table 1 for details of all class 1 towns) is presented region wise for the last three quinquennial NSS rounds of survey in Statement 2 to a

great extent answers the questions raised on the gradual lowering of WPRs in the metro cities. It can be seen that male WPR of Bangalore increased by 8 percentage points during 50th and 61st NSS rounds. Similarly, Surat city recorded a very impressive growth in male WPR of 10 percentage points during 1993-94 and 2004-05. However the fluctuations in the females case for these cities points towards clear inconsistencies/limitations in the data .Indore and Agra cities have exhibited pro growth trends in male as well as female employment. It is a matter of great interest that male employment levels in these cities at the time of the starting point of our analysis, namely, 1993-94, were below that of any metro city for that matter. To illustrate Kolkatta and Chennai recorded the least WPR of 773 in case of males during 1993-94 where as none of the present day non- metro million citities (listed in Statement 2),with the exception of Surat, had a WPR near to this level during the same point of time. However, by 1999-00 enough indications regarding the progress of employment levels in this category of cities was available as some of them namely ,Bangalore, Ahmedabad and Indore achieved equally competitive levels of WPRs and Agra city had even overtaken all metros

.In all, a cursory look at the changing trends in employment position in these cities makes us to come to a decisive conclusion that they are well ahead of the metro cities and governments both centre and states must take it as a wake up call, initiate immediate steps to strengthen the infrastructure and law enforcing machinery to tackle likely social, economic, cultural and development related problems that follow suit with increased levels of employment.

Comparison of usually employed (PS+SS) male per 1000 persons (15+yrs.) between 61st and 50th NSS Rounds

Comparison of usually employed (PS+SS) female per 1000 (15+yrs.) between 61st and 50th NSS Rounds

133
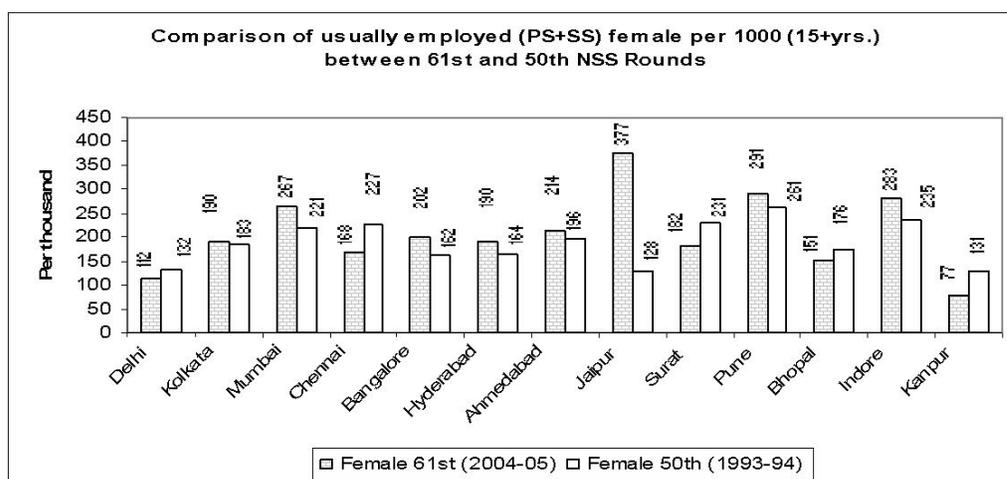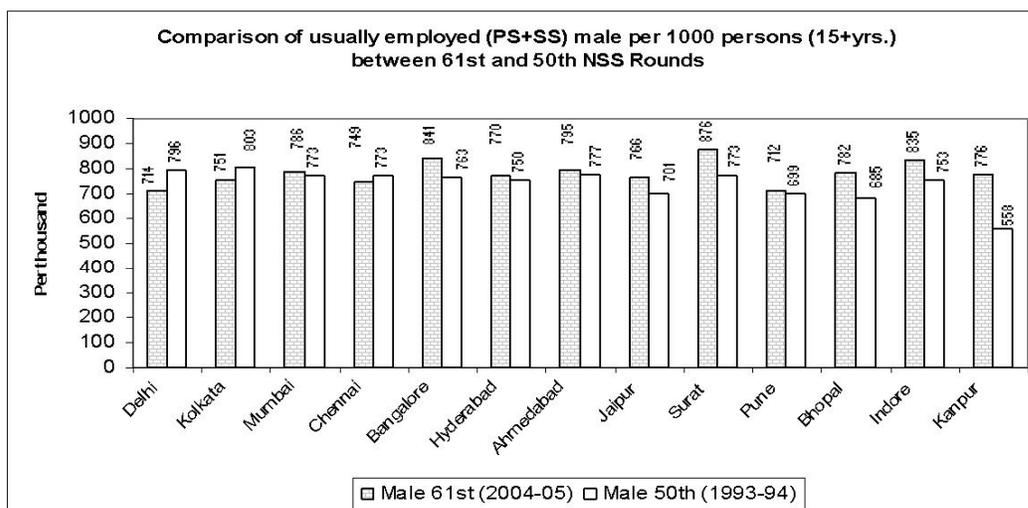
EMPLOMENT BY STATUS

Employed persons can be categorized into three broad groups, namely, self-employed, regular wage/salaried employees and casual labour. Statement 3 which shows per thousand distribution of the usually employed (aged 15 years and above) over the three points of time coinciding 50th 55th and 61st NSS rounds that there was a general tendency for the share of self-employed workers to rise, that of wage and salaried workers to decline and with fluctuating share of casual workers. This was broadly so for the entire urban sector as well as for the class 1 cities/towns.

An overall review of the status of employment in urban areas of India(Statement 2) revealed that quantitatively, the share of self-employed in case of males was the highest at 45% among the three categories of employed viz. self-employed, regular salaried and casual labourers during the year 2004-05. This was nearly 3 percentage points higher than that in the years 1993-94 and 1999-2000 when the share of self-employed remained virtually unchanged at 42%. The share of casual labourer in total employed fluctuating between 16 and 14 per cent.. A comparison over three points of time indicated a broad tendency for the share of regular wage/salaried and self-employed female workers to rise at the cost of the declining share of casual workers in the urban sector and in the three classes of cities/towns. For the female workers in the urban India too, the share of self-employed category was the highest among all the three categories of employed during the periods 1993-94, 1999-2000 and 2004-05. The share of self-employed was nearly 45% during the years 1993-94 and 1999-2000 which increased by 2 percentage points during the period 2004-05.

During 2004-05, among males, the proportion of regular wage/salary earners was the highest (refer table2) for Faridabad (74%) followed by Kalyan-Dombivili and Surat (68% each). The proportion of self-employed males among usually employed persons was the highest (76%) for Varanasi followed by Agra (60%) and Bhopal (53%). The proportion of casual labourers was the highest (25%) for Nasik, followed by Kolkata (20%). In the case of females, Varanasi recorded the highest proportion (92%) of self-employed females followed by Jaipur (80%) and Agra (79%). The lowest proportion of self-employed female workers was reported from Lucknow (15%). The proportion of regular wage/salaried employees was the highest for Lucknow (81%) followed by Delhi (80%). The proportion of female casual labourers was the highest for Ahmedabad (31%) followed by Surat (30%) and Nasik (28%).

The City of Bhopal had attained the distinction of increased proportion of self employed by more than 25 percentage points between 1993-94, and 2004-05 which could be classified as an unusual shift in the pattern of employment and this needs to vouched with the aid of results of subsequent annual surveys. Similar behaviors observed in data like the more than 13% leap in respect of male self employment in the employment structure of Hyderabad city,23% upward movement in female self employment of Chennai city also warrants a close scrutiny.

The decrease in the share of the regular wage/salaried in Mumbai (13.7%) and Kolkatta (10.9%) while proportion of casual labourers had increased by 6% and 8% respectively in these cities during the period 1993-94 and 2004-05 is a matter that also needs careful scrutiny to clear any lingering doubts that similar type of results thrown by survey are not owing to misclassification at the field level.

UNEMPLOYMENT

Unemployment rate is taken as the number of persons unemployed per thousand persons in the labour force (employed and unemployed taken together). In this context persons who are unemployed for a relatively long period *including* those employed in a subsidiary capacity during the reference period are categorized as usually unemployed in the principal status (p.s.) and estimates based on this principle provides a reasonable approximation to an indicator of chronic unemployment. On the other hand unemployed persons *excluding* those employed in a subsidiary capacity during the reference period are grouped under usually unemployed (u.s. adjusted). The later method would conceptually be lower than the former. The estimates presented in the statement are based on the proportion of Unemployed (u.s. adjusted)

Statement 3 : Number of usually employed (ps+ss) by Status per 1000 persons aged 15 years & above during 1993-94, 1999-2000 and 2004-05in select million plus Cities/Towns

S.No.	Name of the City	61st			55th			50th		
		Self-employed	Regular wage salaried	Casual labour	Self-employed	Regular wage/ salaried	Casual labour	Self-employed	Regular wage salaried	Casual labour
	Male									
	Delhi	413	518	69	435	540	26	441	452	107
	Mumbai	403	517	80	292	679	31	352	654	21
	Kolkata	368	435	197	444	406	150	339	544	117
	Chennai	351	545	104	293	491	215	290	464	246
	Bangalore	352	462	186	272	582	146	318	535	147
	Hyderabad	447	427	126	358	499	145	313	555	132
	Ahmedabad	369	525	107	369	340	291	356	513	131
	Jaipur	450	466	84	385	556	58	364	607	29
	Surat	294	682	24	444	297	260	316	537	147
	Pune	291	596	113	461	468	72	333	613	54
	Bhopal	533	413	54	377	454	170	276	593	131
	Indore	519	390	91	428	414	158	421	396	183
	Kanpur	441	434	125	396	462	142	470	482	48
	Agra	603	341	56	431	282	288	n. a.	n. a.	n. a.
A	**Urban India (M)**	449	407	144	415	418	166	415	425	160
	Female									
	Delhi	226	762	12	273	619	112	133	637	230
	Mumbai	321	542	137	219	394	387	212	479	309
	Kolkata	388	299	313	627	225	147	439	270	291
	Chennai	516	442	42	299	545	150	284	623	93
	Bangalore	292	689	19	259	690	52	276	692	32
	Hyderabad	239	672	90	250	586	168	296	623	81
	Ahmedabad	335	650	15	313	646	41	242	576	182
	Jaipur	450	466	84	385	556	58	364	607	29
	Surat	294	682	24	444	297	260	316	537	147
	Pune	238	634	128	441	491	68	277	600	123
	Bhopal	533	413	54	377	454	170	276	593	131
	Indore	519	390	91	428	414	158	421	396	183
	Kanpur	441	434	125	396	462	142	470	482	48
	Agra	603	341	56	431	282	288	n. a.	n. a.	n. a.
B	**Urban India (F)**	471	361	167	452	335	213	446	293	261

city / size-class	MALE			FEMALE		
	61st (2004 – 2005)	55thround (1999 - 2000)	50thround (1993 - 1994)	61st (2004 – 2005)	55thround (1999 - 2000)	50thround (1993 - 1994)
-1	-2	-5	-8	9	10	11
A.Metopolitan cities						
Delhi	49	24	9	59	33	64
Mumbai	31	68	53	53	117	71
Kolkata	53	36	50	104	70	149
Chennai	30	45	53	23	41	117
B.other million plu citisClass1 cities						
Bangalore	12	29	38	137	80	134
Hyderabad	33	64	20	59	38	6
Ahmedabad	27	10	44	27	10	137
Surat	2	13	52	11	0	29
Jaipur	27	33	3	10	18	8
Pune	62	25	48	10	31	61
Bhopal	56	39	46	0	44	74
Indore	16	65	44	0	0	37
Kanpur	53	89	54	49	6	30
all class 1 cities	34	47	38	43	64	86
Urban India	38	44	40	70	57	63

During 2004-05, the chronic unemployment rate among males in metros was the highest in Kolkatta (5.3%) followed by 4.9% in Delhi. In fact unemployment rate of males had increased by 4 percentage points in Delhi between 1993-94 and 2004-05 coinciding with the falling trends observed in WPRs   where as these rates went down in case of Mumbai (from 5.3% to 3.1%) and Chennai (from 5.3% to 3.%) during the same period. Even in respect of Kolkatta the unemployment rates, no doubt increased in the same period but very maginally (from 5% to 5.3%) Over the period 1999-2000 to 2004-05, the usual (adjusted) unemployment rate for males declined by 2 percentage points in class 1 cities as a whole. Thus the trends exhibited by male unemployment rates in Delhi which are clearly contrary to the overall average trends displayed by class 1 cities and urban India as a whole. Therefore the woes of Delhi city are clearly visible as low WPRs coupled with marked increase in unemployment rates paint a not so encouraging scenario for the future The usual un employment rates of male moved south-words in case of Bangalore, Ahmedabad,Surat, , Indoreetc., whereas the cities of Hyderabad, Jaipur, Bhopal and Pune registered increase in unemployment rate.

.   During 2004-05, the usual status unemployment rate of females was as high as 14% in Bangalore followed by 10% in Kolkata . Over the period 1999-2000 to 2004-05, it increased by about 6 percentage points in Bangalore followed by Kolkata, Delhi and Vadodara (3 % each). In the city of Thane there was a sharp fall in unemployment rate over this period (14 percentage points). While the unemployment rate had decreased in class 1 towns during 2004-05 over the years 1999-2000 and 1993-94.

Cities/Towns with increasing unemployment rates (aged 15+ yrs.) during 1993-94 and 2004-05

Cities/Towns with decreasing unemployment rates (aged 15 + yrs.) during 1993-94 and 2004-05
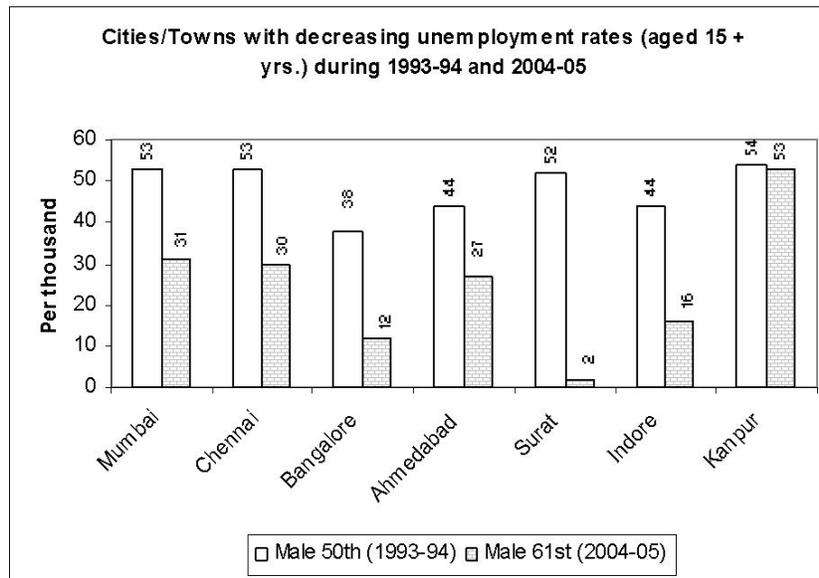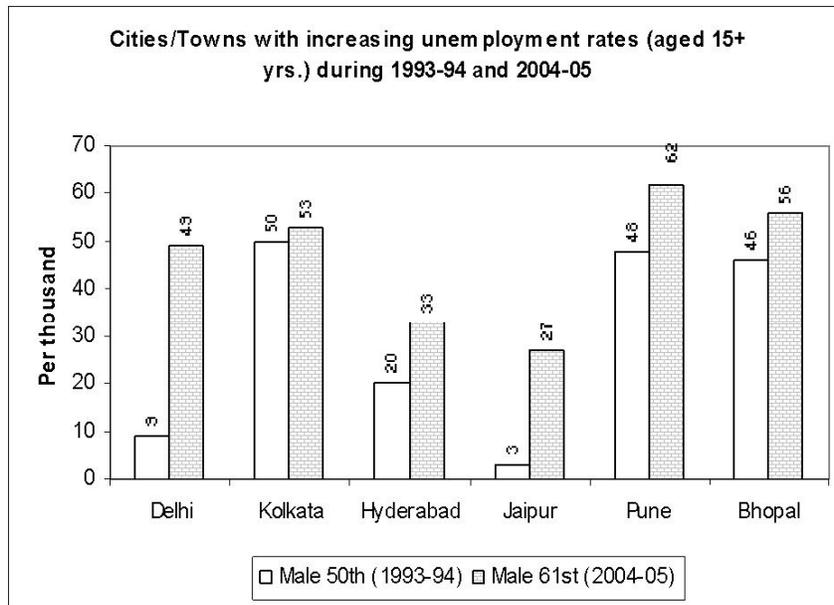
CONCLUSIONS

At the outset it can be stated that in case of metros prospects appear to be bright for Chennai and Kolkatta as the IT sector is taking its firm roots in and around Chennai and   the Communist party ruled state of W.B, having wedded to capitalism realizing it as a fact of the present century, will in all probability brighten the prospects of employment generation in Kolkatta as well. Mumbai city with the strong presence of corporate sector perhaps, can still retain its cool in gainful employment generation. However, in case of Delhi such an affirmative statement can not be made at this stage and it is feared that it will not be able to maintain its present level of employment in the distant future not for any wrong reasons but to attain the status of national capital of international standard by balancing various economic, political, social and global interests . And on the road to attaining these standards, reasonable restrictions on ways and means of organizing economic activities in different sectors are to be enforced either by the government or by the judiciary or both which may never the less curtail / restrict the pace of employment generation or even bring about change in the character/structure of employment in Delhi .The ensuing survey results are to be studied with due care to come to any concrete conclusion .in this regard

It is quite natural that as city grows it expands the economic base leading to increased advantage to trade, commerce, industry and employment. However, this trend can not be sustained forever and negative returns are likely to set in motion proving age old theory that size of city and economic growth are negatively correlated. This theory can set in motion in big metro cities sooner or later.

The information available on different female employment -unemployment indicators from successive surveys are not encouraging as the data does not display any consistent pattern. Moreover metropolitan cities/bigger towns are largely considered to be the ideal places for female employment because of the availability of opportunities/ qualified and willing personnel. However the estimates emerged out of these surveys on this count appears to be on lower side contrary to popular belief may be due to poor aggregation in the field survey. This aspect calls for greater attention and deliberation at the stage of designing such surveys in future.

The nature of quality of employment that is generated in the country in terms of sectors (private or public), occupational pattern and broad financial packages can not be estimated precisely with the present pattern of data collection. The future surveys must address these issues effectively as the focus will hereafter shifts to quality aspects of employment with the levels of employment march upwards and unemployment gradually gets marginalized in the country.

References

1 Employment and Unemployment Situation in Cities and Towns of India 2004-2005

Report No520 of National Sample Survey Organization, Min.of Statistics and PI , G.O.I

2. Census Data of 2001, Registrar General India

3. Report on Employment & U employment Situation in Delhi, Directorate of Economics & Statistics (state sample report based on NSS 61st round, Govt., of N.C.T of Delhi

Table 1: Number of usually employed persons per 1000 persons aged 15 years & above according to principal and subsidiary status taken together for each city / town during 1993-94, 1999-2000 and 2004-05

Name of city/ town	Male			Female		
	61st	55th	50th	61st	55th	50th
-1	-2	-3	-4	-5	-6	-7
Class 1 cities						
Agra	833	806	n. a.	147	106	n. a.
Ahmedabad	795	777	764	214	204	196
Bangalore	841	747	763	202	232	162
Bhopal	782	722	685	151	151	176
Chennai	749	764	773	168	260	227
Delhi	714	743	796	112	147	132
Faridabad	726	n. a.	n. a.	118	n. a.	n. a.
Howrah	779	760	n. a.	158	67	n. a.
Hyderabad	770	682	750	190	155	164
Indore	835	761	753	283	199	235
Jaipur	766	701	720	377	108	128
Kalyan-Dombivili*	730	715	742	203	167	165
Kanpur	776	699	558	77	154	131
Kolkata	751	780	803	190	187	183
Lucknow	695	772	759	93	149	82
Ludhiana	834	841	883	128	139	104
Madurai	n. a.	734	n. a.	n. a.	291	n. a.
Meerut	790	n. a.	n. a.	51	n. a.	n. a.
Mumbai	786	753	773	267	174	221
Nagpur	720	697	727	289	154	212
Nashik	610	n. a.	n. a.	187	n. a.	n. a.
Patna	528	667	n. a.	18	89	n. a.
Pimprichinchwad	774	n. a.	n. a.	212	n. a.	n. a.
Pune	712	726	699	291	220	261
Surat	876	765	773	182	55	231
Thane	736	740	n. a.	223	244	n. a.
Vadodara	717	736	879	197	246	116
Varanasi	860	758	n. a.	411	200	n. a.
Visakhapatnam	n. a.	738	n. a.	n. a.	163	n. a.
All class 1 cities	**762**	**745**	**767**	**198**	**176**	**181**
size class 2	**756**	**746**	**761**	**218**	**179**	**203**
size class 3	**777**	**766**	**781**	**276**	**244**	**281**
Urban India	**763**	**752**	**768**	**227**	**197**	**223**

Table 2: Per 1000 distribution of usually employed (ps+ss) persons aged 15 years and above by status of employment for each city/ town during 1993-94, 1999-2000 & 2004-05 Male

Name of city/ town	61st			55th			50th		
	self-employed	regular wage/ salaried	casual labour	self-employed	regular wage/ salaried	casual labour	self-employed	regular wage/ salaried	casual labour
-1	-2	-3	-4	-5	-6	-7	-8	-9	-10
Class 1 cities									
Agra	603	341	56	431	282	288	n. a.	n. a.	n. a.
Ahmedabad	369	525	107	369	340	291	356	513	131
Bangalore	352	462	186	272	582	146	318	535	147
Bhopal	533	413	54	377	454	170	276	593	131
Chennai	351	545	104	293	491	215	290	464	246
Delhi	371	590	39	435	540	26	441	452	107
Faridabad	231	742	26	n. a.	n. a.	n. a.	n. a.	n. a.	n. a.
Howrah	393	451	157	426	505	68	n. a.	n. a.	n. a.
Hyderabad	447	427	126	358	499	145	313	555	132
Indore	519	390	91	428	414	158	421	396	183
Jaipur	450	466	84	385	556	58	364	607	29
Kalyan-Dombivili*	311	678	11	281	649	70	247	659	94
Kanpur	441	434	125	396	462	142	470	482	48
Kolkata	368	435	197	444	406	150	339	544	117
Lucknow	405	534	60	460	359	183	443	489	68
Ludhiana	345	604	50	350	497	153	386	434	180
Madurai	n. a.	n. a.	n. a.	395	420	185	n. a.	n. a.	n. a.
Meerut	487	490	23	n. a.	n. a.	n. a.	n. a.	n. a.	n. a.
Mumbai	403	517	80	292	679	31	352	654	21
Nagpur	421	417	161	379	396	225	388	448	164
Nashik	344	402	254	n. a.	n. a.	n. a.	n. a.	n. a.	n. a.
Patna	509	402	89	529	406	64	n. a.	n. a.	n. a.
Pimprichinchwad	348	570	83	n. a.	n. a.	n. a.	n. a.	n. a.	n. a.
Pune	291	596	113	461	468	72	333	613	54
Surat	294	682	24	444	297	260	316	537	147
Thane	344	607	49	261	619	119	n. a.	n. a.	n. a.
Vadodara	411	566	22	220	626	154	221	722	57
Varanasi	757	191	52	701	252	47	n. a.	n. a.	n. a.
Visakhapatnam	n. a.	n. a.	n. a.	232	480	289	n. a.	n. a.	n. a.
All class 1 cities	**395**	**512**	**93**	**368**	**510**	**122**	**353**	**540**	**107**
size class 2	**460**	**390**	**149**	**408**	**426**	**166**	**419**	**426**	**155**
size class 3	**488**	**316**	**196**	**473**	**317**	**210**	**460**	**329**	**211**
Urban India	**449**	**407**	**144**	**415**	**418**	**166**	**415**	**425**	**160**

Table 3: Per 1000 distribution of usually employed (ps+ss) persons aged 15 years and above by status of employment for each city/ town during 1993-94, 1999-2000 & 2004-05 Female

Name of city/ town	61st			55th			50th		
	self-employed	regular wage/ salaried	casual labour	self-employed	regular wage/ salaried	casual labour	self-employed	regular wage/ salaried	casual labour
-1	-2	-3	-4	-5	-6	-7	-8	-9	-10
Class 1 cities									
Agra	789	75	136	462	509	28	n. a.	n. a.	n. a.
Ahmedabad	388	299	313	627	225	147	439	270	291
Bangalore	239	672	90	250	586	168	296	623	81
Bhopal	265	735	0	470	278	258	205	509	286
Chennai	226	762	12	273	619	112	133	637	230
Delhi	159	796	44	313	646	41	242	576	182
Faridabad	613	378	8	n. a.	n. a.	n. a.	n. a.	n. a.	n. a.
Howrah	418	506	76	358	507	134	n. a.	n. a.	n. a.
Hyderabad	321	542	137	219	394	387	212	479	309
Indore	576	343	81	332	523	146	498	260	242
Jaipur	799	167	34	380	546	74	469	531	n. a.
Kalyan-Dombivili*	343	569	88	419	449	138	164	697	139
Kanpur	390	519	91	513	468	26	366	580	54
Kolkata	516	442	42	299	545	150	284	623	93
Lucknow	149	809	43	685	134	181	402	402	196
Ludhiana	398	508	94	65	863	72	519	375	106
Madurai	n. a.	n. a.	n. a.	402	419	182	n. a.	n. a.	n. a.
Meerut	333	667	0	n. a.	n. a.	n. a.	n. a.	n. a.	n. a.
Mumbai	292	689	19	259	690	52	276	692	32
Nagpur	377	367	256	383	318	292	385	362	253
Nashik	449	267	283	n. a.	n. a.	n. a.	n. a.	n. a.	n. a.
Patna	278	722	0	315	584	101	n. a.	n. a.	n. a.
Pimprichinchwad	241	514	245	n. a.	n. a.	n. a.	n. a.	n. a.	n. a.
Pune	238	634	128	441	491	68	277	600	123
Surat	330	374	297	55	418	527	429	333	138
Thane	348	652	0	500	463	33	n. a.	n. a.	n. a.
Vadodara	362	592	46	276	232	492	241	404	345
Varanasi	920	0	80	730	215	55	n. a.	n. a.	n. a.
Visakhapatnam	n. a.	n. a.	n. a.	558	362	86	n. a.	n. a.	n. a.
All class 1 cities	382	528	90	352	523	125	282	569	149
size class 2	472	362	165	447	335	218	463	301	236
size class 3	547	221	232	525	213	262	502	160	338
Urban India	471	361	167	452	335	213	446	293	261

Table 4 : Unemployment rates (per 1000 persons/ person-days in the labour force) of persons aged 15 years and above according to usual, current weekly and current daily statuses for each city/size class of town during 1993-94, 1999-2000 and 2004-05 MALE

city / size-class	unemployment rates according to status								
	61st(2004 –2005)			55thround (1999 - 2000)			50thround (1993 - 1994)		
	usual (adj.)	current weekly	current daily	usual (adj.)	current weekly	current daily	usual (adj.)	current weekly	current daily
-1	-2	-3	-4	-5	-6	-7	-8	-9	-10
Class 1 cities									
Agra	2	4	25	19	42	72	n. a.	n. a.	n. a.
Ahmedabad	27	38	53	10	22	26	44	44	55
Bangalore	12	13	40	29	29	42	38	44	58
Bhopal	56	62	68	39	61	96	46	38	55
Chennai	30	41	64	45	58	92	53	55	94
Delhi	49	51	53	24	25	32	9	15	16
Faridabad	15	15	15	n. a.	n. a.	n. a.	n. a.	n. a.	n. a.
Howrah	49	21	44	97	97	97	n. a.	n. a.	n. a.
Hyderabad	33	42	44	64	65	71	20	25	37
Indore	16	62	90	65	79	85	44	44	45
Jaipur	27	31	72	33	36	36	3	10	10
Kalyan-Dombivili*	49	64	65	75	87	91	26	30	28
Kanpur	53	82	100	89	94	97	54	56	56
Kolkata	53			36			50		
Lucknow	20	20	20	42	41	42	32	38	51
Ludhiana	12	17	17	9	11	11	7	9	11
Madurai	n. a.	n. a.	n. a.	15	22	42	n. a.	n. a.	n. a.
Meerut	21	21	22	n. a.	n. a.	n. a.	n. a.	n. a.	n. a.
Mumbai	31	65	75	68	77	85	53	57	60
Nagpur	35	44	57	50	64	78	57	61	73
Nashik	21	59	103	n. a.	n. a.	n. a.	n. a.	n. a.	n. a.
Patna	113	129	137	75	71	73	n. a.	n. a.	n. a.
Pimprichinchwad	47	65	80	n. a.	n. a.	n. a.	n. a.	n. a.	n. a.
Pune	62	65	85	25	41	45	48	55	55
Surat	2	17	17	13	13	21	52	62	74
Thane	24	45	55	50	57	69	n. a.	n. a.	n. a.
Vadodara	58	101	109	45	54	55	18	28	28
Varanasi	21	27	52	69	64	68	n. a.	n. a.	n. a.
Visakhapatnam	n. a.	n. a.	n. a.	56	54	76	n. a.	n. a.	n. a.
all class 1 cities	34	47	61	47	54	65	38	43	52
size class 2	37	51	75	46	57	72	44	57	72
size class 3	59	87	40	56	80	37	52	72	
Urban India	38	52	74	44	56	73	40	52	68

Table.5: Unemployment rates (per 1000 persons/ person-days in the labour force) of persons aged 15 years and above according to usual, current weekly and current daily statuses for each city/size class of town during 1993-94, 1999-2000 and 2004-05 FEMALE

city / size-class	unemployment rates according to status								
	61st(2004 –2005)			55thround (1999 - 2000)			50thround (1993 - 1994)		
	usual (adj.)	current weekly	current daily	usual (adj.)	current weekly	current daily	usual (adj.)	current weekly	current daily
-1	-2	-3	-4	-5	-6	-7	-8	-9	-10
Class 1 cities									
Agra	0	0	28	0	0	11	n. a.	n. a.	n. a.
Ahmedabad	27	36	73	10	10	11	137	149	138
Bangalore	137	172	185	80	81	85	134	148	156
Bhopal	0	0	0	44	77	83	74	78	138
Chennai	23	41	41	41	31	45	117	124	157
Delhi	59	90	91	33	40	45	64	63	65
Faridabad	0	0	0	n. a.	n. a.	n. a.	n. a.	n. a.	n. a.
Howrah	54	108	119	143	143	145	n. a.	n. a.	n. a.
Hyderabad	59	67	69	38	44	65	6	6	57
Indore	0	9	93	0	6	6	37	38	28
Jaipur	10	20	30	18	23	24	8	8	9
Kalyan-Dombivili*	33	48	70	87	105	129	179	172	112
Kanpur	49	54	57	6	9	10	30	30	31
Kolkata	104	111	133	70	89	110	149	157	180
Lucknow	0	0	0	80	82	115	n. a.	n. a.	n. a.
Ludhiana	0	38	41	14	14	14	37	n. a.	n. a.
Madurai	n. a.	n. a.	n. a.	107	103	116	n. a.	n. a.	n. a.
Meerut	0	0	0	n. a.	n. a.	n. a.	n. a.	n. a.	n. a.
Mumbai	53	66	69	117	124	136	71	83	93
Nagpur	17	45	63	25	25	39	58	109	122
Nashik	51	52	87	n. a.	n. a.	n. a.	n. a.	n. a.	n. a.
Patna	182	222	235	174	270	290	n. a.	n. a.	n. a.
Pimprichinchwad	70	83	99	n. a.	n. a.	n. a.	n. a.	n. a.	n. a.
Pune	10	37	56	31	29	30	61	63	67
Surat	11	41	52	0	17	19	29	24	44
Thane	4	87	89	144	112	139	n. a.	n. a.	n. a.
Vadodara	84	180	188	47	75	95	25	26	31
Varanasi	37	69	91	15	16	19	n. a.	n. a.	n. a.
Visakhapatnam	n. a.	n. a.	n. a.	150	197	209	n. a.	n. a.	n. a.
all class 1 cities	43	66	77	64	72	85	86	89	100
size class 2	84	101	127	63	89	105	69	93	117
size class 3	68	96	132	47	61	90	47	73	99
Urban India	70	91	117	57	72	92	63	87	109

ANNEXURE

Cities /Urban Agglomerations with population above one million -2001

Sl.No.	Name of Million Plus Municipal Corporations	State/Union territory*	GrowthRate of population (proper city)1991-2001	Percentage of slum population to total population
1	2	3	4	6
1	Greater Mumbai	Maharashtra	20.0	54.1
2	Delhi	Delhi	4.1	18.7
3	Kolkata	West Bengal	36.2	32.5
4	Chennai	Tamil Nadu	9.7	18.9
5	Bangalore	Karnataka	61.3	10.0
6	Hyderabad	Andhra Pradesh	12.8	17.2
7	Ahmadabad	Gujarat	18.9	13.5
8	Pune	Maharashtra	38.3	19.4
9	Surat	Gujarat	62.3	20.9
10	Kanpur	Uttar Pradesh	35.0	14.4
11	Jaipur	Rajasthan	59.4	15.9
12	Lucknow	Uttar Pradesh	36.3	8.2
13	Nagpur	Maharashtra	26.2	35.9
14	Patna	Bihar	33.4	0.3
15	Indore	Madhya Pradesh	46.3	17.7
16	Vadodara	Gujarat	26.6	14.2
17	Bhopal	Madhya Pradesh	34.9	8.7
18	Coimbatore	Tamil Nadu	13.1	NA
19	Ludhiana	Punjab	33.7	22.5
20	Kocchi	Kerala	2.4	NA
21	Visakhapatnam	Andhra Pradesh	28.9	NA
22	Agra	Uttar Pradesh	29.2	9.5
23	Varanasi	Uttar Pradesh	18.4	12.6
24	Madurai	Tamil Nadu	-1.9	NA
25	Meerut	Uttar Pradesh	42.5	44.1
26	Nashik	Maharashtra	63.9	12.9
27	Jabalpur	Madhya Pradesh	22.0	NA
28	Jamshedpur	Jharkhand	23.8	NA
29	Asansol	West Bengal	85.4	NA
30	Dhanbad	Bihar	31.1	NA
31	Faridabad	Haryana	70.8	46.5
32	Allahabad	Uttar Pradesh	24.9	NA
33	Amritsar	Punjab	27.3	NA
34	Vijayawada	Andhra Pradesh	17.6	NA
35	Rajkot	Gujarat	72.8	NA

Education and employment: How are they related in different population groups in India?

T.R.Sreenivas[*]

Abstract: *The notion that education should lead to tangible economic benefits to the individual is more or less an accepted idea in policy formulation. The relation is not straight forward, as the wages often depend demand supply dynamics. Other social and structural variables also impact such relation. Nonetheless the accepted logic in a macro environment is that more the number of years of education, better should be wages, granting for individual deviations. At least such a view has been gaining ground in some of the international initiatives aimed at restructuring the national economies in order to create better employment opportunities and improve labour productivity.*

Finding such relations would have been premature in the Indian context when the literacy levels had been very low. It is more opportune when the overall literacy and educational attendance have been consistently going up.

This paper tries to answer the questions about the nature dependency between wages and other concomitant variables, especially education, in different identifiable socio demographic societies in various parts. The data from different publications of 61st round on wages, informal sector employment, education, MPCE status, work force participation, mobility of workforce has been identified for analysis for different states/U.Ts classified on sector/sex. Exploratory data analysis techniques have been used. The intention is to create some education-employment clusters, with different State/Sector/sex groups. Education gini coefficient has been used to indicate education equity. The correlated variables with regular salary wages are education equity, Informal sector employment and mobility of labour between establishments. Wages appear to be not correlated to economic inequity or mobility associated with labour empowerment, like mobility of status, mobility of industry or mobility in occupations. The data suggests possibility of grouping different population groups into two clusters.

Education and employment: How are they related in different population groups in India?[1]: In spite of the exalted status education is conferred as a pursuit for it's own worth, the mundane view is that it should fulfill the cause of economic value addition to the pursuer. At least such a view has been gaining ground in some of the international initiatives aimed at restructuring the national economies in order to create better employment opportunities and improve labour productivity. For instance a policy brief done for the International Labour organization (ILO) on Sri Lanka (Leelaratne P.M, 2001) indicates that the restructuring of educational system is a prerequisite for effective policy implementation in the labour markets. Such an inquiry would have been premature in the Indian contest when the literacy levels had been very low. It is more opportune when the overall literacy and educational attendance have been consistently going up as evidenced by various NSSO surveys.

The relation between education and wage rates has not been linear. For instance, in a developed country like Australia, individuals with post school diplomas appear to be receiving on average 10% more wages than similar individuals who only completed 12 years of education. Basic and skilled vocational graduates also received 10% more than similar individuals who did not complete school.(Karmel Tom and Nguyen Nhi, 2006). Unfortunately, In India, opportunities for education is not attainable to all.The 61st round report observes that among males of 5-29 years, about 50% attend an educational institution; and 55% of the remaining 50% who do not attend any institution report that they have not been attending only in order to supplement household income. Even when education is pursued with difficulties, it may not be always rewarding. Amongst unemployed in India about 11% had some sort of vocational training. And amongst employed the proportion is only 3%. Even in a developed economy like Australia, the findings are that "there is no universal benefit from completing a VET qualification in terms of returns in the form of higher wages; some groups benefit, but not all do so". These suggest that education , in vogue, may not lead to better wages. Consequently many may not desire higher education for their economic benefit.

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This paper tries to answer the questions about the nature dependency between wages and other concomitant variables, especially education, in different identifiable socio demographic societies in various parts. Such an inquiry assumes criticality in public policy discussions as government institutions play a dominant role in education. About 63% of all students currently in educational institutions are attending a government school, 14 % attend a government aided school and 6% attend a local body school. That is almost three fourths or 73% to be precise. The curriculum designers in public schools need to be vigilant about the economic benefits the education offers to the students. Internationally such initiatives are not uncommon. For instance organsiations like the Washington D.C. based education for employment foundation tries to solve the problem of unemployment in Islamic countries through designing of innovative schools that are directly linked to jobs.

Conceptual background: In simple neo-classical explanation, in a perfect market wage rates depend on market clearance. The ideal situation is when all the labour supply is absorbed at a market price. The market may , however, experience imbalances due to various reasons. Labour supply for any specific purpose depends on total number of qualified people, non-wage benefits/costs of the job and the benefits of alternative employment(solomon,2002). Depending on qualifications and skills labour operates in distinct markets than a homogeneous single market and these different markets are governed by distinct market dynamics. At the same time pursing education acts as constraint on supply of labour, as till completion of education the individuals are out of labour force. Even low-paid unpleasant jobs also attract labour , if individuals are not educated and alternative job opportunities are not easily forthcoming. When alternative jobs are avaialbe the existing labour moves over to the better paid jobs. The flight of domestic labour in US after World War II is cited as an example. Better socio economic conditions may make people to opt out of employment and seek leisure, if they perceive that prevailing wage rates are not 'worth the labour'.

On the demand side macroeconomic factors like growth and technology play an important role in deciding long term wage rates. But there could be short periods of high wage regime due to the fact that the economy is unable to produce the required labour with required skills and also the growth is so fast that the skill development of existing labour is inadequate. Perhaps, IT sector is the current example. In the short term supply elasticity is often flat, since supply elasticity of labour depends not only on wage rates, but other individual and social factors. Mobility of labour is an important determinant of supply elasticity and thus is likely to impact wage rates. Workers, however, become immobile for a variety of reasons other than low wage rates. These include one time financial costs of moving, inconvenience, social and family ties , lack of awareness etc.

To sum up the individual wage rates tend to depend on environmental factors like growth, urbanization, relative inclination towards education or work or leisure, industrial climate and the work force specific factors like education, skills, economic status, mobility. An attempt is made to undertake a cross sectional analysis of these factors and their correlations with regular salary wages, using the data from 61st round.

Methodology: For the analysis the data from each of the states and all-India average on different parameters are made use of. In each state /UT, the data are cross classified on rural/urban and male/female dimensions. Corresponding Population data from Census 2001 are also made use of where ever required.

Information on the following variables obtained from schedule 10.0 canvassed during 61st round are taken from different publications; distribution of households on MPCE classes, Age-sex distribution of workers and general population, wage rates, workers and workers in informal sector, mobility of workforce. Details are explained further.

Wages of regular salaried workers (WAGESAL): This is the key dependent or defining variable used to denote the returns available to the workers. The limitations in computation of this data has been elucidated in the report.

Since the information regarding the wage and salary earnings was collected for regular wage/salaried employees and casual labourers in the current daily status only, to be precise, the same can not be used as a measure of usual status wages. For instance, the status in employment may differ in the usual status and in the current daily status. The data presented in the report pertain only to those regular wage/salaried employees who had the same status in employment in the usual and current daily

status. Another assumption was that the employees were engaged in the same enterprise type in the current daily status which were reported by them in their usual status, thus making it only a representative the wage rates of all regular employees. Another limitation as observed by Pais (2002) that "Workers with a regular monthly wage (including domestic help) and who are not entitled to any other employment-related benefits or social security are also termed regular workers. Thus, a section of regular workers could well be characterized as part of the informal labour force." In view of these limitations the regular wages as reported in the results may not really reflect the wages prevailing in the domestic market for regular wage employment in the formal sector. The regular wage earners dominate the urban sector and considering casual wage rates for urban areas may not be relevant practically . Since the present analysis is concerned more with a study of relative movements of variables, this may not , in fact pose serious limitations. On the other hand the structure of employment between rural and urban areas is different. In rural areas the proportion of regular wage earners is very low. There the casual wage rates could be more significant to analyse than the wages of regular employees. In fact conceptually the definition of a casual worker appears to be more stable and in tune with reality than a regular wage earner. It may so happen that the the wages of causal workers , although the group is conceptually better identified, may not be dependent on educational status as such.

The data are in Statement 5.11.1 of report 511_partI (: Average wage/ salary earnings (Rs. 0.00) per day received by regular wage/ salaried employees (activity status codes: 31, 71, 72) of age 15-59 years for each state and u.t.) Statement 3.17.1 of Report 511: (Average wage and salary earnings per day received by wage/ salaried employees according to usual status (ps+ss) who had same status in employment in current daily status during for each state/u.t.)

Literacy (LRATE): The literacy rate as reported is considered for analysis

Current attendance (CA15_29)
The current attendance rate among 15-29 years age is obtained form statement 3.14.1. Since the data is for age groups 15_19, 20_24 and 25_29 separately, the population of 2001 is used to obtain the rate for 15_29.

Education Gin Coefficient (EGC)

The distribution of 15-29 population on education is made use of for understanding education attainment of the population. This data is available in Statement 3.8.1 of Report 517. page 58 etc .The concept of education equity is similar to the economic equity. To understand the economic equity in a society a measure of economic gini coefficient can be calculated. This has been used by others also. From a grouped data the formula for calculating the EGC is

ECG=

$$\frac{1}{\mu}\sum_{i>1}^{n}\sum_{j=1}^{i-1} p_i|y_i-y_j|p_j$$

Where
EGC is the education gini based on education attainment distribution,
μ is the average years of schooling for the concerned population;
pi and pj stand for the proportions of population with i & j levels of schooling;
yi and yj are the years of schooling at ith and jth education attainment levels;
n is the number of levels/categories in attainment data.

And *μ is calculated as*

$$\mu = \sum_{i=1}^{n} y_i p_i$$

In NSSO data, the educational attainment has been given at seven levels. These seven levels can be roughly converted in to years of schooling. These may not be uniform across the states, but the classification can be tested for sensitivity.

level	Description	Average Years of schooling
1	Not literate	0
2	literate & up to primary	3
3	middle	7
4	Secondary	10
5	higher secondary	12
6	diploma/ certificate	14
7	graduate & above	16

Gini coefficient among workers (WGC)

The economic inequality among workers in the age group of 15_59 has been derived from the published data. First the MPCE distribution of households available in Statement 3.5.1 of NSS Report No. 515: . Employment and Unemployment Situation in India, 2004-05 page 47: (Per 1000 distribution of households by monthly per capita expenditure (mpce) class for each state and u.t.) is used to obtain absolute numbers in each MPCE class using 2001 census figures

The MPCE classes adopted are different for rural/urban.

Rural

< 235	235-270	270-320	320-365	365-410	410-455	455-510	510-580	580-690	690-890	890-1155	> 1155

Urban

< 335	335-395	395-485	485-580	580-675	675-790	790-930	930-1100	1100-1380	1380-1880	1880-2540	> 2540

The data on number of workers for every 1000 persons is available in Statement 5.4.1in report 515_partI(Number of persons employed per 1000 persons (WPR) according to usual status (ps+ss) in different MPCE classes for each state and u.t.). This data when multiplied with population in each sector for each sex and each MPCE class, will give the figures of workers in each MPCE class. This information in turn is used to calculate the economic gini coefficient for each state/sector/sex classification.

Work force participation rate in 15_59 years (WPR15_59): The age sex distribution of population is obtained from Statement 3.10.1 of report 515_partII (Per 1000 distribution of persons by age-group for each state and u.t.) This rate is used with population 2001 to obtain the absolute numbers in each age-sex group. The proportion population in 15_59 age group is obtained by summing the relevant age group information obtained as explained in the previous Para. The numerator for the rate is obtained is described in the next para.

Number of Workers in 15_59 age group (W15_59): The WPR rates for each of the age groups as given in Statement 5.2.1 of report 515_partI (Age-specific usual principal worker population ratio for each state and u.t.) is used to obtain absolute number of workers in age group. population in an age-group is obtained by multiplying this rate with 2001 census population. All age groups spanning 15 to 59 years is added to get the total number of workers in 15_59 age group.

The proportion of casual workers (CAEMP): The prevalence of casual employment has been obtained from the statement, 5.7.1: of report No.515 ,that is based on principle and subsidiary status.

Current Unemployment (UNEMPCU): The unemployment in current status is taken from the statement 6.2.2 of report 515_partI. : (Unemployment rates according to current weekly status for each state and u.t. –p page 168)
The daily unemployment rates clearly bring out the underemployment situation in the society, which determine the economic returns of the job.

Structure of employment (AGRIWORK): It is known that primary sector is more labour intensive, but the wages are low due to low skill levels and casual nature of work. The manufacturing offers better wages and the service sector still better. The industry status of work force is obtained from the statement 5.9.2 based on primary and subsidiary status. The variable AGRIWORK indicating the proportion of workers in the agriculture and allied sectors is chosen for analysis.

Mobility of work force: Information different types of mobility have been obtained during 61st round. All had a reference period of two years. They are change of establishment, change of status of employment, change in Industry, and change in occupation. Data on four types of mobility rates are provided in Statement 8.1.1: of report 511_part1 (Number of usual principal status employed persons per 1000 persons of age 15 years and above who changed their establishment of work, status of work, Industry(division) of work and occupation of work (2 digit level) during last 2 years) and the four variables have been named as MESTAB, MSTATUS, MIND, MOCCU.

Findings
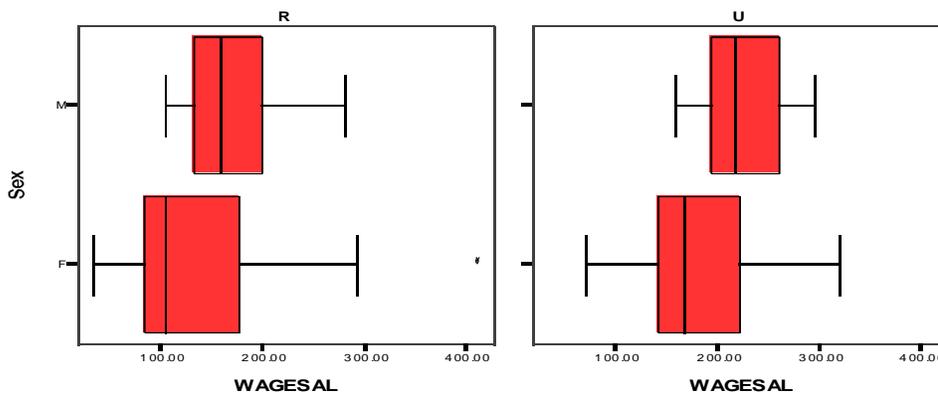
The distribution of WAGESAL is presented in box-plots separately for rural/urban male/female. Females tend to have lower wages in both sectors. Lakshadweep stands out as an outlier in case of rural women with very high wage rate of 401. It is not a surprise that rural wages are lower than urban rates.

Summary descriptive statistics of different variables for each sector/sex is presented in Table1 and Table 2 below.

Table1: Descriptive statistics for Rural sector								
		FEMALE					MALE	
MEAN	WAGESAL	134.35	CAEMP	230	WAGESAL	170.33	CAEMP	271
MEDIAN		103.77		172		156.415		284
MAX		412.86		738		280.38		557
SD		81.65		196.4		49.34		143.7
MIN		31.49		0		103.16		9
MEAN	LRATE	554	CUNEMP	71.8	LRATE	710	CUNEMP	46.2
MEDIAN		545		30		707		37
MAX		875		692		885		161
SD		146		129.1		91		35.3
MIN		313		0		537		1
MEAN	CA15_29	178	AGRIWORK	758	CA15_29	260	AGRIWORK	571
MEDIAN		165		850.5		249.5		624
MAX		381		960		495		849
SD		81.9		179.9		93.3		193.8
MIN		15		288		112		46
MEAN	EGC	0.54	MESTAB	47.9	EGC	0.42	MESTAB	58.9
MEDIAN		0.56		19		0.42		31.5
MAX		0.70		191		0.56		190
SD		0.12		57.08		0.08		54.16
MIN		0.25		0		0.25		4
MEAN	WGC	0.24	MSTATUS	2.8	WGC	0.24	MSTATUS	7.3
MEDIAN		0.24		1.5		0.25		7
MAX		0.36		14		0.32		36
SD		0.05		3.4		0.04		7.4
MIN		0.13		0		0.16		0
MEAN	WPR15_59	366	MIND	2.75	WPR15_59	830	MIND	10.4
MEDIAN		384		1.5		842		7.5
MAX		743		15		899		39
SD		212.8		3.9		51.7		9.9
MIN		44		0		707		0
MEAN	W15_59	4694418	MOCCU	3.3	W15_59	10212141	MOCCU	9.8
MEDIAN		575057		2		2814717		8.5
MAX		79674363		15		183507665		36
SD		13423826		4.2		30432716		8.6
MIN		579		0		9751		0

	FEMALE				MALE			
MEAN	WAGESAL	178.73	CAEMP	145	WAGESAL	225.98	CAEMP	155
MEDIAN		166.865		153.5		216.705		142.5
MAX		319.36		373		295.47		510
SD		57.82		92.8		40.71		98.4
MIN		69.03		0		156.44		25
MEAN	LRATE	733	CUNEMP	130.0	LRATE	833	CUNEMP	58.2
MEDIAN		736		91		840		48.5
MAX		927		578		952		167
SD		81		123.2		52		34.3
MIN		549		22		710		12
MEAN	CA15_29	312	AGRIWORK	185	CA15_29	370	AGRIWORK	85
MEDIAN		299.5		179		332.5		61.5
MAX		488		467		601		326
SD		100.0		135.4		106.8		85.3
MIN		147		0		153		2
MEAN	EGC	0.42	MESTAB	36.3	EGC	0.32	MESTAB	43.0
MEDIAN		0.42		19.5		0.32		30
MAX		0.59		161		0.42		122
SD		0.07		42.38		0.04		35.86
MIN		0.26		0		0.22		0
MEAN	WGC	0.34	MSTATUS	3.3	WGC	0.33	MSTATUS	9.1
MEDIAN		0.34		1		0.33		8
MAX		0.47		26		0.42		29
SD		0.06		5.5		0.04		7.5
MIN		0.24		0		0.24		0
MEAN	WPR15_59	197	MIND	5.3	WPR15_59	763	MIND	11.8
MEDIAN		192		1.5		764		7
MAX		436		31		918		31
SD		84.1		7.6		59.2		9.5
MIN		72		0		602		0
MEAN	W15_59	959300	MOCCU	4.8	W15_59	4276894	MOCCU	12.3
MEDIAN		143833		2		998487		8.5
MAX		17025297		31		76838199		64
SD		2857818		7.0		12772138		13.0
MIN		929		0		4590		0

Table1: Descriptive statistics for urban sector

- From Table 1 and Table 2 the following can be inferred:

- Urban population tend to have better educational-economic indicators than the rural. They have higher mean wages, lower education inequity, lower casual work, higher workforce participation and marginally higher mobility of industry ,status and occupation. All these indicators suggest the labour markets in urban areas are better functioning than the rural labour markets. But they have higher economic inequity, that indicates the skewness of urban incomes.

- Rural females have the worst wages rates and education equity followed by rural men. Urban women and men come next in the order. In both sectors a women group have reported the maximum wage rate and also the maximum education inequity.

- Women tend to be less mobile than men. The nature of mobility between establishments that is higher for rural areas without much differences between male and female is singular.

- urban women have much lower workforce participation than the urban men or for that matter even rural women.

Correlations of variables :

As a first step simple product-moment correlations are obtained between different variable, with the 144 cross-sectional observations. The same are presented in Table 3. It can be seen that Education related variables - EGC, LRATE and CA15_29 - are all well correlated with regular wage rates and also correlated among themselves. In fact EGC explains WAGESAL quite substantially; about 40%. The three education related variables appear to be acting like a cluster with high multicollinearity. The other important variables, which are correlated with wage data are CAEMP , AGRIWORK and MESTAB. In fact the EGC itself is almost fully explained by the other two education variables suggesting that educational inequity can be measured almost fully by literacy rates and current attendances.

Casual Employment per se reduces the wages. Higher levels of casual employment lowers the regular wages by about 20%., the AGRIWORK also has similar explanation.

Interestingly the MPCE inequities among of workers, which can be used as a surrogate for income inequity, explains the WAGESAL only by 1.5%.The number of workers also W15_59 is not meaningfully correlated with wages, suggesting free mobility of labour across state borders or absence of any shortage of labour across the states.

Only the mobility between establishments has some explanatory value for wages, as it explains about 16% of WAGESAL; the causal relationship could be that low wages induce higher mobility. MSTAB is also highly correlated with CAEMP, indicating the mobility of casual labour from one establishment to another in a random manner. The mobility between establishments, in fact, may be induced by such search behaviour of poor unskilled labour, rather than any systematic process of capacity building, as no significant correlations have been observed between other forms of mobility and wages. The positive significant correlation between MESTAB and WGC, CAEMP on one hand and MESTAB and other mobility variables on the other hand lends some credence to this hypothesis, especially in the absence of any significant correlation between other types of mobility and wages.

The negative correlation between WPR15_59 and EGC suggests the obvious that more students mean more numbers are of out of labour force. The correlation between CAEMP and EGC suggests that educated labour is less likely to opt for casual employment.

Table 3: Product-Moment Correlations between variables			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1)	WAGESAL		1	0.66	0.57	-0.66	-0.12	0.14	-0.13	-0.45	0.15	-0.43	-0.41	0	-0.04	-0.01
(2)	LRATE	*		1	0.65	-0.97	0.11	0.27	-0.13	-0.32	0.15	-0.69	-0.12	0.28	0.29	0.24
(3)	CA15_29	*	*		1	-0.61	0.16	0.11	-0.11	-0.45	-0.07	-0.46	-0.25	0.16	0.11	0.13
(4)	EGC	*	*	*		1	-0.04	-0.35	0.12	0.29	-0.14	0.63	0.14	-0.27	-0.26	-0.2
(5)	WGC						1	-0.11	0.06	0.08	0.06	-0.49	0.18	0.19	0.23	0.2
(6)	WPR15_59		*		*			1	0.17	0.2	-0.4	0.03	0.2	0.32	0.32	0.3
(7)	W15_59						+		1	0.15	-0.09	0.14	0.15	0.04	0.04	0.05
(8)	CAEMP	*	*	*	*		+			1	-0.08	0.3	0.45	0.2	0.2	0.25
(9)	CUNEMP						*		+		1	-0.26	-0.08	0.01	0.06	0.05
(10)	AGRIWORK	*	*	*	*	+			*	*		1	0.1	-0.22	-0.25	-0.21
(11)	MESTAB	*		*		+	+		*				1	0.36	0.44	0.38
(12)	MSTATUS		*		*	+	*		+		*	*		1	0.79	0.76
(13)	MIND		*		*	*	*		+		*	*	*		1	0.9
(14)	MOCCU		*		+	+	*		*		+	*	*	*		1
*. Correlation is significant at the 0.01 level (2-tailed).																
+. Correlation is significant at the 0.05 level (2-tailed).																

AGRIWORK is a key structural variable having high correlations with literacy, wage rates and economic status. This is typical of the problems associated with agricultural labour and agriculturalists.

The mobility variables, although do not have direct correlation with wage rates, appear to be revealing some significant patterns. Workers will be more mobile in terms of their status, industry and occupation only if they are educated and skilled. Lesser skills put restrictions on labour mobility. The significant correlations exhibited by mobility variables with LRATE and EGC would explain the same. At the same time this mobility has positive impact on wages only when the labour is scarce. When the labour is in abundant supply, there may only mobility without any corresponding economic gains. High correlations between WPR15_59 and MSTATUS, MIND and MOCCU may indicate prevalence of such phenomenon. Finally mobility has some something to do with economic gains. The correlation between WGC and these variables are significant.

Distance Measurement :

Since the data is cross sectional an attempt has been made to understand the homogeneity/heterogeneity across the various populations using a cluster analysis technique. The clusters so arrived may be called education-wage complex. SPSS/PC+ software was used. The variables chosen are WAGESAL, EGC, CAEMP, AGRIWORK and MESTAB and MIND, each of them correlated but not so highly correlated as to exhibit redundancy. The choice is also guided by the dimensionality they would represent indicating different factors affecting wage rates. Euclidean distances are used the dissimilarity measure between cases. Since the scale of the variable influences Euclidean distance measure, an attempt has been made to scale the variables appropriately. EGC is expressed as a rate (per 1000), WAGESAL is converted into weekly wages, MESTAB and MIND are multiplied by 10 and 50 respectively. The idea has been to explore the dissimilarity before a formal cluster analysis technique is employed. The purpose of cluster analysis in any case is to find patterns in the geographic locations. Uunlike many other statistical procedures, cluster analysis methods are mostly used when no a priori hypotheses is stated. They are part of the exploratory phase of research. In a sense, cluster analysis finds the "most significant solution possible." (Statsoft, 2007).

The exploration of the distances between cases suggests a skewed distribution and the details are at Table 4. A histogram of the values are indicated in Fig 4.

Table 4: the distributional properties of dissimilarity index			Fig 2: Histogram of the 10296 dissimilarity measures
	Skewness	Kurtosis	
Number of observations	10296	10296	
Standard Error	0.024	0.048	
2*SE	0.0483	0.0966	
Data values	0.380	-0.415	
	Positively skewed	Platykurtic	
Interpretation	values are bunched lower side	Flatter than normal	

Fig 2: Histogram of the 10296 dissimilarity measures

No specific groupings are suggested as such, but only a continuous positively skewed distribution. Since the distribution is not symmetric, it means some regions/groups are faring better than others. A cluster analysis with two clusters, perhaps, would be appropriate to describe the data. The results of cluster analysis are presented below in table 5, using a hierarchical cluster technique with two clusters. SPSS/PC+ has been used. The first cluster has 46 (32 %) observations.

Table 5: summary values for input variables for cluster analysis

	EGC	CAEMP	MESTAB	WAGESAL	AGRIWORK	MIND	WGC

		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cluster	1	.53	.1	313	161	61.0	57.3	122.1	49.6	735	155	5.1	4.6	.27	.03
	2	.37	.08	146	104	40.1	41.0	203.0	58.3	242	238	8.7	10	.30	.07

The cluster membership has been represented in Table 6. All the urban areas are in cluster 2. In rural areas the analysis identified the north eastern states, and also smaller states like A&N islands, Delhi, Goa , Daman and Diu, Lakshadweep etc as falling in better education-employment cluster than the rest of India. Tripura is an exception. Bigger states like AP, Bihar , Gujarat, Maharashtra, Madhya Pradesh, Rajasthan, Tamil Nadu etc appear to be the weakest worse off.

In the states of Assam, Haryana, HP, Jammu & Kashmir, Kerala, Manipur, Uttaranchal and Dadra Nagar Heveli and Pondicherry , rural women are worse off than men. In urban areas there are no significant differences. The rural men of Lakshadweep, are worse off than men.

Table 5: Cluster membership for each of the state/sector/sex groups

	R		U	
	M	F	M	F
AND	1	1	2	2
ARU	1	1	2	2
ASS	2	1	2	2
BIH	1	1	2	2
CHH	1	1	2	2
DEL	2	2	2	2
GOA	2	2	2	2
GUJ	1	1	2	2
HAR	2	1	2	2
HIM	2	1	2	2
JAM	2	1	2	2
JHA	1	1	2	2
KAR	1	1	2	2
KER	2	1	2	2
MAD	1	1	2	2
MAH	1	1	2	2
MAN	2	1	2	2
MEG	2	2	2	2
MIZ	2	2	2	2
NAG	2	2	2	2
ORI	1	1	2	2
PUN	1	1	2	2
RAJ	1	1	2	2
SIK	2	2	2	2
TAM	1	1	2	2
TRI	1	1	2	2
UTT	2	1	2	2
UPR	1	1	2	2
WES	1	1	2	2
A&N	2	2	2	2
CHA	2	2	2	2
DAD	2	1	2	2
DAM	1	1	2	2
LAK	1	2	2	2
PON	2	1	2	2
IND	1	1	2	2

Bibliography:

1. Leelaratne P.M.(May, 2001): Study On The Relationship Between Education, Training And Employment,

   http://www.ilomirror.cornell.edu/public/english/region/asro/colombo/download/llrprf01.pdf

2. Tom Karmel, Nhi Nguyen (2006): The value of completing a vocational education and training qualification,National Centre for Vocational Education Research http://www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/28/06/03.pdf

3. Governement of India, National Sample Survey Organsiation (2007):Report 517_final Status of educational and vocational training in India 2004-05

4. Govt of India, National Accounts Statistics, State Domestic products 2004 http://en.wikipedia.org/wiki/States_of_India_by_size_of_economy aug 2007

5. Census 2001, http://www.censusindia.net/results/rudist.html, Aug 2007

6. http://www.crefa.ecn.ulaval.ca/develop/appiah-kubi.pdf

7. http://www.policyproject.com/pubs/generalreport/Demo_Div.pdf

8. James D Brown , http://jalt.org/test/bro_1.htm quoting from *Using multivariate statistics (3rd ed.).* New York: Harper Collins.Tabachnick & Fidell, 1996

9. Statsoft, 2007: Cluster Analysis, http://www.statsoft.com/textbook/stcluan.html StatSoft, Inc., 1984-2004

10. Pais Jesim (2002), Casualisation of Urban Labour Force,Analysis of Recent Trends in Manufacturing ,Economic and Political Weekly, Vol 37 No. 07 February 16 - February 22, 2002

11. Singh C S K, Skill, Education and Employment:A Dissenting Essay,VOL 38 No. 31 August 02 - August 08, 2003.

A PAPER ON EMPLOYMENT AND UNEMPLOYMENT SITUATION IN INDIA, 2004-2005

Report no. 515, 61st Round NSS (July 2004-June 2005)

Sri Swajan Kumar Lodh[*]

The survey on employment and unemployment in the 61st round is the seventh quinquennial survey so far conducted by NSS during July 2004 to June 2005 by canvassing the Schedule No. 10. The detailed tables from table no. 26 to table no. 76 have been presented in the Appendix – A of the report.

The Schedule 10 on employment-unemployment consists of 16 blocks. The first three blocks, viz, Blocks 0, 1 and 2 have been used to record identifications of sample households and particular of field operations. The last two blocks, viz., Blocks 10 & 11, are the usual blocks to record the remarks of investigator and comments by supervisory officer(s). Blocks 3 to 8 have been designed for recoding the information collected regarding the situation of employment and unemployment along with some regular information on household characteristics in Block-3 and on demographic particulars in Block-4. In this quinquennial round apart from some blocks incorporated for collecting data on employment & unemployment in general, some blocks have been incorporated for collection of data on some special characteristics. So this paper has been concentrated particularly on the Block 7.1 and for which table nos. 65 to 71 have been presented in the report and the subject of the Block is " question on availability of work to persons working in the usual principal or subsidiary status (i.e. those with codes 11-51 in col-3 of bl 5.1 or bl 5.2)." In this block an attempt has been made to collect information on certain qualitative aspect of employment of those persons who are categorized as employed either in the principal or subsidiary status. The discussion of the paper is therefore concentrated in Block-7.1.

A set of questionnaires has been incorporated from col-5 to col-15 in the block. In spite of engagement in some economic activities in principal or subsidiary statuses the persons are seeking/available for work due to a number of reasons. It implies that the economic activities they are pursuing are not suitable in terms of particularly earnings for them. Before going into detail of the estimates presented for the block, a summary table taking into consideration the worker, persons unemployed and persons out of labour force with the reference to Table no-26 has been prepared and is presented below:

Table (1): per 1000 distribution of persons by usual activity category taking into consideration the subsidiary economic status of persons categorized 'not working' in the principal status for each household type

rural

Usual activity (ps+ss)		Self employed		Agriculture & other labour		Others		All		Estimated persons (00)	
Status	Industry	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
11,12,21	01-93	518	299	41	92	93	96	318	208	1172453	739578
31	01-99	21	16	475	275	26	19	179	106	659978	376857
41,51	01-99	557	321	560	382	411	159	546	327	2016659	1161510
81	X	7	5	9	6	24	13	9	6	32716	21145
91-99	X	436	674	431	612	564	828	445	667	1642559	2368872
Per 1000 distribution		571	560	346	347	83	93	1000	1000	-	-
Estd. person (00)		2106776	1987131	1277728	1231977	306848	331993	3691933	3551527	-	-

n.r:- not included

Table (1): per 1000 distribution of persons by usual activity category taking into consideration the subsidiary economic status of persons categorized 'not working' in the principal status for each household type

<div align="right">urban</div>

Usual activity (ps+ss)		Self employed		Regular wage/salary		Casual labour		Others		All		Estimated persons (00)	
Status	Industry	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
11,12,21	01-93	515	126	42	41	3	58	61	23	246	79	316831	93872
31	01-99	20	11	23	11	517	151	12	6	79	28	102486	32769
41,51	01-99	578	162	561	164	583	244	115	42	549	166	707470	196830
81	X	14	10	26	13	17	11	67	30	22	12	27990	14544
91-99	x	408	828	413	823	400	745	819	928	430	822	554133	974542
Per 1000 distribution		432	434	400	392	118	119	49	55	1000	1000	-	-
Estd Persons (00)		557132	515077	515976	464395	151844	140985	63594	64770	1289592	1185916	-	-

Out of the population of 724346000 in the rural area of the country 369193300 persons are male and 355152700 persons are female, whereas, in urban sector out of 247550800 persons in the country 128959200 persons are male and 118591600 persons are female.

As observed from the above table, in the rural area 201665900 male persons are workers and 116151000 are female workers. In the urban area 70747000 are male worker and 19683000 persons are female workers. In the rural area amongst all usual activity statuses the majority of male and female are seem to be self-employed and in it they are mostly engaged in agricultural sector, and next to it the major male and female persons are engaged in agricultural and in other labour category. In case of urban area, besides self-employed, most of the male and female persons are working as casual labour.

It may be observed from Table (2) below (Ref. Table-65 NSS Report) that there are persons of age 5 years and above who are seeking or available for work though they are working under different working statuses:

Table (2): Per 1000 distribution of persons of age 5 years and above who/sought/were available for work by period of sought/available for each usual principal activity

<div align="right">rural</div>

Usual principal status		Not sought/ available		<1 month		1 to 2 months		3 to 6 months		Total	
Status	Industry	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Self employed (11+12+21)	01-93	817	825	7	6	47	48	85	90	1000	1000
Casual labour (41+51)	01-99	488	453	18	12	154	131	287	362	1000	1000

<div align="right">urban</div>

Usual principal status		Not sought/ available		<1 month		1 to 2 months		3 to 6 months		Total	
Status	Industry	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Self employed (11+12+21)	01-93	899	891	5	3	20	23	33	50	1000	1000
Casual labour (41+51)	01-99	587	574	16	10	138	107	204	272	1000	1000

n.r.- not included

It is observed from the table above that most of the persons working in rural area are either casual labour in public works or other than public works and they are also job seekers irrespective of male or female and next to it, male or female engaged as self employed are also available for work for 1 to 6 months during a year. In case of urban sector also, both male and female casual workers, for the period of 1 to 6

months, are available/seeking for work and next to this category, the workers male or female under the principal status of 'self-employed' are also available for work for 1 to 6 months.

Now let me discuss a situation where usual status workers were without work for at least 1 month and where they are seeking or are available for work on at least for some days during those months and period without work for each usual activity status.

Table (3): Per 1000 distribution of usual status workers who were without work for at least 1 month and who sought or were available for work on at least some days during those month(s) by availability of work and period without work for each usual activity status

rural

Principal + Subsidiary Status

Activity status		Period without work (1 to 11 months)						Total (incl. n.r.)		Estd workers (00)	
		Sought or available for work									
		Most days		Some days		no					
Status	Industry	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
11	01-93	301	278	274	251	412	456	1000	1000	184178	32902
12	01-93	203	46	185	202	612	743	1000	1000	5110	1951
21	01-93	350	233	282	242	358	517	1000	1000	90680	142369
11,12,21	01-93	315	239	275	243	398	508	1000	1000	279968	177222
31	01-99	594	507	221	251	172	238	1000	1000	11296	4208
41,51	01-99	504	438	337	385	102	172	1000	1000	365533	236988
11-51	01-99	453	354	309	324	229	315	1000	1000	656797	418418
Estd. Workers (00)		297318	148327	202850	135409	150720	131689	656797	418418		

urban

Principal + Subsidiary Status

Activity Status		Period without work (1 to 11 months)						Total (incl. n.r.)		Estd workers (00)	
		Sought or available for work									
		Most days		Some days		No					
Status	Industry	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
11	01-93	426	320	270	308	291	366	1000	1000	26416	10627
12	01-93	499	196	276	63	225	741	1000	1000	1319	329
21	01-93	360	165	354	293	269	534	1000	1000	5501	7535
11,12,21	01-93	418	255	284	297	285	441	1000	1000	33237	18491
31	01-99	533	433	251	273	206	293	1000	1000	15455	6021
41,51	01-99	579	435	324	413	95	151	1000	1000	45482	16958
11-51	01-99	514	354	298	341	180	301	1000	1000	94174	41470
Estd workers (00)		48426	14696	28062	14153	16992	12486	94174	41470		

In the rural area of the country, under principal & subsidiary status for the persons both male and female a significant number of persons is under the status of casual labour in public works and in other works who were available/sought for work having no work for 1 to 11 months. Besides, both male and female under the status of 'salaried worker' a significant number of persons also sought/were available for work in most days during the period of 1 to 11 months when they were without work. In urban sector also the same scenario has been reflected in the above table.

Let us now analyse the nature of efforts the persons made to get work for each usual activity status. These persons were without work for at least 1 month and they sought/were available for work on at least some days during those months.

It has been observed from the table given below that in rural areas of the country amongst the workers under different activity statuses most effort as 'other efforts' was given for getting work by male and female persons. A significant number of both male and female had also no effort for getting job. In urban area of the country the same trend has been observed.

Table (4): Per 1000 distribution of usual status workers (PS+SS) who were without work for at least 1 month and who sought or were available for work on at least some days during those month(s) by nature of efforts for each usual activity status

Usual activity status (workers)		Registered in employment exchange		Other efforts		No efforts		All		Estd. workers (00)	
Status	Industry	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Self employed	01-93	32	17	659	482	301	495	1000	1000	165246	85394
Regular work/salary works	01-99	106	149	727	642	154	196	1000	1000	9203	3187
Casual labour	01-99	10	2	822	719	164	275	1000	1000	325718	195155
All	01-99	19	8	767	647	209	340	1000	1000	500168	283736
Estd workers (00)		9389	2324	383557	183465	104552	96577	500168	283786	-	-

n.r. - not included

Usual activity status (workers)		Registered in employment exchange		Other efforts		No efforts		All		Estd. workers .(00)	
Status	Industry	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Self employed	01-93	54	55	781	648	160	287	1000	1000	23321	10212
Regular work/salary works	01-99	94	151	780	767	117	82	1000	1000	12114	4252
Casual labour	01-99	20	6	869	746	109	246	1000	1000	41053	14385
All	01-99	42	45	828	714	126	236	1000	1000	76488	28849
Estd workers (00)		3221	1285	63333	20604	9644	6813	76488	28849	-	-

On the result of the survey apart from the unemployed with code 81, a significant number of persons of age 15 years and above having usual activity status 11-51 has demand for work. A table is therefore, presented below where the reasons for demand of additional work can be observed.

Table (5): Per 1000 distribution of usual status of workers (15 years and above) who had sought or were available for additional work by duration and reason for seeking work/availability for work for each activity status

Principal + subsidiary Status

Usual activity (ps+ss)	Whether sought/available for additional work											
	On most days				On some days				Not sought		total	
	To supplement income		All reasons		To supplement income		All reasons					
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
11	17	14	26	28	32	19	57	32	912	929	1000	1000
12	2	2	7	3	7	1	16	7	975	987	1000	1000
21	23	11	39	16	32	17	65	33	889	947	1000	1000
11-21	18	11	29	19	32	17	58	33	907	940	1000	1000
31	9	15	13	29	11	14	20	29	957	930	1000	1000
41,51	33	24	53	36	54	31	110	75	833	884	1000	1000
11-51	22	16	36	25	37	22	72	47	887	921	1000	1000
Working persons (15years & after)	43958	17565	70927	27855	73663	24341	142348	52615	1759794	1041463	1983542	1130663

Table (5): Per 1000 distribution of usual status of workers (15 years and above) who had sought or were available for additional work by duration and reason for seeking work/availability for work for each activity status

urban

Principal + Subsidiary Status

Usual activity (ps+ss)	Whether sought/available for additional work											
	On most days				On some days							
	To supplement Income		All reasons		To supplement income		All reasons		Not sought		total	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
11	18	34	33	62	25	19	47	44	917	887	1000	1000
12	6	0	11	42	6	21	14	46	974	895	1000	1000
21	13	12	31	17	19	14	40	35	925	942	1000	1000
11-21	16	23	31	41	23	17	44	40	922	913	1000	1000
31	8	19	11	28	10	14	17	22	970	939	1000	1000
41,51	31	20	48	29	35	35	83	74	865	891	1000	1000
11-50	15	21	25	34	19	19	38	39	933	919	1000	1000
Working persons (15years & after)	10426	4077	17570	6557	13415	3667	26969	7555	654041	176622	700756	192240

There is a provision of 4 codes of reasons for demand for additional work. Of them it is observed from Table 68 of the report that in both rural and urban sector of the country the demand of additional work from the workers under principal and subsidiary status arises since the economic activities the persons are pursuing do not pay enough amount for their requirement. As such, the main reason behind the demand for additional work is to supplement income.

In the Block 7.1 there was also provision of collection of information on the parameter 'whether sought/ available for alternative work during the days he/she had work'. A table on the subject for the workers of age 15 years and above has therefore, been presented. In the earlier discussion there was demand for additional work. But in this table the workers like to change the economic activities they are pursuing. On the basis of Table 69 of the report a summary table is presented below:

Table (6): Per 1000 distribution of usual status workers of age-15 years and above who had sought or were available for alternative work by duration and reason for seeking work/availability for work each activity status

rural

Usual activity (ps+ss)	Whether sought/available for alternative work											
	One most days				On some days							
	Present work not remunerative enough		All reasons		Present work not remunerative enough		All reasons		Not sought		total	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
11	21	14	30	23	23	13	34	21	930	945	1000	1000
12	9	0	17	17	2	1	8	16	973	963	1000	1000
21	31	12	58	17	26	12	47	19	886	954	1000	1000
11-21	24	13	37	19	23	12	37	19	919	952	1000	1000
31	27	38	36	48	8	8	13	16	940	923	1000	1000
41-51	47	31	65	41	49	32	76	50	855	903	1000	1000
11-51	32	20	46	27	31	19	48	29	900	935	1000	1000
Estd. No. of usual status working of age 15 years & above)	62515	22138	91630	30468	60519	21121	94789	33113	1784541	1057011	1983542	1130663

Table (6): Per 1000 distribution of usual status workers of age-15 years and above who had sought or were available for alternative work by duration and reason for seeking work/availability for work each activity status

urban

Usual activity (ps+ss)	Whether sought/available for alternative work											
	One most days				On some days				Not sought		total	
	Present work not remuneration enough		All reasons		Present work not remuneration enough		All reasons					
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
11	18	25	26	38	15	13	24	22	946	932	1000	1000
12	8	42	12	42	4	14	14	46	972	895	1000	1000
21	22	12	37	16	11	11	21	15	937	963	1000	1000
11-21	18	19	27	28	14	12	23	19	946	946	1000	1000
31	18	27	29	35	11	14	16	19	952	936	1000	1000
41-51	33	27	52	33	36	36	66	49	878	913	1000	1000
11-51	20	23	31	31	16	17	26	24	938	937	1000	1000
Estd. No. of usual status working of age 15 years & above	14140	4455	21936	5933	11060	3218	18495	4637	657472	180082	700756	192240

In the block 7.1 there is provision of 6 (six) reasons behind seeking for or available for alternative work from the persons pursuing economic activities under usual principal and subsidiary statuses. Of all these reasons the main reason behind the demand for alternative work is 'present work not remunerative enough'.

Let us now discuss the status of self-employment and earnings come therefrom and the perception of the workers whether it is remunerative or not. Self-employment consists of status codes 11, 12 and 21 i.e., code 11 denotes the persons working in household enterprise as own account workers; code-12 denotes the persons working in enterprise as employer and code 21 denotes the persons working as helper in household enterprises (unpaid family workers). In the Block 7.1 there is provision to collect data on these self-employed persons asking question whether earning from the self-employment is remunerative. A table on the household per capita monthly consumer expenditure class on the question has been presented taking into consideration the amount received per month regarded as remunerative. Since persons having different per capita monthly consumer expenditure class might have asked for higher different amount for the work they are pursuing.

It has been observed from the table given below that in the rural sector of the country the earning of more persons of both male and female per 1000 (as reported) from the household MPCE class of Rs. 455-510 and above (upper class) have reported the earning as remunerative whereas in urban area the male person of household MPCE class from Rs. 455-510 have reported their earning as remunerative. But in case of female persons of per 1000 households of MPCE class of Rs. 580-690 have reported their earning as remunerative.

Table (7): Per 1000 distribution of self-employed person according to the usual status (PS+SS) reporting their earning from self-employed as remunerative/non-remunerative by amount of earning regarded as remunerative for each household monthly per capita expenditure class

rural

Household monthly per capita expenditure class	Earning reported as remunerative		n.r		Earning reported as non-remunerative		n.r		Total		Estd. no. self employed persons(00)	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
0-235	381	426	0	11	609	557	0	17	1000	1000	19684	17579
235-270	360	378	4	7	633	600	5	22	1000	1000	21622	16188
270-320	410	449	4	10	580	540	1	12	1000	1000	77093	50018
320-365	402	435	8	9	589	548	6	16	1000	1000	95097	64586
365-410	446	469	6	9	545	515	8	17	1000	1000	106491	69967
410-455	470	470	8	14	516	515	4	15	1000	1000	123024	80339
455-510	512	533	10	5	483	456	3	11	1000	1000	141001	88157
510-580	519	519	11	10	471	466	3	14	1000	1000	170702	102524
580-690	561	566	10	8	430	423	5	10	1000	1000	166156	98587
690-890	589	576	8	5	405	418	4	7	1000	1000	151846	92661
890-1155	632	592	9	5	364	399	3	8	1000	1000	59131	36106
Equal & above 1155	677	655	8	6	316	342	2	5	1000	1000	40605	22911
All	511	514	8	8	481	473	4	12	1000	1000	172453	739578
Estd. no. of self employed person (00)	598930	380449	9652	14204	563695	350002	2942	12	1172453	739579	X	X

urban

Household monthly per capita expenditure class	Earning reported as remunerative		n.r		Earning reported as non-remunerative		n.r		Total		Estd. no. self employed persons(00)	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
0-335	521	726	0	3	478	274	22	0	1000	1000	1092	641
335-395	444	508	7	0	547	483	11	9	1000	1000	1020	441
395-485	492	418	2	0	488	564	0	18	1000	1000	6253	2876
485-580	424	293	4	5	569	703	2	4	1000	1000	8232	3624
580-675	446	369	2	0	552	610	5	21	1000	1000	11610	5414
675-790	467	380	1	0	519	600	2	20	1000	1000	16623	7374
790-930	530	449	12	0	462	543	3	8	1000	1000	21748	8226
930-1100	505	484	7	0	488	505	3	10	1000	1000	34889	12577
1100-1380	557	505	4	0	438	488	5	8	1000	1000	41283	13795
1380-1880	611	539	4	0	385	451	2	11	1000	1000	59344	16041
1880-2540	659	568	9	4	335	423	3	9	1000	1000	4390	9449
Equal & above 1155	778	692	8	12	217	300	1	8	1000	1000	70776	13414
All	609	509	6	2	385	485	3	11	1000	1000	316831	93872
Estd. no. of self employed person (00)	192934	47793	1995	230	121878	45082	826	997	316831	93872	X	X

A concluding question was asked to the working persons (PS+SS) that whether they are working on full time work and worked more or less regularly during the reference period. A table accordingly has been

presented in the report under reference. A precise scenario of the country in both the sectors is presented below:

Table (8): Number per 1000 of usual status workers of age 15 years and above i) who worked mostly full time work and ii) who worked more or less regularly by activity status

Principal + Subsidiary

Activity status		rural				urban			
		No. per 1000 workers				No. per 1000 workers			
		With mostly full time work		Working more or less regularly		With mostly full time work		Working more or less regularly	
Status	Industry	Male	Female	Male	Female	Male	Female	Male	Female
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
11	01-93	969	695	930	894	971	605	943	833
12	01-93	893	559	899	794	981	662	960	722
21	01-93	903	732	883	867	942	698	948	893
11,12,21	01-93	949	721	916	873	966	650	945	860
31	01-99	985	943	963	948	992	946	963	940
41,51	01-99	949	898	797	726	959	852	790	711
11-51	01-99	852	787	881	827	976	791	930	864
Estd. no. of worker worked(00)		1888611	890389	1747633	935520	683691	151989	651817	166020

It is observed from the above table that number per 1000 of usual status workers in all activities in the rural area of the country in all the statuses, male workers with 'mostly full time work' is more as compared with the female workers. Similarly, in the urban area also per 1000 workers in (PS+SS) of the country, the number of male workers is with 'mostly full time work' and 'working more or less regularly' is more in all statuses as compared with the female workers. It is found that a large number of persons with age 15 & above, male and female, in both rural and urban sector of the country are unpaid family workers.

From the estimates of different parameters of Block-7.1 it is evident that there exists a scenario of under employment/disguised unemployment in the country as the workers under different economic activity statuses particularly for self-employed and casual labour have not either work for the entire last 365 days or the earnings from the work they are pursuing are not remunerative. Besides, without quitting the economic activities being pursued the workers are seeking/available for additional work for supplementing the present income.

A note on employment and unemployment situation in India - NSS 61st round

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1. Introduction: The National Sample Survey Organization (NSSO) has brought out the present report on **Employment and Unemployment Situation in India 2004-05** which is the first in the series of seven reports brought out on the results of the seventh quinquennial survey on employment and unemployment conducted by NSSO in its 61st round (July 2004 – June 2005). In NSS 61st round survey, apart from the information usually collected in the earlier quinquennial rounds, information has been collected through a schedule of enquiry (Schedule 10) on some new items such as principal work/subsidiary activity of usual status workers, earning from self-employment, vocational training receiving/received by the persons of age 15-29 years, voluntary participation of household Non-worker members without remuneration in production of goods and services, persons (< 75 years) seeking or available for the type of occupation, period of seeking/availability for work during the last 365 days for all the persons, etc. as a result of the suggestions made by the Working Group set up to finalize the survey methodology and schedules of enquiry of the 61st round. Based on the data collected during July 2004 – June 2005 in the nationwide enquiry survey as a part of the NSS 61st round the estimates on various characteristics pertaining to employment and unemployment in India and some characteristics associated with them at the national and state levels, measured in terms of three basic approaches of: usual status, current weekly status, current daily status and their patterns along with their correlates, have been presented in this report. In this paper the sampling design & estimation procedure adopted in the survey, the salient survey results and value added observations/suggestions on the survey findings are highlighted.

2   Sampling design and estimation procedure: The geographical coverage of Employment and Unemployment Survey as a part of NSS 61st Round was the whole of India except some disturbed/inaccessible areas of Jammu & Kashmir, Nagaland and Andaman & Nicobar Islands. The broad design adopted for the survey was a stratified multi-stage random sampling design with villages (panchayat wards in Kerala) for rural areas and the NSSO Urban Frame Survey (UFS) blocks for urban areas as First Stage Units (FSUs), both rural and urban households as Ultimate Stage Units (USUs) and hamlet-groups / sub-blocks (i.e. the parts wherever formed within a large FSU) as the Intermediate Stage Units (ISUs). For rural areas, the list of 2001 census villages constituted the sampling frame for selection of sample FSUs for most of the states. For the rural areas of Kerala, however, the list of panchayat wards was used as the sampling frame for selection of panchayat wards. For the urban areas, the latest lists of UFS blocks constituted the sampling frame for selection of sample FSUs. Within each district of a State/UT, two separate basic strata were formed for rural areas and urban areas. All rural areas of the district comprised rural stratum and all the urban areas of the district comprised urban stratum. At the all-India level, a total number of 12788 FSUs (8128 villages and 4660 urban blocks) was allocated for the survey and this was allocated to the different States and UTs in proportion to population as per census 2001 which was then allocated between rural and urban sectors in proportion to population as per population census 2001 with 1.5 weightage to urban sector. Within each of the rural and urban sectors of a State/UT, the respective sample size was allocated to the different strata in proportion to the stratum population as per census 2001. Within a district, if **r** number of FSUs were allocated for a rural stratum, a total number of **r/2** sub-strata were formed within that rural stratum. From each sub-stratum of the rural stratum of a district, two FSUs were selected with probability proportional to size with replacement (PPSWR), size being the population as per Population Census 2001. Within a district, if **u** number of FSUs were allocated for a urban stratum, a total number of **u/2** sub-strata were formed within that urban stratum. From each sub-stratum of the urban stratum of a district, two FSUs were selected with simple random sampling without replacement (SRSWOR). Within each sub-stratum, samples were drawn in the form of two independent sub-samples in both the rural and urban sectors. All households listed in the

selected village/block/hamlet-groups/sub-blocks were stratified into three second stage strata (SSS). A total of 10 households were selected from each sample village/block for canvassing the employment and un-employment schedule. The sample households from each of the second stage strata were selected by SRSWOR. Out of the total number of 12788 FSUs (8128 villages and 4660 urban blocks) selected for survey for the central sample, 12601 FSUs (7999 villages and 4602 urban blocks) could be surveyed at the all-India level for canvassing Schedule 10. The number of households surveyed was 124680 (79306 in rural areas and 45374 in urban areas) and number of persons surveyed was 602833 (398025 in rural areas and 204808 in urban areas).

In estimation procedure ratio method of estimation has been followed.

3 Salient Highlights: This report is based on the seventh quinquennial survey on employment and unemployment conducted in the 61st round of NSS during July, 2004 to June, 2005. The survey was spread over 7,999 villages and 4,602 urban blocks covering 1,24,680 households (79,306 in rural areas and 45,374 in urban areas) and enumerating 6,02,833 persons (3,98,025 in rural areas and 2,04,808 in urban areas). Employment and unemployment were measured with three different approaches, viz. usual status with a reference period of one year, current weekly status with one week reference period and current daily status based on the daily activity pursued during each day of the reference week. Unless otherwise stated, 'all' usual status workers will mean all workers taking into consideration the usual principal and subsidiary status taken together. Some of the key findings are stated below:

3.1 Household and Population :
- According to the survey estimates, a little over 73 per cent of the households belonged to rural India and accounted for nearly 75 per cent of total population.
- About 11 per cent of households in both the rural and urban areas were headed by females. Compared to all households, they had, on an average, a relatively smaller household size and a much higher sex-ratio.
- During 2004-05, in India, in as many as 26 per cent of the households in the rural areas and 8 per cent in the urban areas, there was no member in the age group 15 years and above who could read and write a simple message with understanding.
- Among those households having at least one member of age 15 years and above, about 4 per cent in the rural areas and 8 per cent in the urban areas had no usually employed member of age 15 years ad above.
- About 57 per cent of the rural and 64 per cent of the urban population belonged to the age group (15-59 yrs.). In the rural areas, during 2004-05, about 64 per cent of males and 45 per cent of the females were literate. The corresponding proportions, in the urban areas, were 81 per cent and 69 per cent.

3.2 Labour Force :
- According to the usual status (ps+ss), about 56 per cent of rural males and 33 per cent of rural females belonged to the labour force. The corresponding proportions in the urban areas were 57 per cent and 18 per cent, respectively.
- During the period 1999-2000 to 2004-05, the LFPRs according to usual status (ps+ss) increased by nearly 2 percentage points for males and about 3 percentage points for females, in the rural areas. In the urban areas, during that period, it increased by about 3 percentage points for both the males and females.

3.3 Work Force :
- About 42 per cent of the population in the country were usually employed. The proportion was 44 per cent in the rural and 37 per cent in the urban.
- The gender differential in the worker population ratio (WPR) was distinct: 55 per cent for males and 33 per cent for females in the rural areas, and 55 per cent for males and 17 per cent for females in the urban areas.
- The daily status rates ere slightly lower than the current weekly status rates, which, in turn, were slightly lower than the usual status rates.
- Between 1999-2000 and 2004-05, in the rural areas, WPR in the usual status approach increased by about 2 percentage points for the males and by about 3 percentage points for the females. In the urban areas, the rates increased by about 3 percentage points for both the males and females.

165

- In rural India, the proportion of 'all' male workers engages in the agricultural activities declined gradually from 81 per cent in 1977-78 to 67 per cent in 2004-2005. For 'all' female workers, the decline was less – from 88 per cent in 1977-78 to 83 per cent in 2004-05.
- In urban India, the "trade, hotel and restaurant" sector engaged about 28 per cent of the male workers while 'manufacturing' and 'other services' sectors accounted for nearly 24 and 21 per cent, respectively, of the usually employed males. On the other hand, for urban females, 'services' sector accounted for the highest proportion (36 per cent) of the total usually employed, followed by 'manufacturing' (28 per cent) and 'agriculture' (18 per cent).
- The proportion of urban females employed in 'manufacturing' sector increased from 24 per cent in 1999-2000 to 28 per cent in 2004-05. The 'trade, hotel and restaurant' sector revealed a fell in its share by about 5 percentage points between 1999-2000 and 2004-05. During this period, no such distinct changes are observed in the case of urban males.

3.4 Unemployment Rate :
- The unemployment rate (number of person unemployed per 1000 persons in the labour force), according to usual status (ps+ss), was 17 in the rural areas and 45 in the urban areas. The unemployment rates for females are found to be higher than that for males, and highest among urban females.
- The unemployment rates according to the current daily status (cds) approach are higher than the rates obtained according to usual status approach and weekly status approach, thereby indicating a high degree of intermittent unemployment.
- During the period 1999-2000 to 2004-05, the unemployment rate in terms of the usual status (ps+ss), remained almost the same for rural males and decreased by 1 percentage point for urban males, but this increased by about 1 percentage point for females in both the rural and urban areas.
- In both the rural and urban areas, unemployment rate among the educated (secondary and above) was higher than that among those whose education level was lower than secondary.
- The unemployment rate was much higher among the youth (15-29) as compared to that in the overall population.
- Among the educated youth, the unemployment rate was predominantly high in both the rural and urban areas : 267 and 208, respectively for females, and 133 and 91, respectively for males.

3.5 Underemployment :
- During 2004-05, the proportion of usually employed females who were found not to be employed during the week preceding the date of survey was 17 per cent in rural India and nearly 9 per cent in urban India. The corresponding percentages for usually employed males were 4 and 2 only.
- The proportion of person-days of the usually employed utilized for work, in the rural and urban areas, was estimated at about 66 per cent and 80 per cent, respectively for females, and 89 and 95 per cent, respectively for males.
- During 2004-05, in the age group 15 years and above, about 11 per cent of usually employed rural males and 6 per cent of usually employed urban males sought or were available for additional work. The corresponding percentages for females were around 7 in both the rural and urban areas.
- During 2004-05, about 5 to 9 per cent of the usually employed persons of different categories had reported availability for alternative work.

Labour Mobility :
- During the two years preceding the date of survey, about 1 per cent of the usually (ps) employed had changed their work status while about 7 (urban males) to 9 (rural females) per cent had changed their establishment.
- The proportion of persons who changed their establishment is much less among those with education level higher secondary and above as compared to those with lower levels of education – be it rural or urban area.
- About 1 per cent of usual status (ps) workers reported change in their industry of work during the two years preceding the date of survey.
- About 1 per cent of male workers and less than 1 per cent of female workers reported change in their occupation during the two years preceding the date of survey.

4 Observations on the report :

The NSSO deserves to be complemented for generating a useful wealth of data out of the **Employment and Unemployment Survey**. We are sure that the administrators, policy planners, research organizations and even individual research workers will use this data in their own way. The results of the survey in the form of report are very well presented. With the given changes taking place at the global level the report is very timely. The aim of the present paper is to provide some suggestions which will be a sort of value addition to the results already achieved on the survey.

4.1 A huge volume of data has been generated from the survey but the analysis of the data is restricted to working out only the descriptive statistics. Since standard error formulae are given in the estimation procedure but the same have not been reported alongwith the estimates in the report. In the absence of this information it is not possible to judge the reliability of the estimates, to test statistical hypothesis, to determine confidence to be placed in the estimate and also whether or not the sample size used are adequate. It is evident from the formulae given for the standard errors that the weights have not been used at all the stages. For example, estimates for the rural and urban areas are simply added to get overall estimates. Perhaps a weighted estimator would have been more appropriate. In this particular case number of first stage units in the rural and urban areas could have been used as weights.

4.2 The information available on the preceding surveys could be utilized by matching the sampling units between the surveys conducted at different time intervals. This way it is possible to work out the correlation between the matching sampling units. This correlation can be exploited to improve the precision of estimates for the current survey as well as for the estimates of change. Also, it is possible to modify the estimates with higher precision for the previous surveys in the light of data obtained for the current survey. Alternatively, it can result in reduction of survey cost at a prefixed or permissible precision and this saving in cost could have been used to collect data on some other important items of information thus enriching the scope for the survey subject coverage and for achieving more informative results.

4.3 The estimation of flow of households and population / labour force / work force / unemployment rate / underemployment / labour mobility in various classes thereof over time can be obtained by following the findings of an IASRI study. Broadly findings of IASRI study (i.e. the estimation of flow matrix **F**) can be used for spatially and temporally reorganizing the available / generated manpower / resources subject to the causal factors in various sectors identified for accelerative development. **It is also possible to study the flow of monthly employment status.**

Stationarity and both forward and backward mobility, of units or units' number/characteristic of a population between changing classes, thereof, over time or subject to some factors, together is defined as cross-movements, inter-classificatory movements of flow of units or units' number/characteristic within the population. As an illustration let N (the number of individuals in a population) be fixed during two years and $N_{1\bullet}$ and $N_{2\bullet}$ be the sizes of the population employed individuals' class and unemployed individuals' class respectively in the first year. Due to some causal factors it is observed in second year that N_{12} of $N_{1\bullet}$ become unemployed individuals retaining N_{11} as employed individuals whereas N_{21} of $N_{2\bullet}$ become employed individuals leaving N_{22} as unemployed individuals. The distribution / flow of N individuals in two classes according to their employment status during the two years, also known as Flow matrix **F** ($= \left[N_{ij} \right]_{2 \times 2}$), is schematically shown as follows:

II Year

Employment status	Employed	Unemployed	Total
Employed	N_{11}	N_{12}	$N_{1\bullet}$
Unemployed	N_{21}	N_{22}	$N_{2\bullet}$
Total	$N_{\bullet 1}$	$N_{\bullet 2}$	N

I Year

167

4.4 For estimating seasonal fluctuations in the labour market, occupation of work, etc. an appropriate successive sampling plan or repeat survey technique, which is cost/efficiency/scope effective, could be adopted for the data collection, estimation purposes and in the case of multi-stage sampling design too. Generally a successive sampling plan is followed in impact/ evaluation studies also it can be used successfully in the surveys which are seasonal, annual, quinquennial or decadal in nature as the **NSSO has been conducting the 'Employment and Unemployment Survey' regularly almost every year.**

4.5 An appropriate seasonal relationship, between the households income and their corresponding Monthly Per Capita Expenditure (MPCE) as close proxy for income, is required to be established so as to have an idea about the one on the basis of the availability of the other.

4.6 MPCE classwise population must be equal or more than the number of households. MPCE classes' formation seems to be arbitrary as regards the MPCE class interval width. Strata construction techniques could have been used. As such the MPCE classes (Rs.) used are : <235, 235-270, 270-320, 320-365, 365-410, 410-455, 455-510, 510-580, 580-690, 690-890, 890-1155, and equal to or above 1155.

4.7 About 22% rural male and female and 8% urban male and female received benefit from the four Government Schemes viz. Annapurna, ICDS, Mid-day meal and Food for work. The impact of these schemes on the households could have also been measured.

4.8 During latest two consecutive quinquennial (I.e. decadal) period (1993-2005) of 55th & 61st NSS rounds the usually employed male, female and persons were estimated as 55%, 33% and 44% in rural areas and in the urban areas the corresponding figures were 52-55%, 16-17% and 35-36% respectively apparently indicating the increasing employment trend despite the fast increase in the population during the period. The relationship trend in increase of employment and increase in population needs to be further studied.

4.9 Although change in the proportion of self-employed, proportion of casual labour and the proportion of regular employed among urban males have been reported, information on essentially required sample replacement pattern and the relevant estimator needs to be included in the report.

4.10 It is not clear whether average wage/salary earnings per day received by regular wage/salaried employees of active population in the age group of 15-59 years for different broad general education level have been estimated with reference to a base year so that these are comparable over different NSS rounds.

4.11 An emphasis is required to be laid down on the employment-unemployment situation exclusively of the youth and educated persons who do not accept the work other than that of their choice i.e. when they become choosers.

5 Conclusion : The all-India **Employment and Unemployment Survey** conducted by the NSSO provide useful information on rural/ urban households & population, labour force, work force, unemployment, underemployment and labour mobility. The data obtained through these surveys can be analyzed in variety of ways for drawing of inferences required for survey planning etc. The administrators and policy planners will find this data very useful for formulating effective policies and programmes for the target population. The further analysis of data on the basis of observations/suggestions made above can throw light on many other aspects.

REFERENCES :

1. Employment and Unemployment Situation in India 2004-05, NSS 61st Round (July 2004 - June 2005), National sample Survey Organization, Ministry of Statistics and Programme Implementation, Govt. of India.

2. Singh, Jagbir (2002). Estimation of flow and change in dynamic population. IASRI Publication.

Activity profiles of Children in India

P C Mohanan[*]

Abstract

[The employment-unemployment surveys conducted by the National Sample Survey Organisation (NSSO) provide detailed information on the activity profiles of persons. Though the primary purpose of recording the activity profiles is to identify the activities that can be categorized as economic activities leading to the identification of persons employed and those not employed., it is possible to gain information on several other non-economic activities. The activity profiles of children provide interesting aspects of school and out-of-school activities of children of different ages.]

I. INTRODUCTION: The 86th amendment to the Constitution of India was enacted to make free and compulsory education to the children in the age group 6 to 14 years, a Fundamental Right. Towards this end the Government of India has launched various programs including the flagship program Sarva Shiksha Abhiyan for achievement of universalization of elementary education in a time bound manner. Over the years there has been substantial increase in the percentage of children attending schools both in rural and urban areas and among male and female children. Increased school attendance also brings down extent of child labour. Data on school attendance is available both from the administrative sources and also from household surveys. Official statistics on school attendance are usually collected from the educational institutions and suffer from certain limitations. Data on school attendance collected from household surveys, however, are free from agency bias, but may not be useful to distinguish attendance in the recognized curriculum streams, in view of the variety of schooling available in the country. This also implies that the household surveys have a distinct advantage as it provide a complete picture of school attendance among children. It is also necessary to distinguish school enrolment and attendance. The official statistics generally provide figures of school enrolment which may not translate into school attendance. One of the important sources of information on the participation of persons on a wide range of economic and non-economic activities is the National Sample Surveys of NSSO. In particular the quinquennial surveys on employment-unemployment conducted by NSSO follows a well tested methodology for recording the activity profiles of the household members as also current attendance in different levels.

In the NSS, activity profiles are recorded using three different reference periods, the usual status, current weekly status and the current daily status. The usual principal status has a reference period of one year and uses the major time criteria. In case of persons pursuing multiple activities a priority cum major time criteria is used. Considering that the weekly and daily status recording takes in to account much shorter duration, where the priority criteria would not take into account the normal or usual activity status, the usual status, especially the principal usual status is more suited for understanding the activity profiles of persons better. This is especially important if one is interested to look at the school attendance, which in rural areas may still be dictated by the needs of agricultural operations.

The activity classification used consists of three broad categories viz. employed, unemployed and those not-in-labour-force. The detailed classification for recording the usual status and the codes used   by NSS are as follows:

In the first category i.e. those pursuing economic activities or the activities of the employed the categorizations are:

i. *Working* in household enterprise (self-employed)[1]:
        own account worker -11
        employer-12,
        unpaid family worker -21,
ii. Working as regular salaried/wage employee-31

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[1] Initially NSSO did not separate own account workers and employers and one single code was used for identifying these two. However from the 1993-94 survey (corresponding to 50th round of NSS), a separate code was used for the Employers. The current weekly and current daily status classification also follows the above divisions but also includes a few additional codes to take in to account for persons temporarily staying away from certain economic activities due to leave or sickness etc, which are not relevant when one adopts a longer reference period as in usual status.

iii. Working as casual wage labour: in public works-41, in other types of work-51;

Unemployed

Did not work but was seeking and/or available for work-81,

Out of labour Force
i. Attended educational institution-91,
ii. Attended domestic duties only-92
iii. Attended domestic duties and was also engaged in free collection of goods (vegetables, roots, fire-wood, cattle feed, etc.), sewing, tailoring, weaving, etc. for household use-93,
iv. Rentiers, pensioners, remittance recipients, etc.-94
v. Not able to work due to disability-95
vi. Beggars, prostitutes-96
vii. Others-97

In this paper we concentrate on the activity profiles of persons in the age 5 to 24 years when most of them are expected to be attending educational institutions. For this we the activity statuses are tabulated for each age from the basic data. However this has to contend with the problem of digit preferences in age reporting.

Digit preference in age reporting

Tabulation of age data for each single age of the 61st round clearly shows that there are larger percentage of persons of ages that are multiples of 5 starting from age 10. For example there are 1.88 percent of rural males reporting age 9 and 1.76 percent reporting age 11 whereas there are 3.37 percent reporting age 10. This is observed for both males and females in rural and urban areas. However this should not normally be a problem when we look at the distribution of persons by different activity statuses for each age group. If the digit preference is more among illiterate members or households with illiterate members then there is a chance that there would be more people not attending educational institutions for these preferred ages.

II. School attendance: In the NSS, the status attending educational institutions does not necessarily imply formal recognized school streams, allowing more accurate description of the activity profiles. For example attendance in schools by children of five years would mainly mean attending nursery schools etc. However the level of school attendance including information on attendance in the past is separately ascertained, providing another set of information relating to participation in education. Second, the definition of usual status encompasses the concept of enduring status and therefore temporary absence from an activity would not matter. Lastly the concept is applied to a variety of activity statuses ranging from different types of employment, unemployment, out of labour force activities, which are mutually exclusive, making simultaneous comparisons possible.   In the next four tables the percentage of children in the different activities are presented for boys and girls for rural and urban sector. Since the percentages in the categories of rentiers, pensioners, remittance recipients, disabled, beggars, prostitutes etc are negligible at the national level these are omitted. Therefore the residual share would consist of those recorded as 'others'

Table 1a: Distribution of persons by activity-NSS 61st round

age	Activity status for NSS 61st Round									
	11	12	21	31	41	51	81	91	92	93
					RURAL MALE					
5								55.11	0.10	0.05
6			0.07					78.79	0.01	0.08
7	0.02		0.06					88.69	0.06	0.11
8	0.06		0.08			0.08	0.01	89.11	0.15	0.09
9	0.15		0.29	0.01		0.15	0.00	94.14	0.05	0.24
10	0.21		0.80	0.02		0.29	0.03	89.68	0.14	0.13
11			1.01	0.09		0.41	0.04	93.76	0.01	0.23
12	0.49		2.81	0.22		1.44	0.09	86.32	0.16	0.74
13	0.35		3.98	0.46		2.69	0.43	85.76	0.14	0.61
14	0.52		6.42	0.93		5.10	0.90	80.16	0.21	0.66

170

Table 1a: Distribution of persons by activity-NSS 61st round

age	Activity status for NSS 61st Round									
	11	12	21	31	41	51	81	91	92	93
15	1.81		11.00	1.83		12.67	2.03	65.32	0.37	0.56
16	2.40		15.11	2.40		17.66	3.18	55.03	0.36	0.49
17	3.10	0.07	16.12	3.15	0.16	20.71	4.42	48.94	0.41	0.32
18	5.33	0.09	23.27	4.40	0.13	26.90	4.42	32.68	0.48	0.40
19	7.29	0.02	22.23	5.31	0.11	25.75	6.59	30.17	0.72	0.44
20	9.95	0.02	28.74	6.42	0.03	29.73	4.78	17.88	0.49	0.42
21	12.29	0.07	27.21	8.49	0.23	28.49	6.86	14.37	0.08	0.01
22	15.61	0.09	29.33	7.59	0.09	33.04	5.36	7.34	0.32	0.24
23	16.68	0.22	27.60	10.26	0.19	30.87	5.69	7.17	0.10	0.27
24	18.60	0.45	28.01	9.03	0.20	33.89	5.09	2.99	0.14	0.30

We first look at the profiles of children and the youth in the age group 5 to 24 years as obtained from the 61st round of NSS corresponding to the reference period 2004-05, which are the latest survey results currently available. Table 1a gives the distribution of persons of ages between 5 and 24 by different usual activity statuses for rural males. The important activity statuses we need to look for children between 5

and 24 are 'currently attending educational institutions' (91) and those relating to work viz 11, 21 and 51 corresponding to working as own account worker, unpaid family worker and casual worker respectively. We do not generally expect to find persons of this age group in activity statuses like employers, retired persons, regular salaried worker etc.
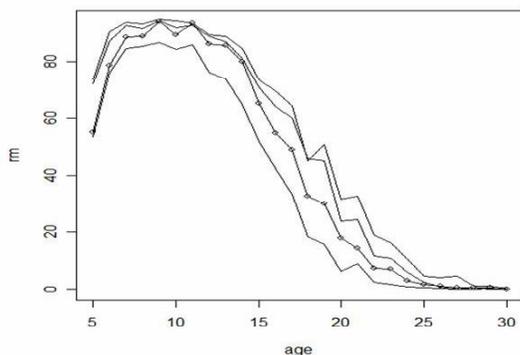
Slightly over half of the children aged 5 years are found attending educational institutions. This should roughly correspond to the actual number who enrolls at the age of 5 years in educational institutions as there would be no drop outs for this age. The percentage of children in educational institutions increases to 79 percent for those of age 6, and steadily rises to 94 percent for those of age 9

years. The figures for those aged 10 years show a slightly different situation. The share of those in education is lower than those for ages 9 and 11 breaking the monotonous increase or decrease expected.. For them, the percentage in the residual category 'others', is higher than that for 9 and 11 years. One cannot discount the effect of age reporting bias while looking at the age wise activity profiles. After the age 9 we find a monotonous decrease in those attending the educational institutions. The percentage drops steeply after the age 14. At the age 14, we find that only 80 percent are in educational institutions, 6.4 percent are employed as unpaid family workers in household enterprise and 5 percent are working as casual labour and 5 percent are found not doing any economic activities. For those of age 15, these percentages are 65, 11 and 12.7 respectively. For higher ages the percentage of persons in educational institutions decreases and those employed increases and of the persons in the age group 18, as high as 60 percent are in employment, and only around 32 percent are in educational institutions. Percentage of those who are seeking or available for work is only 4.4 percent.

Thus in the rural sector, we observe that the children move out of the educational institutions to take up employment at a fairly young age. As expected, the employment is mostly in the family enterprises and as casual worker.

Table 1b gives the distribution of different activity statuses pursued by rural girls. The girls unlike the boys leave the educational institutions to join household chores. While three fourth of the girls of age 12 are in educational institutions, already 12 percent are engaged in household chores. For girls of age 15 years the percentage in schools is just 52 percent. 28 percent are in their homes engaged in household chores. Just as in the case of boys, the employment is mostly in household enterprises as unpaid worker (6.7 %) and as casual workers (7.2%). Only around 18 Percent of the rural girls of age 18 are in educational institutions. 52 percent are at home. Only 15 percent are in employment.

171

The graph shows the lines plotting age and attendance for persons in the age group 5 to 30. The inside graph is for rural females, followed by rural male, urban female and urban male, The steep fall in attendance is noticed around the age of 14 years, except for rural females for whom it starts an year earlier. For a vast majority of the young people in the rural areas the school life is rather short by universal standards, lasting a mere six to seven years.

The highest attendance is seen at the age of nine for both boys and girls. It is 94 percent for boys and 87 percent for girls. Since fresh enrollment beyond the age of nine is unlikely, the remaining boys and girls of this age are unlikely to prosecute any further education. Of course it is quite possible, but much unlikely, that some of them might have attended schools for a year or two earlier.

Since the attendance keeps increasing till the age 11 we have to accept that many of the children enroll at a much later age than the generally accepted age of 6 years for admission to Class I. Further since the attendance drops after the age 11, which roughly correspond to the completion of primary level, if one join the first standards at the age of 6 (which again does not happen looking at the data), we may surmise that a large number do not go beyond the primary stage.

Table 1b: Distribution of persons by activity-NSS 61st round

age	Activity status for RURAL FEMALE

age	11	12	21	31	41	51	81	91	92	93
5	0.01					0.01		53.60	0.01	0.12
6	0.00					0.09	0.02	76.31	0.03	0.00
7	0.00						0.05	84.70	0.29	0.36
8	0.08							85.67	0.49	0.21
9	0.03					0.06	0.03	86.97	0.97	0.67
10	0.23					0.39	0.00	84.40	2.20	1.44
11	0.28		1.34			0.59	0.01	86.15	2.85	2.35
12	0.32		2.07	0.19		1.53	0.13	76.42	5.99	5.28
13	0.52		4.05	0.22		2.30	0.06	73.91	7.41	6.77
14	0.66		4.88	0.25	0.04	4.81	0.39	64.66	10.21	9.97
15	0.86		6.68	0.44	0.03	7.21	0.82	52.03	13.04	15.45
16	1.72		7.94	0.92		9.17	0.59	42.58	17.89	17.01
17	2.06		10.56	0.98	0.01	11.17	1.59	33.25	22.91	16.26
18	2.66		12.01	1.02	0.02	10.41	2.63	18.35	28.96	23.03
19	2.64		11.71	1.37	0.06	11.19	2.25	15.88	30.96	22.93
20	2.32	0.05	12.91	1.03	0.04	11.10	2.13	6.40	36.02	26.85
21	2.16		10.45	1.85	0.07	9.47	4.62	9.02	33.75	27.70
22	2.18		13.19	1.27	0.03	12.50	2.86	2.39	32.54	31.76
23	3.35	0.03	12.52	2.12	0.00	11.64	3.85	1.81	34.09	30.27
24	3.14	0.03	13.75	2.43		11.88	2.53	0.82	32.25	32.62

Almost three-fourth of the urban boys aged five years are attending schools. For urban girls of five years the percentage in schools is a close 72 percent. Almost 95 percent of the children aged nine years are in the schools. Thus we observe that the gender difference is not very prominent as far as the starting age for school attendance is concerned in both rural and urban sector are concerned. There could be however large differences at sub-national levels.

It is interesting to not that while the boys, after leaving schools gravitate towards the left of the table (corresponding to employment activity statuses) the girls move to the right (corresponding to non-economic activity statuses i.e performing household chores)

While as high as 94 percent of the boys of age 11 years are in school in urban areas, only around 70 percent of the boys of age 16 years are in education. This is the age when generally one completes the secondary school level. About 20 percent of the boys aged 16 years are in employment, one third of them reporting regular wage employment.

Table 1c: Distribution of persons by activity-NSS 61st round

age	Activity status for URBAN MALE

age	11	12	21	31	41	51	81	91	92	93
5								74.04	0.11	
6								90.55	0.00	
7								93.97	0.08	
8	0.03		0.08	0.07		0.04		93.43	0.16	
9	0.16	0.01	0.33	0.08		0.13	0.40	94.94		
10	0.04		0.15	0.04		0.50	0.32	94.34	0.20	0.11
11	0.32		0.20	1.29		0.40	0.19	93.60	0.35	0.00
12	0.12		1.12	1.78		0.99	0.38	89.63	0.37	0.14
13	0.48		1.47	2.54		1.37	0.62	88.98	0.10	0.20
14	1.15		2.57	2.81		2.50	1.14	84.69	0.27	0.05
15	1.14		5.70	5.57		6.87	2.05	73.55	0.32	0.12
16	3.34		4.92	7.26		6.55	4.77	69.53	0.32	
17	2.60	0.01	6.21	10.85	0.03	7.92	4.44	64.52	0.61	
18	5.82	0.24	10.90	16.44	0.08	11.88	7.05	45.12	0.55	0.14
19	6.36	0.09	8.70	15.02		10.16	7.15	50.80	0.31	0.01
20	9.82	0.29	10.62	21.25	0.02	15.57	8.67	31.67	0.39	
21	10.84	0.60	11.45	24.22		9.73	8.52	32.85	0.11	
22	13.13	0.30	13.21	28.73	0.05	14.63	9.40	18.97	0.11	0.16
23	13.83	0.37	12.62	30.29	0.04	13.18	11.82	16.39	0.20	0.38
24	16.66	0.71	14.15	31.55	0.08	15.24	9.84	10.74	0.18	0.15

For urban girls of age 16 years, we find only 64 percent in schools. 25 percent of urban girls are reporting as doing household chores and do not get counted as in labour force. As against 20 percent of urban boys only 7.5 percent of urban girls of age 16 years are in employment.

Table 1d: Distribution of persons by activity-NSS 61st round

age	URBAN FEMALE

age	11	12	21	31	41	51	81	91	92	93
5				0.13				72.35		
6								87.43	0.13	
7								92.78	0.12	
8			0.21	0.01				91.64	0.31	0.20
9			0.20	0.05		0.03		94.37	1.15	
10	0.13		0.37	0.06		0.10		92.13	1.71	0.29
11	0.30		0.41	0.11		0.05	0.01	92.84	1.32	0.12
12	0.08		1.16	0.89		0.28	0.01	88.97	3.83	1.18
13	0.53		1.24	0.73		0.43		87.10	5.97	2.11
14	0.63		2.22	1.23		0.73	0.75	81.11	7.91	2.78
15	0.91		1.74	2.57		1.31	0.45	70.87	16.35	3.82
16	0.86		2.67	2.46		1.98	1.52	64.18	20.13	4.03
17	1.40		2.73	2.17		3.27	1.59	60.04	22.06	5.61
18	2.65	0.01	2.83	4.81		1.87	2.26	46.08	28.96	9.45
19	1.23		3.23	4.29		1.13	2.93	45.23	31.74	8.11
20	2.15		3.58	5.52	0.01	2.37	4.08	23.76	44.13	13.39
21	1.68	0.35	4.15	8.41		1.75	6.79	24.37	37.31	14.49
22	2.06		2.91	6.89		1.65	5.02	11.64	55.97	13.05
23	2.30		3.84	8.01		2.33	7.42	10.90	49.86	14.82
24	3.33	0.08	3.23	9.81		2.68	5.16	6.12	51.40	17.22

III. Attendance in educational institutions beyond schooling: We may also look at the percentage of boys an girls reporting attending educational institutions for the ages 18 when generally they would be

attending college or other technical institutions after their higher secondary level. The data for the last four rounds starting from 1987-88 are summarized below.

During the last two decades, though there is an increase in the percentage of 20 year olds reporting attendance, which should roughly correspond to attendance in some higher educational or vocational stream, the increase is not spectacular for any of the four categories considered.

The results for the years 18 and 19 are not very specific as the attendance in schools (higher secondary level) and higher educations (colleges or vocational streams after higher secondary are likely to get mixed in the survey reporting.

Table 2: Percentage of children aged 18, 19 and 20 years reporting usual status as attending educational institutions

Round/period	Rural boys	Rural girls	Urban boys	Urban girls
Aged 18 years				
1987-88	21.43	6.09	42.74	27.93
1993-94	25.57	9.50	46.12	38.09
1999-00	29.03	14.05	46.38	39.47
2004-05	32.68	18.35	45.12	46.08
Age 19 years				
1987-88	17.86	5.65	41.49	27.55
1993-94	23.03	8.94	45.41	35.58
1999-00	27.42	11.28	46.78	36.04
2004-05	30.17	15.88	50.80	45.23
Age 20 years				
1987-88	9.40	1.91	28.46	14.38
1993-94	11.59	2.85	31.39	19.87
1999-00	14.95	4.78	32.30	24.21
2004-05	17.88	6.40	31.67	23.76

IV. Children in employment: The activity profiles of children in different ages also provide a picture of children in employment. We need to remember that the profile presented is the 'usual profile' and not any current profile observed during the survey. In table 3 the percentage of children in different employment activities are reported. We find that child employment generally start at the age of 9 years. Roughly one out of 100 children aged 11 years are working. The work participation goes up to 11 to 12 percent for rural children of age 14 years. Over 6 percent of the urban boys and 3.5 percent of the urban girls of 11 years are in employment.

Table 3: Percentage of children in different employment activities for each age

	Type of employment- NSS 61st round											
age	unpaid	casual	others	unpaid	casual	others	unpaid	casual	others	unpaid	casual	others
	Rural boys			Rural girls			Urban boys			Urban girls		
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.2	0.0	0.0
9	0.3	0.1	0.2	0.0	0.1	0.0	0.3	0.1	0.2	0.2	0.0	0.0
10	0.8	0.3	0.2	0.0	0.4	0.2	0.1	0.5	0.0	0.4	0.1	0.1
11	1.0	0.4	0.0	1.3	0.6	0.3	0.2	0.4	0.3	0.4	0.1	0.3
12	2.8	1.4	0.5	2.1	1.5	0.3	1.1	1.0	0.1	1.2	0.3	0.1
13	4.0	2.7	0.3	4.1	2.3	0.5	1.5	1.4	0.5	1.2	0.4	0.5
14	6.4	5.1	0.5	4.9	4.9	0.7	2.6	2.5	1.1	2.2	0.7	0.6

As is to be expected major type of employment is as unpaid worker in family run enterprises and to some extent in casual work. However what is heartening to note is the decrease in the percentage of children in employment over the years. The Children reporting employment in 1987-88 are as given below in table 4.

We find that during 1987-88 there were significant reporting of children in employment even at the age of 5 years and in rural areas as high as 32.6 percent of boys and 29.4 percent of girls of age 14 years reported employment. These figures for the current survey (2004-05) are 12 percent for boys and 10.5 for girls. Obviously the increased attendance in educational institutions keeps them away from employment.

Table 4: Percentage of children in employment during 1987-88

Age	Rural boys	Rural girls	Urban boys	Urban girls
5	1.38	1.60	0.22	0.08
6	1.78	2.19	0.03	0.16
7	1.84	1.97	0.34	0.16
8	2.90	2.78	0.80	0.34
9	4.19	3.91	1.28	1.04
10	10.08	9.72	3.38	2.36
11	12.23	13.68	3.41	2.97
12	20.53	19.34	8.46	4.82
13	23.43	24.05	8.91	5.38
14	32.57	29.44	12.72	7.10

V. Nowhere children: Children are generally expected to be in educational institutions or in not so rare cases in employment. However many of them may not be found in these activities and are therefore called 'no where' children. Generally these children especially girls would be at their homes doing domestic work. Most of them would be in categories like attending domestic duties (codes 92 and 93), beggars etc (96) or in other category (code 97). The percentages of such children for different ages are given in table 5.

As we have seen there is large scale non-enrollment in the ages 5 and 6, which is why for children of age 5 the percentage is quite large.

Table 5: Percentage of children who are neither in schools nor in economic activities

age	Rural boys	Rural girls	Urban boys	Urban girls	age	Rural boys	Rural girls	Urban boys	Urban girls
5	44.88	46.38	25.96	27.52	10	8.97	14.26	4.62	7.21
6	21.14	23.53	9.45	12.57	11	4.68	11.63	3.99	6.27
7	11.22	15.19	6.03	7.22	12	8.64	19.34	5.98	8.60
8	10.66	14.07	6.34	8.14	13	6.33	18.93	4.54	9.97
9	5.27	12.80	3.94	5.36	14	5.97	24.30	5.14	13.33

However the children who are neither in the schools nor economically active are still quite sizable.

VI. Household types and activity statuses: In the rural areas lowest reporting of 'attending educational institutions' is from children coming from households that derives major share of their income from self employment in non-agricultural activities. Further children in employment are seen to be much higher in the households that are self employed in agriculture or in other labour where most of them report unpaid work.

In the urban areas lower attendance is reported from casual labour households. Employment being reported more by self employed households, where again the children are in the unpaid family helper category.

Table (6): Distribution of children in the age-group 5 to 14 by activity statuses for different household types

hh type	11	12	21	31	41	51	81	91	92	93	94	95	97
Rural Male													
Self-employed in agri	0.23		2.09	0.22		0.44	0.21	84.48	0.10	0.21		0.37	11.64
self employed in non-agri	0.26		0.69	0.22		2.79	0.18	76.43	0.22	0.37		0.32	18.51
agri lab.	0.22		0.89	0.33		1.35	0.30	81.23	0.09	0.40		0.48	14.71
Other lab	0.15		2.21	0.07		0.11	0.05	86.73	0.07	0.26		0.25	10.10
Others	0.03		0.09	0.06		0.07	0.04	91.78	0.01	0.21		0.26	7.45

Table (6): Distribution of children in the age-group 5 to 14 by activity statuses for different household types

hh type	11	12	21	31	41	51	81	91	92	93	94	95	97
Rural female													
Self-employed in agri	0.31		1.24	0.03		0.30	0.09	78.63	2.72	2.16	0.01	0.15	14.37
self employed in non-agri	0.29		0.57	0.08		2.95	0.10	69.14	3.69	3.50		0.33	19.34
agri lab.	0.11		0.67	0.31	0.04	1.02	0.09	75.50	3.69	2.20		0.25	16.12
Other lab	0.17		2.05	0.03		0.06	0.05	79.42	2.58	2.64	0.01	0.11	12.89
Others	0.03		0.41	0.02		0.13	0.02	87.17	1.67	1.07		0.21	9.27
Urban male													
self employed	0.25		1.30	0.39		0.42	0.32	89.19	0.17	0.07		0.16	7.73
regular salaried	0.14		0.02	1.43		0.11	0.21	93.45	0.13	0.02		0.10	4.38
Casula Labo	0.44		0.08	1.39		2.89	0.68	77.94	0.34	0.11		0.32	15.82
Others	0.02		0.09	0.05			0.01	94.74	0.05		0.10	0.30	4.63
Urban female													
self employed	0.08		1.18	0.21		0.05	0.02	87.92	2.48	0.64		0.24	7.17
regular salaried	0.13		0.12	0.46		0.07	0.20	91.18	1.56	0.47		0.14	5.67
Casula Labo	0.64		0.23	0.62		0.92	0.01	78.01	4.71	1.73		0.50	12.63
Others	0.03		0.20			0.03		93.01	1.04	0.63	0.18	0.14	4.73

VII. Level of school attendance: The Employment surveys also provide information on the level of school attendance for each person. Tables giving age-wise school attendance for the 55th and 61st round are given in the Annex (Tables B1 and B2). Generally it is expected that children start attending primary classes at the age of six years. In 1999-2000 only 46 percent of the six year old rural boys were attending primary classes with 21 percent were still attending pre-primary classes and 31 percent had never attended any schools. However the good news is that in 2004-05, 70.7 percent of the six year old rural boys were attending primary classes with only 7 percent in pre-primary classes. The percentage of six year olds who never attended any educational institutions decreased to 20.7 percent.

Only 41 percent of six year old rural girls were in primary classes in 1999-00 and this percentage increased to 69.6 percent in 2004-05, which is close to the percentage of boys attending primary classes.

In urban areas 51.6 percent of the boys and 50 percent of the girls of age six years were attending primary classes in 1999-2000 and this has increased to 77.9 percent and 76.6 percent respectively. However in urban areas the percentage of children attending pre-primary classes at the age of six years is quite significant. In 1999-2000 28.6 percent of boys and 26.6 percent of the girls were in pre-primary classes. This however decreased to 11.9 and 11.0 percent respectively in 2004-05. Possibly the urban children attend pre-primary classes at an earlier age than in the past.

The results thus indicate that the gender discrimination in sending girls to school is perhaps coming down.

VIII. Withdrawal from schooling: As we have seen the children up to the age of 10 get in and out of schools. However no fresh enrolment by children aged 10 years and above is expected. Therefore it is possible to compare the school attendance of children aged 10 years in 1999-2000 and five years later to get an idea of the extent of children dropping out of schools. 81.6 percent of the rural boys aged 10 years were attending school in 1999-200 and during 2004-05 we find only 65.3 percent of those aged 15 years attending educational institutions i.e about 20 percent has dropped out of studies. The percent of rural girls of age 10 years in 1999-2000, percentage dropping out in the next five years is about 24 percent. For urban children the corresponding figures are 21 percent and 18 percent for boys and girls. Thus for this age, we do not observe much rural-urban or gender differentials

From the data relating to level of school attendance it is also possible to look at the above from a different angle. 54.5 percent of the rural boys were in primary school in 1999-2000. Ideally we would expect the same percentage to be in secondary classes five year later i.e. in 2004-05, but for the dropouts and

repeaters. This can be checked from the school attendance for the 15 year old boys in 2004-05. We find among this cohort only 42.5 percent in secondary and higher secondary classes[2].

The percentage of children below the age of 15 years reporting 'attended in the past' is also a measure of dropping out as these children are unlikely to have completed secondary school which is the basic level expected to be completed. The percentage of children reporting 'attended in the past' is 2.8 for rural boys aged 10 and is 6.1 for boys aged 12. This steadily climbs to 10.7 for 13 years old and is as high as 20 percent for 15 years old. The percentage of rural girls of age 15 years (roughly corresponding to those dropping out before matriculation) is 23.4 percent. For urban boys this percentage is 18.5 for boys and 19.7 for girls. However for urban areas the chances that 15 years old has completed matriculation would be much higher due to early start of school attendance.

IX. Other estimates of 'out of school children': Department of Elementary Education, Ministry of Human Resource Development had conducted a study by Social and Rural Research Institute IMRB International using the same samples as those in the 61st round of NSSO[3]. The object of the survey was to get quick estimates of the number of out of school children. While the 61st round was conducted during the period July 2004 to June 2005, the SRI-IMRB study was during July – October 2005.

Table 7: All India percentage of 'out of school children' in the age group 6–13 years as per NSSO and the SRI-IMRB study

	Out of school children in the age group 6 – 13 years			
	As per 'SRI-IMRB study'		As per NSS 61st round*	
	rural	urban	rural	urban
Boys	6.78	4.33	12.1	7.7
Girls	9.14	4.36	18.4	9.1
	Out of school children of age 5 years			
	As per 'SRI-IMRB study'		As per NSS 61st round* (figures in bracket are for 6 years old children)	
	rural	urban	rural	urban
Boys	22.63	10.77	45.89 (21.21)	25.06(9.45)
Girls	24.22	11.38	46.40 (23.69)	27.75(12.57)

Source: Table A1 and C41 of the SRI-IMRB Report
* The figures are the percentages of children reporting principal status other than '91'. In fact the percentage of children reporting 'never attended' and 'dropped out' for the age group 6-13 years are also identical.

The figures computed from the NSS are almost double that of the figures obtained by the SRI-IMRB survey for the 6 to 13 years age group. For the children aged 5 years, the out of school percentage from the SRI-IMRB survey is less than half of that in NSS. Compared to NSS, the SRI-IMRB study rather excludes certain category of children attending unrecognized madrassas, informal Sanskrit schools etc for the scope of schooling. Some possible reasons for this difference could be the different survey periods and survey methodologies. While the survey period of the study is slightly later compared to the 61st round, the fact that the study covered the four months closer to the commencement of the school year could have a bearing on the lower percentage of children reporting 'out of school'. In the NSS, the adoption of the usual status with a long reference period of one year substantially removes the seasonality aspect in the reporting.

In the SRI-IMRB survey the age of children is reported in years completed as on 1st July 2005. i.e. the age of a child born between 1/07/1999 and 30/6/2000 would be recorded a five years. In the NSS, the age is the completed years as on date of the survey, which is a moving date. The comparability of the figures in table 7 therefore appears to be much influenced by the manner of age reporting.

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[2] In general we have the rough identity that for children of age 'n' years in 61st round
$A_{61}^{n}=A_{55}^{n-5}-P_{61}^{n}+(X_{55}^{n-5}-X_{61}^{n})$ Where A_{61}^{n} is the percentage of children of age n years attending schools in the 61st round, P_{61}^{n} is the percentage of children reporting 'attended in the past' in 61st round and X_{61}^{n} is the percentage of children reporting 'never attended'

[3] Report of the study is available at http://ssa.nic.in/research/outschool.asp

177

X. Concluding observations: Analysis of the age wise activity profiles provides interesting highlights of the 'school' and 'out of school' activities of children. The availability of regular survey data helps in understanding the changing activity patters over time and age group. The highest attendance is seen for the age 9 years. Generally the percentage of children in schools falls steeply after the age 11, indicating that there are substantial dropouts from the schooling system. While employment is an activity for out of school children, there are still children who are neither in employment nor in schools. This is much higher for girls, who are mainly in household activities after being out of school. Enrolment of children in regular primary schools at the age of six has improved over the years. However a very large proportion of children do not go beyond secondary level and over the years the proportion who attends higher studies has not increased in comparison to the increase in enrollment in the schools. Withdrawal from schooling is quite significant with almost 20 percent of all children of age 10 years in 1999-2000 withdrawing from schooling during the next 5 years.

As far as the percentage of children attending pre-primary and primary schools is concerned, there is not much gender difference.

The percentage of children in employment has decreased substantially during the last two decades with practically no reporting of child labour till the age of 8. Significant participation in work among children is generally after the age of 10. Most of the child employment is as unpaid family worker in household enterprises.

Disclaimer: The views expressed if any in this paper are personal. The tables were generated from the unit level data of NSS employment surveys.

Appendix:

1. **Charts showing percentage of children in educational institutions for different NSS rounds separately for rural male, rural female, urban male, urban female**
2. **Distribution of children by activity for each age for different NSS rounds (Tables A1 to A4 corresponding to NSS 43rd, 50th, 55th and 61st rounds)**
3. **Distribution of children by level of school attendance (Tables B1 & B2 corresponding to NSS 55th and 61st rounds)**
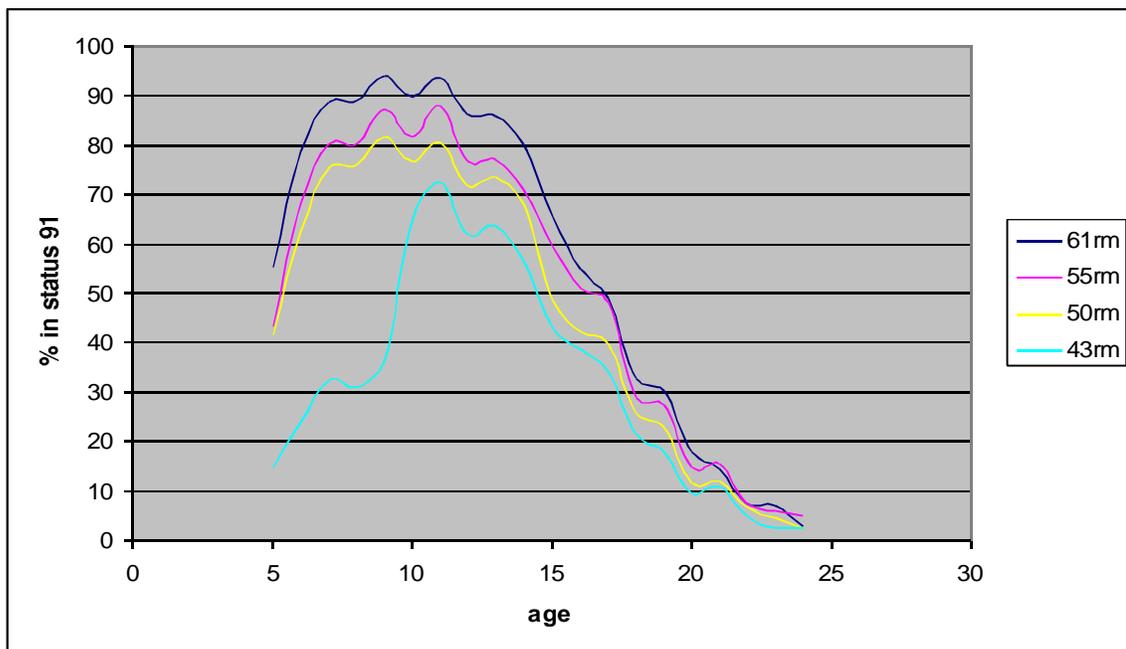
Charts showing percentage of children of different ages attending educational institutions

rural female

Charts showing percentage of children of different ages attending educational institutions

Urban Male

urban female
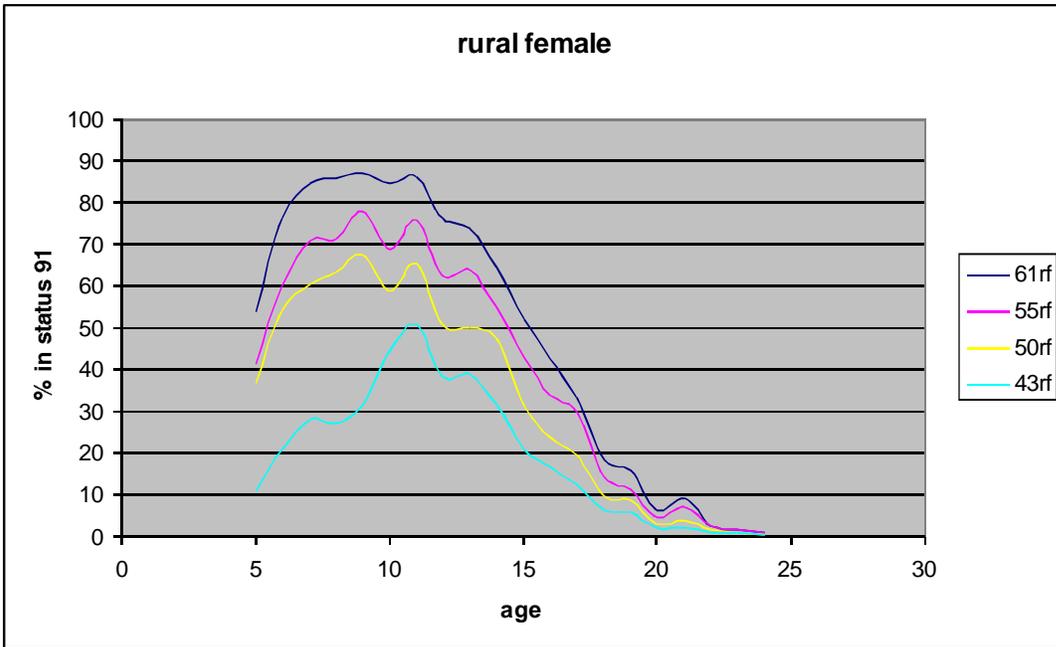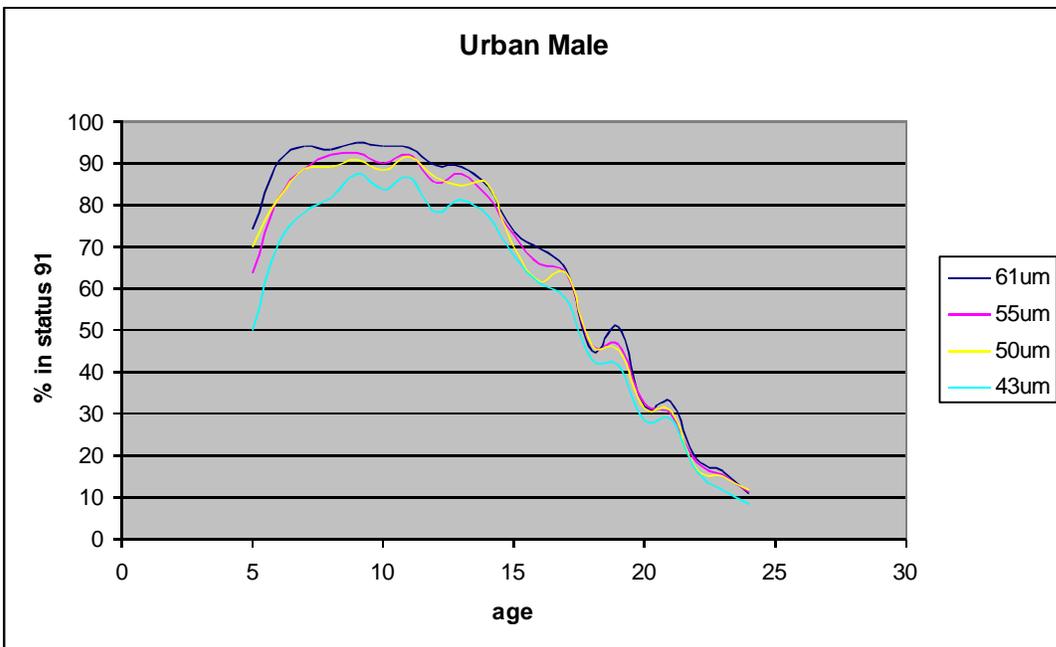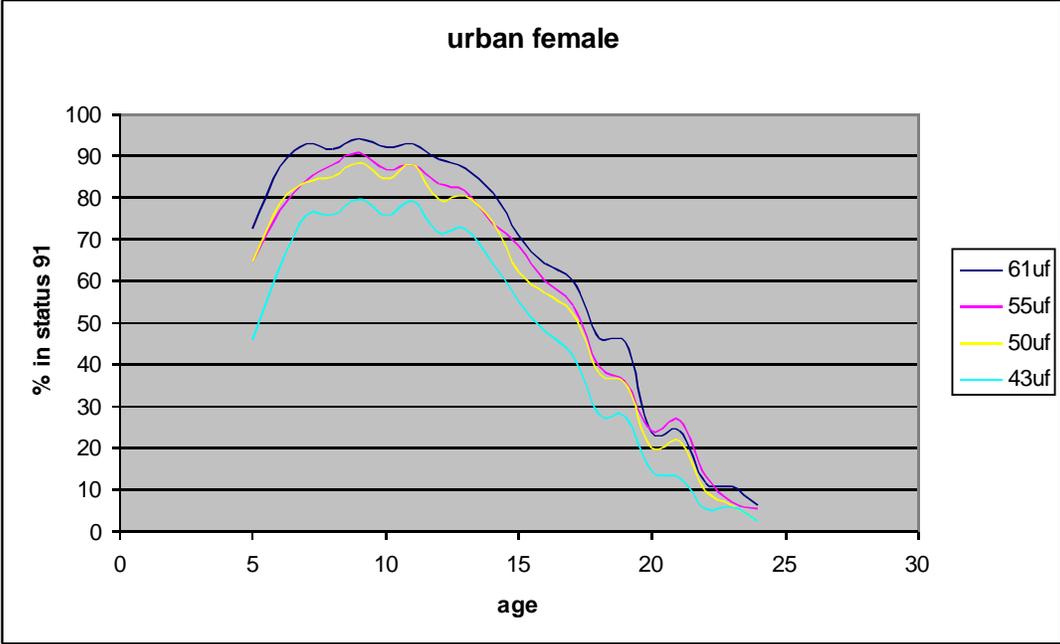
Charts showing percentage of children of different ages attending educational institutions

Annex I

Table A1: Distribution of persons by activity for each age -NSS 43rd round - RURAL

Age	11	21	31	41	51	81	91	92	93	94	95	96	97	99	Total
						Rural male - 43rd round									
05	1.34	0.04					14.85		0.06	0.02		0.02	32.07	51.59	100
06	1.60	0.10	0.02	0.01	0.04		23.99	0.04	0.00			0.03	22.07	52.08	100
07	1.51	0.28	0.02		0.04	0.00	32.57	0.02	0.09		0.01	0.02	14.73	50.72	100
08	2.00	0.48	0.25		0.17	0.02	30.96	0.09	0.08		0.09	0.03	14.31	51.51	100
09	2.73	0.87	0.25		0.34	0.01	36.27	0.06	0.07				9.42	49.99	100
10	4.80	2.67	1.02		1.60	0.08	64.66	0.66	0.94	0.02	0.15	0.05	23.35		100
11	6.62	2.67	1.04		1.90	0.14	72.50	0.40	1.15		0.16	0.03	13.39		100
12	8.13	5.50	1.88	0.09	4.94	0.17	61.97	0.94	1.18		0.16	0.04	15.00		100
13	9.96	6.47	2.02	0.15	4.84	0.37	63.70	0.56	1.02		0.26	0.05	10.62		100
14	12.32	8.80	2.40	0.38	8.66	0.75	56.52	0.67	0.79	0.04	0.22	0.10	8.35		100
15	15.54	12.97	3.43	0.33	16.65	1.39	43.05	0.51	0.63	0.02	0.35	0.04	5.09		100
16	17.02	13.94	4.36	0.49	17.37	2.50	38.63	0.64	0.38		0.49	0.05	4.12		100
17	18.60	13.99	4.92	0.64	19.21	3.57	34.29	0.81	0.41		0.69	0.02	2.85		100
18	24.79	16.85	4.60	1.02	24.78	3.23	21.43	0.54	0.37		0.35	0.02	2.02		100
19	25.45	16.38	6.14	0.91	24.44	5.82	17.86	0.48	0.17		0.22		2.12		100
20	28.67	17.90	6.70	0.94	29.79	4.13	9.40	0.50	0.31	0.01	0.30		1.35		100
21	29.36	16.80	7.05	0.82	27.30	6.69	10.95	0.22	0.12		0.12		0.57		100
22	32.74	15.56	7.49	0.92	32.44	4.23	4.81	0.30	0.29	0.03	0.55		0.63		100
23	37.14	15.79	7.76	0.67	29.76	5.12	2.58	0.22	0.12		0.22		0.58	0.04	100
24	36.38	14.72	10.49	1.04	29.03	4.47	2.42	0.30	0.06		0.60		0.43	0.03	100
						rural female-43rd round									
age	11	21	31	41	51	81	91	92	93	94	95	96	97	99	Total
05	1.56	0.01			0.04		10.82	0.05	0.02		0.02		36.56	50.93	100
06	2.05	0.07			0.08		20.75	0.15	0.11		0.03	0.03	26.89	49.85	100
07	1.83	0.12			0.02		28.01	0.33	0.10				18.95	50.64	100
08	2.10	0.32			0.35		26.93	0.81	0.58		0.02	0.01	18.64	50.23	100
09	2.34	0.77	0.08		0.72		31.45	1.31	1.58	0.03	0.01	0.00	13.61	48.09	100
10	4.96	2.24	0.21	0.06	2.25	0.03	44.49	5.16	5.49		0.06	0.13	34.90	0.02	100
11	6.35	3.28	0.23	0.06	3.76	0.04	50.85	7.26	6.39		0.20		21.58		100
12	7.52	5.00	0.65	0.15	6.02	0.20	38.40	11.97	9.11		0.12	0.06	20.80		100
13	9.69	5.66	0.63	0.11	7.96	0.22	38.66	13.54	10.25		0.19		13.09		100
14	9.80	8.32	0.94	0.36	10.02	0.32	31.65	16.56	13.69	0.07	0.16	0.04	8.08		100
15	11.81	9.49	1.51	0.93	14.15	0.42	20.70	22.59	13.52	0.04	0.18	0.01	4.66		100
16	10.91	8.62	1.23	1.17	15.28	1.24	16.72	25.87	15.66	0.03	0.19	0.02	3.05		100
17	12.22	10.32	1.39	1.14	14.44	1.70	12.56	28.72	14.66		0.14	0.02	2.70		100
18	11.86	10.65	1.37	0.85	17.31	1.73	6.09	31.76	16.21	0.04	0.12		2.01		100
19	11.71	13.24	1.16	0.73	17.08	3.32	5.65	27.61	18.08	0.07	0.31	0.08	0.92	0.04	100
20	14.34	10.77	1.27	0.93	17.28	1.45	1.91	32.51	18.48	0.02	0.14	0.03	0.87		100
21	14.48	12.11	1.95	0.50	16.86	3.80	2.09	29.66	17.73	0.05	0.19		0.57		100
22	15.26	12.13	1.60	1.00	17.28	1.57	0.99	30.45	18.92	0.03	0.23	0.01	0.54		100
23	16.43	12.13	2.48	1.12	17.48	2.55	0.86	28.39	18.10		0.11		0.36		100
24	15.55	12.19	2.41	0.63	16.07	1.81	0.47	30.64	19.37	0.10	0.25		0.52		100

Table A1 : Distribution of persons by activity fro each age - NSS 43rd round - URBAN

age	11	21	31	41	51	81	91	92	93	95	96	97	All
					43rd round urban male								
05	0.07	0.02	0.05		0.08	0.06	49.95	0.15		0.08			100
06			0.03				70.68	0.18	0.02	0.02			100
07	0.11		0.17		0.06		78.36	0.17		0.06			100
08	0.21	0.30	0.07		0.22	0.10	81.81	0.17	0.05	0.25			100
09	0.43	0.20	0.29		0.35		87.52	0.21	0.36	0.17			100
10	0.86	0.67	0.74		1.11	0.10	83.77	0.25	0.09	0.19			100
11	0.95	0.41	1.52		0.52	0.36	86.82	0.39	0.14	0.16	0.10		100
12	1.81	1.44	2.82		2.40	0.85	78.36	1.00	0.42	0.28	0.01		100
13	1.78	1.70	2.66		2.78	1.30	81.05	0.50	0.15	0.08	0.02		100
14	2.67	3.50	4.00	0.02	2.53	1.67	77.38	0.64	0.06	0.18	0.03		100
15	5.28	4.37	5.95	0.14	5.85	3.94	67.90	0.80	0.16	0.34			100
16	6.30	4.63	7.51	0.04	8.30	5.80	61.38	0.68	0.14	0.51			100
17	7.27	5.31	9.31	0.13	7.36	8.61	57.55	0.55	0.02	0.17	0.01		100
18	10.31	7.93	13.00	0.08	9.96	11.50	42.74	0.99	0.16	0.21	0.01		100
19	12.22	6.21	13.86	0.12	10.50	12.06	41.49	0.50	0.25	0.35			100
20	15.26	7.61	18.07	0.15	13.99	13.03	28.46	0.89	0.10	0.26	0.07		100
21	14.30	7.78	21.52	0.36	8.58	16.04	28.93	0.47	0.01	0.18			100
22	20.23	8.14	23.29	0.29	15.69	13.68	16.12	0.22	0.01	0.59	0.07		100
23	22.16	7.72	30.34	0.36	12.87	13.39	11.87	0.28	0.21	0.21			100
24	25.74	7.98	31.83	0.30	12.35	11.87	8.28	0.16	0.00	0.37			100
					43rd round urban female								
05	0.08						45.99	0.07	0.03	0.06			100
06	0.07	0.03			0.07		63.68	0.20		0.06			100
07	0.04	0.06	0.05				75.87	0.45	0.08	0.25			100
08	0.07	0.06	0.14		0.07		76.04	1.03	0.27	0.14			100
09	0.45	0.01	0.32		0.25	0.04	79.78	1.55	0.40	0.01			100
10	0.89	0.36	0.56		0.54	0.02	75.79	4.42	1.64	0.00			100
11	0.75	0.65	0.56		1.02	0.04	79.29	4.92	1.63	0.43			100
12	0.87	1.02	1.45		1.48	0.23	71.50	9.03	2.84	0.36			100
13	1.27	0.88	1.65		1.58	0.14	72.30	11.42	3.72	0.04			100
14	1.59	1.57	1.60	0.04	2.30	0.38	63.97	18.37	4.69	0.24	0.22		100
15	1.79	1.32	2.08		3.16	1.21	55.18	24.57	5.36	0.17	0.24		100
16	2.44	2.33	2.48		3.64	1.97	47.75	28.99	7.46	0.16	0.00		100
17	2.59	1.70	1.73	0.13	4.22	3.01	42.05	32.37	10.09	0.00			100
18	2.99	2.81	2.30	0.06	5.37	2.87	27.93	44.36	9.81	0.09	0.01		100
19	2.56	2.15	2.53	0.07	3.76	4.41	27.55	45.54	10.11	0.31	0.04		100
20	3.23	1.88	3.38	0.06	5.00	3.51	14.38	52.56	14.03	0.41	0.21		100
21	2.32	2.16	6.08		3.30	5.86	13.06	50.92	15.66	0.01	0.00		100
22	3.53	1.68	5.46		4.00	3.70	5.26	59.21	15.62	0.12	0.38		100
23	2.69	1.50	5.04		3.28	5.75	5.90	58.19	17.01				100
24	3.20	1.89	6.51		2.77	5.10	2.32	59.97	17.58	0.35	0.02		100

Table A2: Distribution of persons by activity for each age -NSS 50th round - RURAL

Age						50th round rural male							
	11	12	21	31	41	51	81	91	92	93	94	96	Total
5			0.02			0.08	0.01	41.65	0.05	0.03			100
6	0.08		0.15			0.03		62.85		0.06	0.06		100
7	0.16		0.30	0.03		0.07		75.35	0.10	0.06	0.04	0.03	100
8	0.52		1.08	0.14		0.28		76.21	0.20	0.16		0.03	100
9	0.55		1.51	0.14		0.96		81.71	0.12	0.17			100
10	1.10		3.85	0.38		1.51	0.04	76.86	0.50	0.92			100
11	1.65		4.91	0.74		2.08	0.04	80.76	0.39	0.18			100
12	2.04		8.21	1.10		4.29	0.06	71.82	0.48	0.70		0.02	100
13	2.18		9.54	0.99	0.02	4.74	0.10	73.75	0.35	0.65			100
14	1.70		12.68	1.20	0.05	9.00	0.59	68.20	0.56	0.60	0.03		100
15	4.43	0.02	21.47	1.76	0.01	16.58	0.66	48.74	0.60	0.50	0.03	0.09	100
16	4.69	0.05	25.71	2.32	0.32	20.11	1.26	42.22	0.19	0.27	0.02		100
17	6.70	0.03	25.98	1.88	0.38	20.94	1.87	39.64	0.21	0.21			100
18	8.30	0.16	31.38	3.45	0.25	25.69	2.95	25.57	0.24	0.33		0.00	100
19	9.41	0.16	29.97	3.92	0.35	27.17	4.43	23.03	0.35	0.13		0.07	100
20	13.95	0.19	33.38	4.99	0.30	29.94	3.11	11.59	0.60	0.33	0.04		100
21	15.28	0.81	30.81	6.04	0.19	27.68	6.33	11.97	0.06	0.02	0.05		100
22	15.72	0.55	32.19	7.38	0.20	31.33	4.06	6.81	0.42	0.27	0.05	0.09	100
23	22.29	0.71	28.60	7.34	0.49	30.20	4.90	4.43	0.14	0.17	0.02		100
24	23.51	0.70	27.95	9.02	0.31	29.19	5.25	2.43	0.31	0.08			100

age						50th round rural-female							
	11	12	21	31	41	51	81	91	92	93	94	96	Total
5	0.08							36.77	0.17	0.21			100
6	0.00		0.13			0.07		53.97	0.33	0.14			100
7	0.15		0.56	0.01		0.16	0.04	60.43	0.55	0.60		0.08	100
8	0.40		1.57	0.02		0.46		63.45	1.10	1.01	0.03		100
9	0.73		2.25	0.13	0.03	0.92		67.45	1.97	1.86			100
10	1.03		4.34	0.25		1.71	0.03	58.60	5.04	5.20		0.01	100
11	1.07		5.30	0.21	0.07	3.15		65.39	5.70	6.26			100
12	1.48	0.02	8.12	0.15		5.79	0.04	50.78	11.14	8.90	0.01		100
13	1.60		9.84	0.32	0.18	7.42	0.00	49.98	12.04	10.44		0.05	100
14	1.40		12.86	0.60	0.06	8.30	0.16	47.67	13.31	11.27			100
15	2.38	0.05	15.52	0.82	0.08	12.71	0.22	31.21	18.94	14.87			100
16	2.54	0.02	16.68	0.61	0.24	14.11	0.59	23.79	23.17	16.23			100
17	2.68	0.04	16.43	0.95	0.21	14.08	0.81	19.79	24.43	18.37			100
18	3.17	0.01	20.14	0.59	0.15	16.91	0.88	9.50	28.31	19.09		0.04	100
19	4.31	0.02	19.02	0.89	0.18	16.39	1.35	8.94	27.65	20.17			100
20	3.57	0.02	19.71	1.36	0.20	19.57	0.85	2.85	29.22	21.61	0.09		100
21	4.73	0.14	19.79	1.03	0.31	18.64	2.06	3.64	26.99	22.32			100
22	5.15	0.02	20.68	1.24	0.38	17.96	1.31	1.50	28.50	22.50	0.07		100
23	6.53	0.29	19.99	1.38	0.21	18.48	1.69	0.90	25.66	24.19	0.14		100
24	5.86	0.15	20.75	2.40	0.29	18.05	1.50	0.61	26.70	23.34			100

Table A2: **Distribution of persons by activity for each age -NSS 50th round - URBAN**

Age						50th round Urban male									
	11	12	21	31	41	51	81	91	92	93	94	95	96	97	Total
5	0.02					0.05		69.87	0.05			0.31		29.70	100
6			0.04				0.01	81.76	0.0 0			0.08		18.12	100
7			0.09	0.03		0.19		88.75	0.09			0.04		10.81	100
8			0.22	0.05		0.22		89.21	0.14			0.23		9.93	100
9	0.04		0.45	0.40		0.06	0.12	91.02	0.19			0.05		7.67	100
10	0.40		0.67	0.64		0.70	0.03	88.35	0.36	0.20	0.00	0.35		8.31	100
11	0.24		1.20	1.49		0.73	0.14	91.69	0.12	0.02		0.13		4.24	100
12	0.52		1.90	1.57		2.04	0.31	86.57	0.27	0.22	0.02	0.16	0.02	6.38	100
13	0.63		2.85	2.77		2.92	0.56	84.41	0.71	0.21		0.31		4.61	100
14	1.09		3.21	2.91	0.02	2.17	0.66	85.07	0.44	0.29		0.39		3.75	100
15	1.75		5.92	5.36		8.78	2.49	70.05	0.35	0.43	0.02	0.52		4.33	100
16	3.22		8.90	7.32	0.28	9.35	4.69	61.52	0.74	0.27	0.06	0.21		3.44	100
17	3.23	0.04	7.70	9.03		8.35	4.69	63.89	0.28	0.15		0.32		2.32	100
18	6.17	0.08	10.62	13.38	0.09	13.99	5.87	46.12	0.38	0.13	0.01	0.68		2.47	100
19	7.66	0.19	10.41	13.24	0.05	12.55	8.85	45.41	0.14	0.10	0.10	0.25		1.04	100
20	12.43	0.09	12.49	16.73	0.20	15.50	8.81	31.39	0.47	0.21		0.34		1.34	100
21	10.70	0.54	12.31	19.49	0.06	12.06	11.16	30.82	0.71	0.04	0.05	0.74		1.33	100
22	17.72	0.77	13.70	21.49	0.17	15.85	10.94	16.84	0.64	0.19		0.55		1.14	100
23	15.79	1.06	14.54	24.37	0.17	14.65	11.98	15.03	0.21	0.40		0.59		1.22	100
24	20.81	1.65	12.80	28.05	0.17	11.82	10.96	11.64	0.18	0.03	0.08	0.76		1.05	100

Age						50th round Urban female									
	11	12	21	31	41	51	81	91	92	93	94	95	96	97	Total
5	0.16		0.02			0.00		64.66	0.02			0.07		35.06	100
6	0.08					0.04		78.67	0.33	0.12	0.03	0.15	0.02	20.58	100
7	0.14		0.17			0.06		83.73	0.45	0.08		0.15		15.22	100
8			0.08	0.04		0.07		84.94	0.60	0.06		0.16		14.04	100
9	0.05		0.31	0.18		0.35		88.29	1.88	0.71		0.07	0.03	8.14	100
10	0.19		0.74	0.27		0.67	0.03	84.73	3.04	1.23		0.18	0.04	8.87	100
11	0.40		0.58	0.63		0.62		88.05	3.79	0.99		0.29		4.64	100
12	0.21		1.50	1.65		1.17		79.53	7.19	2.39		0.31		6.06	100
13	0.48	0.01	0.67	1.38		1.55	0.05	80.58	9.32	3.07		0.16		2.73	100
14	0.60		1.43	1.11		1.61	0.41	74.28	13.47	3.75		0.28	0.04	3.03	100
15	0.97		2.26	1.56		2.82	0.64	62.27	21.39	5.69	0.06	0.39		1.94	100
16	0.90		2.69	1.43	0.05	3.44	0.82	57.21	24.29	6.97		0.13		2.07	100
17	1.25		1.89	4.00	0.01	3.92	1.62	52.14	25.49	7.67		0.15		1.87	100
18	1.37	0.02	2.49	2.15		4.09	2.33	38.09	37.61	9.91		0.55	0.06	1.32	100
19	1.76		2.91	3.10	0.01	2.68	4.72	35.58	39.76	8.47		0.19		0.82	100
20	2.31		2.36	3.09	0.00	4.09	3.22	19.87	51.06	12.66		0.04	0.04	1.25	100
21	1.40	0.09	2.41	5.16	0.18	3.44	6.78	21.64	45.56	12.27		0.28	0.19	0.59	100
22	2.11	0.02	2.83	5.90		3.74	5.96	9.60	54.41	14.14	0.04	0.14	0.06	1.06	100
23	1.79	0.18	2.46	6.16		3.12	6.35	6.42	55.10	16.95		0.37	0.16	0.94	100
24	2.48	0.09	2.18	7.46		3.94	4.91	2.46	59.03	17.00			0.06	0.38	100

Table A3: Distribution of persons by activity for each age -NSS 55th round - RURAL

age	11	12	21	31	41	51	81	91	92	93	94	95	96	97	All
					55th round rural male										
5				0.04			0.01	43.40	0.24	0.01		0.18		56.12	100
6	0.04		0.05				0.00	68.18	0.14	0.02		0.07		31.51	100
7	0.01		0.17	0.01		0.05		80.36	0.09	0.06	0.02	0.10		19.13	100
8	0.14		0.42	0.00		0.27	0.01	80.38	0.16	0.15		0.06		18.42	100
9	0.30		0.55	0.04		0.48	0.08	87.16	0.16	0.02		0.09		11.11	100
10	0.46		1.13	0.15		1.29	0.02	81.55	0.30	0.47		0.14	0.01	14.47	100
11	0.35		1.00	0.25		1.33	0.06	88.07	0.25	0.06	0.07		0.00	8.55	100
12	0.98	0.14	3.19	0.51		2.52	0.13	76.92	0.68	0.79		0.19		13.96	100
13	0.96		4.73	0.92		4.64	0.35	77.20	0.44	0.35		0.37		10.04	100
14	1.93		7.23	0.83	0.01	8.06	0.80	71.17	0.55	0.50		0.18		8.74	100
15	2.63		13.18	1.73	0.07	13.48	1.41	59.58	0.71	0.47	0.06	0.36		6.32	100
16	3.68		14.65	2.37	0.05	18.71	2.38	50.90	0.37	0.32	0.02	0.30		6.25	100
17	5.00	0.04	16.31	3.23	0.06	18.99	3.90	48.07	0.51	0.31		0.66		2.92	100
18	7.06	0.06	23.28	3.00	0.19	28.89	4.44	29.03	0.41	0.30	0.04	0.46		2.83	100
19	7.64	0.10	21.55	6.60	0.07	28.15	5.39	27.42	0.14	0.27		0.42	0.14	2.11	100
20	11.89	0.10	27.09	5.04	0.19	32.84	4.90	14.95	0.28	0.21		0.64		1.87	100
21	13.45	0.31	26.80	4.58	0.11	30.67	6.36	15.36	0.08	0.16	0.04	0.52	0.09	1.48	100
22	15.29	0.21	28.25	6.12	0.10	34.24	5.49	7.37	0.29	0.11	0.00	0.35		2.18	100
23	18.61	0.16	26.26	6.93	0.04	33.38	6.51	6.02	0.12	0.31	0.01	0.75		0.90	100
24	20.26	0.72	26.36	8.16	0.30	31.78	5.61	4.91	0.07	0.19	0.00	0.76		0.87	100
age	11	12	21	31	41	51	81	91	92	93	94	95	96	97	All
					55th round rural female										
5	0.04			0.00	0.01		0.04	41.05	0.04	0.00		0.31		58.50	100
6			0.16					60.08	0.23	0.00		0.08		39.45	100
7	0.01		0.33	0.06		0.14		71.02	0.31	0.11		0.07	0.02	27.92	100
8	0.04		0.51	0.04		0.26		71.41	0.55	0.57		0.16		26.46	100
9	0.17		0.66	0.16	0.00	0.46	0.02	77.76	1.20	0.98		0.09		18.49	100
10	0.48		1.30	0.00		0.90	0.01	68.68	3.10	2.55		0.20	0.00	22.77	100
11	0.31		1.81	0.07		1.47		75.78	3.71	2.87	0.01	0.18		13.79	100
12	1.11		3.13	0.17	0.02	3.48	0.04	62.47	7.92	5.21		0.38		16.10	100
13	0.88		4.36	0.19	0.05	3.73	0.06	63.63	10.05	7.73	0.06	0.04		9.22	100
14	1.16		5.38	0.23		6.15	0.13	54.93	12.58	11.81		0.17	0.05	7.41	100
15	1.85		7.69	0.32		8.33	0.50	43.12	18.76	13.92		0.25		5.25	100
16	1.20	0.03	8.44	0.50	0.12	11.30	0.67	33.75	23.73	16.54		0.35		3.37	100
17	2.67	0.09	10.14	0.81		9.45	1.66	30.16	25.42	16.83	0.01	0.15	0.09	2.54	100
18	1.95	0.07	11.11	0.76	0.02	13.13	1.05	14.05	34.59	21.30	0.00	0.40	0.05	1.52	100
19	3.17		9.40	0.93	0.08	13.41	1.58	11.28	35.31	22.94	0.13	0.09		1.67	100
20	2.77		11.73	1.09	0.01	15.33	1.34	4.78	37.94	23.75	0.12	0.06	0.01	1.06	100
21	2.28	0.06	11.02	1.72	0.07	13.32	2.22	6.93	37.59	23.24	0.36	0.31		0.88	100
22	3.23	0.02	11.70	1.02	0.07	13.29	1.60	2.38	39.21	26.30	0.12	0.18		0.88	100
23	2.76		12.54	1.56	0.35	13.24	1.90	1.65	36.45	28.62	0.16	0.15		0.62	100
24	2.44		12.99	1.18	0.26	16.19	1.79	0.85	36.37	26.98	0.14	0.15		0.65	100

Table A3: Distribution of persons by activity for each age -NSS 55th round - URBAN

55th round urban male

age	11	12	21	31	41	51	81	91	92	93	94	95	96	97	All
5								63.84	0.17	0.04	0.13	0.05		35.78	100
6			0.02					81.75	0.39	0.00	0.03			17.80	100
7			0.06			0.08	0.01	88.56	0.08			0.33	0.08	10.80	100
8			0.30	0.02		0.12		92.12	0.10	0.04		0.06		7.23	100
9			0.05	0.29	0.00	0.28	0.20	92.43	0.11			0.21		6.44	100
10	0.24		0.43	0.68	0.04	0.25	0.13	90.01	0.16			0.07	0.07	7.92	100
11	0.21		0.58	0.36	0.06	0.48	0.06	92.24				0.30		5.71	100
12	0.24	0.00	1.20	1.45		1.77	0.28	85.23	0.46	0.09		0.15		9.12	100
13	0.62		1.75	1.86	0.05	2.06	0.25	87.70	0.47	0.08		0.18		4.98	100
14	0.54		2.48	2.41		3.93	0.79	81.97	0.68	0.02		0.13		7.05	100
15	1.52		4.36	5.30	0.05	5.90	2.56	73.06	0.25	0.02	0.01	0.52		6.45	100
16	2.36	0.00	6.01	6.32	0.16	9.61	4.36	65.89	0.81	0.05		0.50		3.93	100
17	2.61	0.03	7.10	8.27		8.63	5.59	63.59	0.76	0.09		0.07		3.25	100
18	5.57	0.10	8.89	11.67	0.15	15.32	7.53	46.38	0.40	0.05	0.04	0.73		3.17	100
19	6.26	0.03	8.41	14.45	0.06	11.91	8.10	46.78	0.45	0.10		1.17		2.29	100
20	8.24	0.28	11.88	18.41	0.23	15.87	9.16	32.30	0.20	0.08		0.64	0.04	2.67	100
21	11.00	0.05	10.82	21.28	0.26	12.52	11.13	30.13	0.12	0.14		0.39		2.17	100
22	14.18	0.20	12.19	26.74	0.18	15.33	10.40	18.21	0.35	0.12	0.04	0.63	0.04	1.38	100
23	15.49	0.32	12.96	26.28	0.13	13.01	12.94	15.46	1.51	0.01	0.06	0.83		1.00	100
24	16.40	0.65	13.93	28.70	0.36	16.95	10.00	11.39	0.29	0.22		0.29		0.81	100

55th round urban female

age	11	12	21	31	41	51	81	91	92	93	94	95	96	97	All
5								64.56	0.07	0.03		0.26		35.09	100
6			0.07			0.09		77.08	0.12		0.04	0.01		22.59	100
7			0.03					84.07	0.21	0.05		0.01		15.62	100
8			0.03	0.05		0.01	0.02	88.08	0.35	0.02	0.01	0.09		11.34	100
9	0.11			0.07		0.16	0.09	91.01	0.51	0.10	0.03	0.13		7.78	100
10			0.25	0.67		0.14		86.59	1.66	0.48	0.02	0.09		10.10	100
11	0.04		0.63	0.78		0.73	0.05	87.82	3.69	0.61		0.03		5.63	100
12	0.23		0.57	0.60	0.09	0.62	0.22	83.45	4.07	0.77		0.14	0.06	9.17	100
13	0.15		1.08	0.58		1.23	0.07	81.66	8.28	1.14		0.39		5.41	100
14	0.52		1.80	0.96	0.06	1.97	0.24	73.71	13.40	2.76		0.04		4.54	100
15	0.56		1.83	1.09		1.56	0.48	68.47	18.43	3.54		0.07		3.98	100
16	1.01		2.66	2.67	0.03	2.37	0.77	60.05	22.39	4.12		0.17		3.76	100
17	0.78		2.99	2.85	0.03	1.91	1.94	54.34	27.02	5.15		0.42		2.58	100
18	1.84		2.06	3.55	0.02	2.85	1.93	39.47	38.07	7.25		0.17	0.04	2.75	100
19	1.57		2.60	3.82		2.28	3.82	36.04	41.67	6.31		0.05		1.85	100
20	1.61		2.04	4.50	0.05	3.36	3.40	24.21	48.91	9.89		0.32	0.04	1.67	100
21	1.63		2.65	4.05		2.96	5.08	26.76	47.28	8.25	0.01	0.18		1.15	100
22	2.39		2.23	4.98	0.06	2.42	3.35	13.32	58.90	10.91	0.01	0.24		1.18	100
23	2.25		2.50	7.83	0.01	3.29	3.73	7.25	61.34	10.70		0.13		0.97	100
24	2.42		2.13	7.17	0.18	2.49	4.19	5.38	63.35	11.61	0.00	0.04	0.37	0.67	100

Table A4: **Distribution of persons by activity for each age -NSS 61st round - RURAL**

age	11	12	21	31	41	51	81	91	92	93	94	95	97	All
						NSS 61st Round								
						RURAL MALE								
5								55.11	0.10	0.05		0.10	44.63	100
6			0.07					78.79	0.01	0.08		0.19	20.86	100
7	0.02		0.06					88.69	0.06	0.11		0.26	10.80	100
8	0.06		0.08			0.08	0.01	89.11	0.15	0.09		0.33	10.10	100
9	0.15		0.29	0.01		0.15	0.00	94.14	0.05	0.24		0.21	4.77	100
10	0.21		0.80	0.02		0.29	0.03	89.68	0.14	0.13		0.47	8.24	100
11			1.01	0.09		0.41	0.04	93.76	0.01	0.23		0.14	4.29	100
12	0.49		2.81	0.22		1.44	0.09	86.32	0.16	0.74		0.49	7.26	100
13	0.35		3.98	0.46		2.69	0.43	85.76	0.14	0.61		0.28	5.30	100
14	0.52		6.42	0.93		5.10	0.90	80.16	0.21	0.66		0.55	4.55	100
15	1.81		11.00	1.83		12.67	2.03	65.32	0.37	0.56		0.52	3.90	100
16	2.40		15.11	2.40		17.66	3.18	55.03	0.36	0.49		0.72	2.66	100
17	3.10	0.07	16.12	3.15	0.16	20.71	4.42	48.94	0.41	0.32		0.46	2.16	100
18	5.33	0.09	23.27	4.40	0.13	26.90	4.42	32.68	0.48	0.40		0.85	0.99	100
19	7.29	0.02	22.23	5.31	0.11	25.75	6.59	30.17	0.72	0.44		0.66	0.73	100
20	9.95	0.02	28.74	6.42	0.03	29.73	4.78	17.88	0.49	0.42	0.03	0.83	0.67	100
21	12.29	0.07	27.21	8.49	0.23	28.49	6.86	14.37	0.08	0.01		1.36	0.54	100
22	15.61	0.09	29.33	7.59	0.09	33.04	5.36	7.34	0.32	0.24	0.01	0.57	0.42	100
23	16.68	0.22	27.60	10.26	0.19	30.87	5.69	7.17	0.10	0.27		0.76	0.17	100
24	18.60	0.45	28.01	9.03	0.20	33.89	5.09	2.99	0.14	0.30		1.14	0.17	100
						RURAL FEMALE								
age	11	12	21	31	41	51	81	91	92	93	94	95	97	All
5	0.01					0.01		53.60	0.01	0.12		0.03	46.23	100
6	0.00					0.09	0.02	76.31	0.03	0.00	0.03	0.16	23.31	100
7	0.00						0.05	84.70	0.29	0.36		0.28	14.27	100
8	0.08							85.67	0.49	0.21		0.12	13.25	100
9	0.03					0.06	0.03	86.97	0.97	0.67		0.17	10.99	100
10	0.23					0.39	0.00	84.40	2.20	1.44		0.12	10.50	100
11	0.28		1.34			0.59	0.01	86.15	2.85	2.35	0.02	0.15	6.26	100
12	0.32		2.07	0.19		1.53	0.13	76.42	5.99	5.28	0.00	0.25	7.82	100
13	0.52		4.05	0.22		2.30	0.06	73.91	7.41	6.77	0.02	0.28	4.45	100
14	0.66		4.88	0.25	0.04	4.81	0.39	64.66	10.21	9.97		0.45	3.67	100
15	0.86		6.68	0.44	0.03	7.21	0.82	52.03	13.04	15.45		0.50	2.94	100
16	1.72		7.94	0.92		9.17	0.59	42.58	17.89	17.01		0.31	1.88	100
17	2.06		10.56	0.98	0.01	11.17	1.59	33.25	22.91	16.26		0.15	1.06	100
18	2.66		12.01	1.02	0.02	10.41	2.63	18.35	28.96	23.03	0.01	0.30	0.60	100
19	2.64		11.71	1.37	0.06	11.19	2.25	15.88	30.96	22.93	0.03	0.36	0.63	100
20	2.32	0.05	12.91	1.03	0.04	11.10	2.13	6.40	36.02	26.85	0.09	0.47	0.58	100
21	2.16		10.45	1.85	0.07	9.47	4.62	9.02	33.75	27.70	0.17	0.51	0.24	100
22	2.18		13.19	1.27	0.03	12.50	2.86	2.39	32.54	31.76	0.38	0.54	0.35	100
23	3.35	0.03	12.52	2.12	0.00	11.64	3.85	1.81	34.09	30.27	0.18	0.07	0.08	100
24	3.14	0.03	13.75	2.43		11.88	2.53	0.82	32.25	32.62	0.26	0.17	0.12	100

187

Table A4: **Distribution of persons by activity for each age -NSS 61st round - URBAN**

					URBAN MALE									
age	11	12	21	31	41	51	81	91	92	93	94	95	97	All
5								74.04	0.11			0.17	25.68	100
6								90.55	0.00			0.02	9.42	100
7								93.97	0.08			0.11	5.84	100
8	0.03		0.08	0.07		0.04		93.43	0.16			0.11	6.07	100
9	0.16	0.01	0.33	0.08		0.13	0.40	94.94				0.01	3.93	100
10	0.04		0.15	0.04		0.50	0.32	94.34	0.20	0.11		0.27	4.04	100
11	0.32		0.20	1.29		0.40	0.19	93.60	0.35	0.00		0.01	3.62	100
12	0.12		1.12	1.78		0.99	0.38	89.63	0.37	0.14		0.20	5.27	100
13	0.48		1.47	2.54		1.37	0.62	88.98	0.10	0.20	0.05	0.14	4.06	100
14	1.15		2.57	2.81		2.50	1.14	84.69	0.27	0.05		0.50	4.31	100
15	1.14		5.70	5.57		6.87	2.05	73.55	0.32	0.12	0.01	0.40	4.29	100
16	3.34		4.92	7.26		6.55	4.77	69.53	0.32			0.79	2.53	100
17	2.60	0.01	6.21	10.85	0.03	7.92	4.44	64.52	0.61		0.05	0.78	1.99	100
18	5.82	0.24	10.90	16.44	0.08	11.88	7.05	45.12	0.55	0.14	0.01	0.49	1.28	100
19	6.36	0.09	8.70	15.02		10.16	7.15	50.80	0.31	0.01		0.44	0.95	100
20	9.82	0.29	10.62	21.25	0.02	15.57	8.67	31.67	0.39		0.34	0.52	0.83	100
21	10.84	0.60	11.45	24.22		9.73	8.52	32.85	0.11			0.64	1.02	100
22	13.13	0.30	13.21	28.73	0.05	14.63	9.40	18.97	0.11	0.16		0.84	0.48	100
23	13.83	0.37	12.62	30.29	0.04	13.18	11.82	16.39	0.20	0.38		0.61	0.27	100
24	16.66	0.71	14.15	31.55	0.08	15.24	9.84	10.74	0.18	0.15		0.36	0.33	100
					URBAN FEMALE									
age	11	12	21	31	41	51	81	91	92	93	94	95	97	All
5	0.00			0.13				72.35	0.00			0.06	27.46	100
6	0.00							87.43	0.13			0.17	12.27	100
7	0.00							92.78	0.12			0.16	6.94	100
8	0.00		0.21	0.01				91.64	0.31	0.20		0.09	7.53	100
9	0.00		0.20	0.05		0.03	0.00	94.37	1.15	0.00		0.54	3.67	100
10	0.13		0.37	0.06		0.10	0.00	92.13	1.71	0.29		0.16	5.05	100
11	0.30		0.41	0.11		0.05	0.01	92.84	1.32	0.12	0.09	0.53	4.21	100
12	0.08		1.16	0.89		0.28	0.01	88.97	3.83	1.18		0.32	3.28	100
13	0.53		1.24	0.73		0.43	0.00	87.10	5.97	2.11		0.03	1.85	100
14	0.63		2.22	1.23		0.73	0.75	81.11	7.91	2.78		0.40	2.23	100
15	0.91		1.74	2.57		1.31	0.45	70.87	16.35	3.82		0.37	1.61	100
16	0.86		2.67	2.46		1.98	1.52	64.18	20.13	4.03		0.55	1.64	100
17	1.40		2.73	2.17		3.27	1.59	60.04	22.06	5.61	0.01	0.14	0.97	100
18	2.65	0.01	2.83	4.81		1.87	2.26	46.08	28.96	9.45		0.21	0.87	100
19	1.23		3.23	4.29		1.13	2.93	45.23	31.74	8.11	0.11	1.11	0.90	100
20	2.15		3.58	5.52	0.01	2.37	4.08	23.76	44.13	13.39	0.03	0.33	0.66	100
21	1.68	0.35	4.15	8.41		1.75	6.79	24.37	37.31	14.49	0.09	0.05	0.57	100
22	2.06		2.91	6.89		1.65	5.02	11.64	55.97	13.05	0.04	0.26	0.50	100
23	2.30		3.84	8.01		2.33	7.42	10.90	49.86	14.82	0.06	0.24	0.22	100
24	3.33	0.08	3.23	9.81		2.68	5.16	6.12	51.40	17.22	0.15	0.55	0.27	100

Table B1: Level of school attendance for children of ages 5 to 29 – NSS 55th round

age	never attended	attended in past	attending nonformal	pre-primry	primary	middle	secondary and higher sec	graduate and above	All
				Rural male					
5	56.1	1.0	.5	18.2	23.7	.4	.0		100.0
6	31.0	.7	.4	21.3	45.9	.6	.0		100.0
7	18.6	.8	.3	20.7	58.3	1.3	.0		100.0
8	18.1	1.0	.3	16.9	61.5	2.0	.1		100.0
9	10.2	1.2	.1	13.1	70.5	4.9	.1		100.0
10	15.3	2.8	.2	9.8	54.5	17.2	.3		100.0
11	9.0	2.6	.2	5.2	40.3	42.3	.5		100.0
12	16.8	6.1	.2	4.2	25.8	44.4	2.5		100.0
13	12.5	10.7	.1	2.8	13.5	50.6	9.7		100.0
14	15.2	14.0	.1	1.2	7.3	33.7	28.5		100.0
15	20.5	20.0	.0	.6	3.8	19.4	35.7		100.0
16	20.0	28.8	.1	.3	1.9	12.1	36.8		100.0
17	15.0	37.1	.0	.0	.9	5.8	37.6	3.5	100.0
18	23.3	47.0	.1	.3	.4	3.2	21.2	4.5	100.0
19	17.7	55.0	.0	.0	.3	1.2	15.6	10.3	100.0
20	29.2	55.0	.1	.0	.2	.7	7.1	7.4	100.0
21	19.5	65.0	.0	.0	.1	.4	4.4	10.4	100.0
22	26.9	64.8	.1		.2	.3	2.1	5.6	100.0
23	23.5	68.4	.2	.0	.9	.4	1.7	5.0	100.0
24	24.5	69.7		.0	.1	.2	.7	4.8	100.0
25	35.9	61.3	.0	.1	.0	.2	.5	1.8	100.0
				Rural female					
5	57.7	1.0	.6	18.2	22.4	.1			100.0
6	39.0	.9	.3	18.4	41.0	.5			100.0
7	27.5	1.0	.2	16.4	54.1	.7	.0		100.0
8	26.8	1.4	.3	15.0	54.9	1.6			100.0
9	20.4	1.6	.2	11.6	60.6	5.7			100.0
10	27.1	3.3	.3	7.7	45.4	16.0	.2		100.0
11	18.1	4.9	.1	6.2	33.9	36.3	.4		100.0
12	27.4	9.2	.2	3.3	23.0	34.7	2.1		100.0
13	23.8	11.8	.1	1.4	12.5	41.6	8.7		100.0
14	27.0	17.6	.1	1.2	6.0	26.3	21.8		100.0
15	33.2	23.4	.1	.5	2.9	13.0	27.0		100.0
16	33.8	32.4	.2	.2	1.2	8.1	24.2		100.0
17	30.3	39.4	.1	.0	1.1	3.0	23.6	2.5	100.0
18	43.3	42.6	.0	.1	.2	1.4	7.9	4.4	100.0
19	37.7	50.8	.0		.2	.6	5.2	5.5	100.0
20	53.0	41.6	.1	.1	.1	.2	1.9	3.1	100.0
21	42.0	50.0	.2	.0	.2	.4	1.3	5.9	100.0
22	51.8	45.1	.1	.1	.1	.2	.7	1.8	100.0
23	49.4	48.1	.1	.0	.2	.0	.5	1.7	100.0
24	52.4	46.2	.0		.0	.1	.4	.8	100.0
25	57.9	41.5	.0	.0	.0	.1	.2	.2	100.0

Table B1: Level of school attendance for children of ages 5 to 29 – NSS 55th round

age	never attended	attended in past	attending non formal	pre-primary	primary	middle	secondary and higher sec	graduate and above	All
				Urban male					
5	35.0	.7	.7	36.6	26.5	.4	.0		100.0
6	16.4	1.3	.6	28.6	51.6	1.4	.1		100.0
7	9.7	1.2	.2	23.5	63.7	1.6	.0		100.0
8	6.9	1.1	.1	20.3	67.8	3.6	.2		100.0
9	5.0	1.6	.2	14.9	70.7	7.6	.0		100.0
10	7.4	2.0	.0	9.4	53.5	27.3	.4		100.0
11	4.5	3.2	.1	5.4	33.6	52.8	.5		100.0
12	8.6	6.6	.1	2.7	20.5	58.2	3.4		100.0
13	6.4	7.4	.2	1.3	10.0	62.1	12.5		100.0
14	7.9	9.7	.1	.7	5.0	31.7	44.9		100.0
15	9.3	18.5	.0	.4	2.9	18.1	50.8		100.0
16	10.1	25.0	.0	.4	1.2	9.3	54.0		100.0
17	8.7	28.2	.0	.1	.4	2.9	49.7	10.1	100.0
18	13.7	40.3	.1	.2	.3	2.1	26.9	16.4	100.0
19	9.6	42.5	.0		.1	.5	17.4	29.8	100.0
20	13.7	53.9	.1	.1		.7	9.2	22.5	100.0
21	11.8	57.4		.0		.2	5.3	25.2	100.0
22	16.2	64.1		.2	.3	.2	3.0	16.1	100.0
23	12.9	70.0		.2	.0	.2	1.7	15.0	100.0
24	13.5	73.6	.0		.2	.2	1.3	11.2	100.0
25	18.2	75.4	.0	.0	.1	.1	.6	5.5	100.0
				Urban female					
5	35.1	.7	.3	36.1	27.0	.8			100.0
6	21.7	.7	.2	26.6	49.9	.7	.2		100.0
7	14.8	1.0	.0	21.4	61.6	1.0	.1		100.0
8	10.6	.9	.4	25.1	59.4	3.6			100.0
9	7.2	1.2	.1	14.2	68.3	9.1			100.0
10	10.6	2.8	.1	7.8	49.1	29.0	.5		100.0
11	8.1	4.2	.1	5.9	29.4	51.8	.5		100.0
12	10.8	6.0	.2	5.2	19.8	53.7	4.3		100.0
13	9.3	11.2	.1	1.2	11.9	51.7	14.6		100.0
14	12.2	14.0	.1	.3	4.3	29.5	39.6		100.0
15	11.3	19.7	.0	.4	1.9	14.9	51.8		100.0
16	13.3	27.4	.1	2.4	.7	7.1	49.1		100.0
17	10.0	35.3	.1	.1	.2	3.4	38.1	12.9	100.0
18	14.9	45.1	.0	.0	.1	1.0	19.2	19.7	100.0
19	13.2	49.7		.0	.1	.8	11.2	25.0	100.0
20	23.6	51.4	.1	.0	.2	.2	5.0	19.6	100.0
21	15.4	57.6			.4	.2	3.2	23.2	100.0
22	25.9	59.7	.0		.2	.3	1.9	12.0	100.0
23	23.3	68.6		.0	.0	.0	.9	7.2	100.0
24	24.8	68.7	.2	.1		.3	.7	5.2	100.0
25	29.8	67.7	.0		.1	.0	.4	1.9	100.0

Table B2: Level of school attendance for children of ages 5 to 29 – NSS 61st round

age	never attended	attended in past	attending non formal	pre-primary	primary	middle	secondary and higher sec	graduate and above	All
				Rural male					
5	42.6	1.1	.7	14.2	41.3	.1			100.0
6	20.7	.8	.5	7.0	70.7	.4			100.0
7	10.1	.8	.2	2.9	85.0	1.0			100.0
8	10.0	.7	.3	1.5	86.1	1.5			100.0
9	4.7	1.1	.2	.7	89.1	4.2			100.0
10	8.5	1.9	.0	.6	67.7	21.2	.1		100.0
11	4.1	2.1	.3	.1	42.0	51.1	.3		100.0
12	8.5	5.0	.1	.2	29.3	53.0	3.9	.0	100.0
13	6.9	7.5	.0	.0	12.2	51.8	21.5	.0	100.0
14	7.1	12.6	.1	.1	7.0	35.4	37.8		100.0
15	10.1	24.7	.0	.0	3.5	19.0	42.5	.2	100.0
16	12.5	32.3	.0	.0	1.5	9.9	42.8	1.1	100.0
17	10.5	40.3	.0	.0	.4	3.6	40.5	4.5	100.0
18	14.3	52.5	.0	.1	.2	2.0	23.6	7.3	100.0
19	11.5	58.1		.1	.2	1.1	13.7	15.2	100.0
20	19.0	62.5	.0		.1	.7	6.3	11.5	100.0
21	13.7	70.4	.0		.1	.1	3.4	12.3	100.0
22	18.3	73.6	.0	.0	.0	.3	1.7	6.1	100.0
23	17.0	75.5			.0	.1	1.1	6.2	100.0
24	18.1	78.3	.1			.1	.4	3.1	100.0
25	26.1	71.6	.0	.0	.1	.1	.5	1.7	100.0
26	23.8	74.6			.0	.0	.1	1.5	100.0
27	20.4	78.1	.0	.0	.3	.0	.3	.9	100.0
28	28.0	71.1			.1	.0	.4	.4	100.0
29	19.1	80.3					.0	.6	100.0
				Rural female					
5	43.9	1.5	.9	13.9	39.6	.2			100.0
6	22.4	1.1	.5	5.7	69.6	.7			100.0
7	14.0	.9	.3	3.2	80.8	.8			100.0
8	12.9	1.3	.2	1.5	82.3	1.7			100.0
9	11.2	1.6	.1	.7	81.0	5.4			100.0
10	12.6	3.0	.1	.7	63.6	19.9	.1		100.0
11	8.6	5.0	.1	.5	36.5	48.8	.5		100.0
12	14.3	9.1	.1	.2	23.7	47.8	4.7		100.0
13	13.5	13.1	.1	.1	12.1	42.8	18.2		100.0
14	15.2	20.3	.0	.1	6.6	28.0	29.8		100.0
15	19.9	28.0	.1	.0	3.0	15.6	33.2	.2	100.0
16	19.2	37.6	.1	.0	1.6	7.4	33.2	.9	100.0
17	20.8	45.7	.0	.0	.6	2.9	25.2	4.7	100.0
18	28.5	52.4			.3	1.5	11.3	5.9	100.0
19	27.4	56.1		.0	.2	.5	6.0	9.8	100.0
20	38.8	54.3			.0	.2	1.5	5.3	100.0
21	31.0	59.3			.1	.0	1.4	8.1	100.0
22	36.8	60.5	.0		.0	.2	.4	2.1	100.0
23	38.4	59.4			.0	.1	.2	1.9	100.0
24	38.5	60.2			.0	.2	.2	.8	100.0
25	43.5	55.3		.0	.1	.1	.3	.6	100.0
26	45.2	54.0	.0		.1	.1	.2	.4	100.0
27	40.6	58.5			.1	.1	.0	.7	100.0
28	47.0	51.9		.0	.2	.0	.0	.7	100.0
29	39.2	58.5			.6	.4	.2	1.0	100.0

191

Table B2: Level of school attendance for children of ages 5 to 29 – NSS 61st round

age	never attended	attended in past	attending non formal	pre-primary	primary	middle	secondary and higher sec	graduate and above	All
				Urban male					
5	25.3	.8	.4	29.4	43.9	.3			100.0
6	9.1	.3	.5	11.9	77.9	.4			100.0
7	4.9	1.2	.4	4.6	87.5	1.4			100.0
8	6.7	.7	.2	3.3	87.6	1.5			100.0
9	4.2	.8	.2	1.0	85.1	8.7			100.0
10	4.6	1.1	.4	.6	61.6	31.7	.1	.0	100.0
11	2.4	3.4	.1	.0	26.8	66.8	.5	.1	100.0
12	4.9	5.6	.1	.5	18.5	62.1	8.3	.0	100.0
13	3.5	8.1	.1	.0	6.3	50.6	31.3		100.0
14	5.1	11.2		.0	3.5	27.2	53.0	.0	100.0
15	6.5	21.5	.1		2.2	12.0	56.9	.8	100.0
16	5.6	25.1		.0	.8	6.7	59.5	2.3	100.0
17	5.7	31.1	.0		1.2	2.1	48.4	11.5	100.0
18	7.2	47.8		.0	.1	.8	23.9	20.2	100.0
19	4.5	45.4	.1		.0	.1	14.3	35.5	100.0
20	9.1	58.3			.0	.4	5.6	26.5	100.0
21	5.4	62.4	.0			.2	2.1	29.8	100.0
22	8.8	71.1	.0		.0		1.1	18.9	100.0
23	9.1	74.2	.0		.0	.0	1.5	15.2	100.0
24	7.3	80.8			.1	.3	.6	10.9	100.0
25	14.1	80.9	.0			.2	.2	4.6	100.0
26	7.8	87.4	.0		.0	.0	.0	4.8	100.0
27	5.9	88.4		.1		.0	.0	5.6	100.0
28	11.0	87.6				.0	.2	1.2	100.0
29	6.8	90.6			.0		.3	2.3	100.0
				Urban female					
5	26.0	.9	.6	30.8	41.6	.1			100.0
6	11.0	.8	.1	11.0	76.6	.5			100.0
7	6.6	.3	.7	4.6	86.2	1.6			100.0
8	6.9	1.8	.4	1.1	87.1	2.6			100.0
9	4.2	.8	.2	2.8	81.2	10.8			100.0
10	6.2	1.7	.1	1.4	56.0	34.6	.1		100.0
11	5.2	2.0	.0	.1	28.8	63.3	.6		100.0
12	4.8	6.1	.3	.0	14.4	62.5	11.9		100.0
13	5.9	7.1	.0	.6	6.9	44.6	34.5	.3	100.0
14	6.4	12.7	.0	.0	3.5	24.9	52.5		100.0
15	8.7	20.3			.6	10.6	58.6	1.1	100.0
16	10.4	25.5	.1	.0	.3	4.5	55.2	4.0	100.0
17	7.3	33.8			.4	2.7	43.6	12.2	100.0
18	11.5	43.1		.0	.7	.7	17.5	26.5	100.0
19	11.6	43.6			.0	.7	9.3	34.7	100.0
20	17.0	58.4			.2	.5	3.4	20.6	100.0
21	10.9	63.5			.2	.0	3.1	22.3	100.0
22	16.7	71.3	.0			.0	.3	11.5	100.0
23	11.9	76.9				.0	.4	10.8	100.0
24	12.1	79.8			.2	.0	.1	7.8	100.0
25	19.2	77.5	.0	.1	.1	.0	.1	3.0	100.0
26	18.7	79.1	.0		.2	.0	.2	1.8	100.0
27	14.5	83.1			.3	.0	.5	1.6	100.0
28	18.9	80.0		.0	.1	.1	.1	.8	100.0
29	13.0	86.0				.1	.2	.7	100.0

Rural Non Farm Employment (RNFE) and its Measurement through National Sample Surveys on Employment Unemployment

Dr. Rajiv Mehta[*]

[**Summary:** *In the economic environment of accelerated growth, the inequity in growth and accruals of its gains across regions and sectors is a development issue of critical contemporary significance. This divide is more pronounced between the rural and urban, particularly between agriculture and non agriculture sectors, mainly due to the structural impediments associated with the farm economy. Creation of non-agricultural opportunities in the rural areas is an identified adjunct to the strategies of managing vulnerabilities associated to farm sector and bringing meaningful structural change in rural socio-economic conditions. It is, therefore, imperative to ensure that the income of the farmers through farm and non-farm economic activities rise and the divide between the income of farmers and others is minimized. Accordingly, the need for diversified rural economy and expansion of Rural Non Farm Employment (RNFE) has been emphasized at the apex forums of policy formulation.   This underlines the importance of measuring and factoring the RNFE. The National Sample Survey (NSS) on Employment and Unemployment is one of the most comprehensive and premier source of estimates of various parameters of labour force and its participation ratios. The present paper delves on the aspects of measuring RNFE through the results and concepts followed in 61st Round NSS Employment and Unemployment Survey (2004-05) along with salient policy derivatives.*]

I. Introduction: The scope of increasing the income of the farmers, merely through farming operations is seriously constrained mainly due to low productivity, stressed land resources, preponderance of small and marginal land holdings and risk associated with farm activities. Further, the agricultural growth is not keeping pace with the faster overall economic growth and the share of agriculture in the overall GDP has been gradually shrinking. Although such a phenomenon is not un-desirable as this is the consequence of economic development, the continued high dependence of population / labour force on agriculture resulting in to decline in per capita income in the farm sector is identified as a crucial factor for causing the economic devide between farm and non farm sector.

The approach paper for the XIth Five Year Plan (Planning Commission 2006) was sensitive to this emerging divide in the economy and has laid emphasis on bridging the same. While emphasizing the catalytic role of accelerated agricultural growth for development and overall economic growth, the approach paper views that such agricultural growth may not to be a source of increasing direct employment but be a necessary condition for reducing under employment and increasing agricultural earning per head. Considering the negligible employment elasticity to the agricultural growth (Planning Commission 2002), creation of non-agricultural opportunities is adjunct to the strategies of managing vulnerabilities associated to farm sector and bringing meaningful structural change in rural socio-economic conditions. This need of diversified rural economy and expansion of Rural Non Farm Employment (RNFE) has also been echoed in the Resolution of the 53rd National Development Council (NDC) meeting held on 27th May, 2007. It is, therefore, imperative to ensure that the income of the farmers through farm as well as non-farm economic activities rise and the divide between the income of farmers and others is minimized.

Against this background, the policy formilation for creating gainful and self sustaining non farm employment opportunities for the farm households would necessitate synthesis of its existing status. Towards this end, the importance of measuring and factoring the RNFE is underlined. The National Sample Survey (NSS) on Employment and Unemployment is one of the most comprehensive and premier source of estimates of various parameters of labour force and its participation ratios. The present paper delves on the aspects of measuring RNFE through the results and concepts followed in 61st Round NSS Employment and Unemployment Survey (2004-05) along with salient policy derivatives.

 II. Structural agrarian issues and significance of RNFE: The profile of agrarian economy of the country is skewed on account of natural endowments, production asset holdings by the farmers and corresponding resource use efficiency in different regions. Nearly 60 percent of agriculture is rain-fed and substantial part of which is under single cropping. Agricultural operations, particularly in about 90 million hectare single crop area, do not provide adequate opportunity for full engagement of labour. The accentuated demographic pressure on inelastic land resources has led to unabated fragmentation of land

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holdings over the years and average size of holding has fallen to 1.3 hectares. High preponderance of small and marginal farmers with 82% of the land holdings of the size less than 2 hectares, though is a crucial source of livelihood security to majority of farm household, but holds little promise to improve their livelihood standard substantially. Moreover, this livelihood is often breached due to climatic aberrations and adverse produce market situations.

According to Census 1991 and 2001, the rural population registered the growth at 1.68 percent per annum. As against this, the agricultural work force, including cultivators and agricultural labourers increased at 2.4 percent per annum while the total cultivated land has virtually stagnated during the decade. Corresponding to 2.6 percent growth in agriculture GDP (constant price 1993-94 base) the growth in agriculture GDP per agricultural worker during the decade was nominal 0.27 percent per annum, less than one tenth of the growth of per capita GNP. These indicators highlight the disconnect between the economic conditions of the population engaged with agriculture and the overall economic surge witnessed in the recent past.

The income supplementation from non farm activities not only improves the livelihood of farm household, it also plays catalytic role in overall agricultural development. The income augmentation leads to increased household savings and enhances capacity of farmers to invest in their agriculture. There are contemporary developing economies where faster transitions in agriculture and farm household economies have taken place in tandem, due to such restructuring. These restructuring are turning rural households into multi activity rural households. As a result, the notion that rural economies are predominantly agricultural is becoming less significant.

The extent of RNFE making in-roads in the rural economy and its significance for rural development has lately assumed importance, specially in the context of global quest to achieve Millennium Development Goals (Rearden et.el-2006). The impact of economic liberalization on rural employment dynamics has been attracting academic as well as policy interest (Chadha 2003). Such diversification of rural labour participation is considered to be driven by "pull factor" either due to increased farm returns invested in non farm activity or due to external economic development. There is alternatively the " push factor" deriving labour out of agriculture as a result of stagnation and its secular decline. It is, therefore, important to examine various factors that would lead to diversification of household non-farm activities. In the context of Indian agriculture, push factor is becoming more evident, though this may not be a generalization in sub national context, with federal structure of policies and governance. Moreover, Indian agrarian space in itself is very diverse, reflecting on the varying intensity of RNFE. It is therefore necessary to explore, what kind of policy interventions and programmes stimulate diversification of rural economy.

III. NSS concepts and RNFE measurements: The quinquennial Employment and Unemployment surveys of National Sample Survey (NSS) provide state specific temporal data on Labour Force and Labour Force Participation Rate (LFPR) on comparable and established concepts of usual and current activity status in the industry / occupation classification of the activity of persons, since the 27th round (October 1972- September 1973) and the results of latest available 61st round (July 2004 – June 2005) are seventh in this series.

The NSS concepts identify the labour force in terms of activity status of the persons, that is the activity situation in which a person was found during the reference period with regard to the person's participation in economic and non-economic activities. It further identifies the person through the households with the criteria of normal residence. Thus the location of performing the activity by the person may be different from the location of household. Further, NSS as such has not defined Farm Employment explicitly. This also brings out the issue that what should constitute farm employment and non farm employment (Visaria, 1995). Normally, the farm employment should constitute the engagement of the person in production activities in the farm sector covering wider dimension of crop, horticulture, plantation of animal husbandry, fisheries, and its allied variants such as bee keeping, gardening etc. However, the NSS captures the economic domain in which the economic activities are performed by the person, as identified following the National Industrial Classification (NIC 1998). The nature of occupation and operations are also classified under the National Classification of Occupations (NCO 1968). Accordingly, the economic domain of agricultural and non agricultural enterprises is segregated, besides identifying the self employed labour force in agriculture and agricultural labour.

In the context of improving economic conditions of farmers, RNFE for farm households is considered to be crucial for their income augmentation. The published results of NSS 61st round do not classify farm households which inter-alia may imply all households with atleast one member active in the industry and /or occupation classification of agriculture. The NSS 61st round results do classify households in the (a) economic classification depending upon major income share from the activities of all the active members and (b) occupation classification depending upon the aggregate major time disposition of all the active members of the household. Thus the households classified under "Self employed in agriculture households" and "agricultural labour households" may not be the total domain of farm households. Though, the segregation of farm households in the NSS sample is possible through re-tabulation of unit-wise data, the RNFE indicators and the inferences are drawn from the available results, keeping in view the aforesaid conceptual considerations.

The activity status of the persons in the NSS results are identified with agriculture either as primary activity or as secondary activity in terms of time disposition and not in terms of income generation. If the agriculture activity of a person is tertiary   in nature, it is not getting reflected in the NSS results.   Rural activities are predominantly agricultural and thus are of seasonal labour occupancy. Hence, in the present analysis **LFPR in RNFE (**Labour Force Participation Rate in Rural Non Farm Employment) is taken on Primary usual activity basis i.e. on the basis of time disposition in the activities in the reference period of preceding 365 days.

IV. RNFE indicators and inferences: Over the years, there is an increasing trend of LFPR in RNFE, particularly for males. During 2004-05, usually active male labour force in non-agriculture was 34 percent, 5 percent points higher than in 1999-2000 (55th Round). This was highest percentage point increase during any other quinquennial intervals of NSS Employment Unemployment Surveys (Figure-1). The trend of LFPR in RNFE has accelerated in the recent years. Incidentally, this period coincides with the period of economic liberalization and of accelerating growth of overall economy. However, the trend is not gender neutral and female participation in RNFE has not shown any significant increase over the decades. The sub National perspective on female participation is differentiated, as discussed later.

Fig-1: Trend of LFPR in RNFE
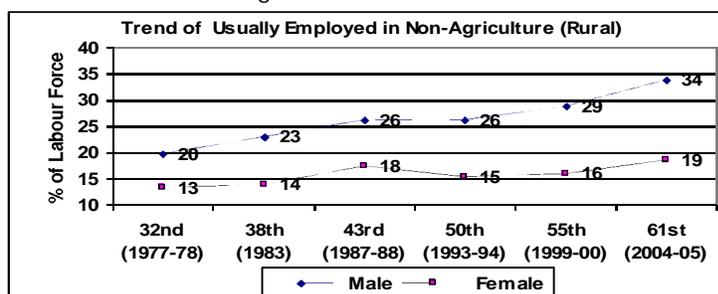
The increasing trend of RNFE has also not made any noticeable transformation in the structure of rural labour force participation. Despite the constraints of agriculture sector to further absorb the workforce, the rural employment continues to be predominantly agrarian and 66.5 percent of usually employed male persons, 83.3 percent female persons and 70.8 percent of all persons are engaged in agriculture (Table-1).

Table-1 : Per 1000 distribution of usually (Principal) employed persons by broad industry division (NIC 1998) during 1993-94 to 2004-2005.

Broad Industry Division	Male			Female		
	50th Rd (1993-94)	55th Rd (1999-00)	61st Rd (2004-05)	50th Rd (1993-94)	55th Rd (1999-00)	61st Rd (2004-05)
Agriculture	741	714	665	862	854	833
Mining and Quarrying	6	6	7	4	3	3
Manufacturing	70	73	79	70	76	84
Electricity, Water, etc.	3	2	2			
Construction	32	45	68	9	11	15
Trade, Hotel & Restaurant	55	58	83	21	20	25
Transport, Storage & Communication	22	32	38	1	1	2
Other Services	70	61	59	34	37	39
All	1000	1000	1000	1000	1000	1000

Source: NSS 61st Round Report no. 515 (Statement 5.9)

Amongst the non-farm activities, perceptible change in the activity status is witnessed in service sector mainly in construction, trade, hotel and restaurant. The impulses to increase RNFE in manufacturing and transport, storage and communication have been relatively weak. Rather, there is a decline in the LFPR in other services in rural areas.

The sub-national analysis of LFPR in RNFE is confined to 21 major States namely Andhra Pradesh (AP), Assam, Bihar, Chhatishgarh, Gujarat, Haryana, Himachal Pradesh (HP), Jammu & Kashmir (J&K), Jharkhand, Karnataka, Kerala, Madhya Pradesh (MP), Maharashtra, Orrisa, Punjab, Rajasthan, Tamil Nadu (TN), Tripura, Uttranchal, Uttar Pradesh (UP) and West Bengal (WB) and this gives interesting revelations (Table 2).

Table 2: Incidence of LFPR in RNFE (all persons) in States

LFPR in RNFE	States
More than 50%	Kerala (62), Tripura (53)
40 – 50%	Haryana (46), J&K (47), Punjab (46),
30 – 40 %	HP (35), Jharkhand (33), Orissa (33), Rajasthan (31), TN (35), UP (32), WB (38),
20- 30 %	AP (28), Assam (29), Bihar (23), Gujarat (25), Maharashtra (20), Uttaranchal (25),
Less than 20%	Chattisgarh (14), Karnataka (19), MP (18)

Source: *Author's compilation from NSS 61st Round Report no. 515 (Statement 5.9.3)*
Figures in bracket are % LFPR in RNFE

The LFPR in RNFE at 62 percent is highest in Kerala followed by Tripura. In agriculturally prosperous states like Haryana and Punjab, the LFPR in RNFE is higher than the national average. On the other hand, in economically dynamic states, like Gujarat, AP, Maharashtra and Karnataka, LFPR in RNFE is lower than national average. This phenomenon may be interesting for further analysis. It is a generally expected that overall economic growth would be stimulating "pull factor" and compensating "push factor" for the LFPR in RNFE. The absence of this may be due to low percolation of growth in the hinterland. This is also possible that agrarian economy in these states may have resilience to keep people engaged in agriculture. The States may also be less comparable due to their geographical dimensions and logistics of respective agriculture besides the polarized development.

There is also a varying pattern in absorption of LFPR in RNFE in the industry divisions. (Table 3). Construction sector is most widely absorbing industry division, out side agriculture, particularly of male lablor force. In Kerala the distribution of LFPR in RNFE is most well distributed over the industry groups. However, in general, the manufacturing and the services, the two main growth derivers of overall economy, are not having that pronounced a role in stimulating rural labour force engagement.

The pattern of rural LFPR in industry division out side agriculture has significant gender differentiation across the States. In Kerala, J&K and West Bengal, the female LFPR (Rural) in manufacturing is about a quarter or more. The female LFPR (rural) in other services such as education, communication, public administration (rural participatory activities) is high in Kerala, Punjab and West Bengal.

Table 3: Dominant industry divisions contributing to LFPR in RNFE in States

Broad Industry Division	States with 10% or more LFPR in RNFE in broad industry divisions		
	Male	**Female**	**Persons**
Mining and Quarrying			
Manufacturing	Gujarat (10), Haryana (12), J&K (10), Kerala (10), TN (13),	J&K (30), Jharkhand (10), Kerala (24), Orissa (17), TN (15), WB (29)	J&K (12), Kerala (14), Orissa (11), TN (14), WB (12)
Electricity, Water, etc.			
Construction	Haryana (13), HP (19), J&K (10), Jharkhand (15), Kerala (15), Punjab (14), Rajasthan (14), Tripura (12), Uttaranchal (11)		Haryana (11), HP (11), Jharkhand (11), Kerala (12), Punjab (13), Rajasthan (11), Tripura (12)
Trade, Hotel & Restaurant	Assam (12), Haryana (11), Kerala (12), Tripura (12), WB (12)		Assam (11), Kerala(13), Tripura(11), WB (10)
Transport, Storage &	Kerala (10),		

196

Table 3: Dominant industry divisions contributing to LFPR in RNFE in States

Broad Industry Division	States with 10% or more LFPR in RNFE in broad industry divisions		
	Male	**Female**	**Persons**
Communication			
Other Services	J&K (11), Kerala (10), Tripura (26)	Assam (10), J&K (12), Kerala (23), Punjab (36), Tripura (36), WB (12)	J&K (12), Kerala (13), Tripura (26)

Source: *Author's compilation from NSS 61st Round Report no. 515 (Statement 5.9.1, 5.9.2 and 5.9.3)*
Figures in bracket are % LFPR

Agriculture in the country is predominately a household enterprise and the rural households are generally multi activity households. The household members get engaged in the respective activity in varying intensity. The NSS results, besides measuring the activity status and LFPR for persons, also provide useful information on household type, taking into account the aggregate of economic activities pursued by the household members. Table-4 gives the distribution of rural households in household type, classified as major economic contribution from the numerous activities pursued by the active household members.

Table-4: Percentage distribution of households by household type (Rural)

Household Type	% households
1. Self-employed in Agriculture	35.9
2. Self-employed in Non-Agriculture	15.8
3. Total self-employed (1+2)	**51.7**
4.Agricultural labour	25.8
5. Other labour	10.9
6. Total Rural labour (4+5)	**36.7**
7. Others	11.6
8. All	**100.0**
9. Agricultural Households (1+4)	**61.7**

Source: *NSS 61st Round Report no. 515*

The agriculture households, in the aforesaid conceptual framework, comprise both the self employed type of households as well as the agricultural labour households. Accordingly, there were 61.7 per cent households of such type, comprising 35.9 per cent self employed in agriculture and 25.8 per cent agriculture labour households. As discussed in the section of concepts, there may remain some over lap / omission in the consideration of farm and non farm households in the aforesaid tabulation.

The rural activity profile in the NSS results is also available in the segregation of land ownership of the households, an important agrarian parameter. Table-5 gives the distribution of households and household activity types according to land ownership. There is skewed distribution of self employment and rural labour in non-agriculture for the households with land ownership less than one hectare. The percentage of these household types is 85.5 and 83.8 respectively corresponding to 71 percent of the total households belonging to such marginal land ownership. In the household categories owning land more than one hectares, the distribution of self employed households in non-agriculture is relatively lower. Amongst the landless, the propensity of households in non-agricultural labour type and of other activities is higher. This indicates the significance of "push factor" in RNFE prevalent in the preponderant land marginalization in the agrarian economy. The analysis of "push factor" in the sub-national context may reveal further insight into the dynamics of RNFE.

Table 5: Percentage distribution of rural households by size class of land owned.

Size class of land owned (Hectares)	Household distribution	Household Type in economic activity class		
		Self employed in non agriculture	Rural labour non-agriculture	Other Household
Land Less	6.6	6.7	11.9	20.5
Less than 1HA	71.0	85.5	83.8	68.5
1-2 HA	11.7	4.7	2.8	6.1
2-4 HA	7.2	2.2	1.1	3.4
More than 4HA	3.5	0.1	0.5	1.6
All Classes	100.0	100.0	100.0	100.0

Source: *NSS 61st Round Report no. 515*

As stated earlier, RNFE is considered to be an important development catalyst, particularly for defusing the rural poverty (Jha, 2006) and ushering inclusiveness in the growth process. The cause and effects of poverty incidence has multiple dimensions. However, there are evident correlations in RNFE and rural poverty incidence (measured through 61st Round consumer expenditure survey). For exploring this postulation, following set of indicators are taken and corresponding correlation matrix is given in Table-6

P: Percentage Incidence of rural poverty on Mixed Recall Period consumption (61st Rd Consumer Expenditure)

X_1:   Percentage of households by Non Agriculture household type (Other than Self   Employed   in Agriculture, Non Agriculture labour and others)

X_2:   Percentage of usually working persons status (Industry division other than Agriculture)

X_3 : Percentage of persons by general educational level – Not literate

The agrarian space of the country is very heterogeneous. This heterogeneity brings down the correlation between the considered parameters. Therefore, the correlation has been worked for the states grouped in two broad and more homogenous groups. The states of indo-gangetic plane are traditionally agrarian with prominence of food grain cultivation. The cropping pattern of these states is also subjected to the specific policies and technology intervention, focused on food security. In the other group of states, the agriculture has been move diverse and market oriented.

Group-1 (States of Indo Gangatic plane) : Assam, Bihar, Haryana, Jharkhand, Orrisa, Punjab, Uttranchal, Uttar Pradesh (UP), West Bengal (WB)

Group-2 (Other than Group 1) : Andhra Pradesh (AP), Chhatishgarh, Gujarat, Himachal Pradesh (HP), Jammu & Kashmir (J&K), Karnataka, Kerala, Madhya Pradesh (MP), Maharashtra, Rajasthan, Tamil Nadu (TN),

Table 6: Correlation of RNFE and Poverty indicators

State Groups	Parameters	Correlations			
		P (Poverty)	X_1	X_2	X_3
All Major States	**P (Poverty)**	1			
	X_1	-0.496	1		
	X_2	-0.471	0.926	1	
	X_3	0.468	-0.577	-0.537	1
Group 1 **All Major States of** **Indo Gangatic plane**	**P (Poverty)**	1			
	X_1	-0.641	1		
	X_2	-0.643	0.972	1	
	X_3	0.700	-0.351	-0.366	1
Group 2 **All Major State other** **than Group 1**	**P (Poverty)**	1			
	X_1	-0.702	1		
	X_2	-0.662	0.998	1	
	X_3	0.289	-0.692	-0.657	1

Rural Poverty and RNFE are negatively correlated. This negative correlation improves on segregation of states in the broad homogenous groups. The correlation is stronger between poverty and RNFE household type than that between poverty and LFPR in RNFE for persons, signifying the importance of activity profile of rural households. While the poverty and illiteracy are positively correlated, this correlation was found to be stronger in indo-gangetic plane. The negative correlation between illiteracy and RNFE indicators substantiates the role of education and skill in diversification of activity profile of rural India.

V. Concluding observations: Amongst the development issues of prime concern faced by India, the foremost is that relating to accentuating socio-economic divide between rural and urban areas. One of the prime causes of this is the coexistence of rapid economic restructuring leading to gradual marginalization of agrarian economy with the demographic rigidity of population dependence on agriculture. The consequent chronic poverty in rural areas would need to be addressed using catalysts such as RNFE. The demographic structure is poised to increase the labour supply in rural areas. Given

the negligible employment elasticity of agricultural growth, this augmenting labour supply will need to be given more opportunities of absorption in non farm employment in rural areas.

Some of the barriers to hold back the process of RNFE are evident such as illiteracy, that engulfs nearly 54 per cent of rural work force. Not only RNFE, but the nature of RNFE with better income generation require skill development of rural work force to meet the requirements of diversified economic activities. The basic literacy would be essential for skill development.

Further, the rural infrastructure, communication, support system and service delivery mechanism for linking such rural activity domains with economic expressways would also be necessary. This would require a road map for RNFE and a more detailed synthesis of LFPR in the regional perspective. NSS data base of 61st round employment unemployment survey offers ample data mining scope in this endeavour.

References:

Chadha, G.K., 2003. Rural employment in India: Current situation, challenges and potential for expansion. Issues in employment and poverty discussion paper 7. Recovery and Reconstruction Department, International Labor Office, Geneva.

GOI (Government of India)., 2001, Task Force on Employment Opportunities, Planning Commission

GOI (Government of India)., 2006. Results of Employment and Unemployment Survey. NSS report 515 National Sample Survey Organization, Ministry of Statistics and Program Implementation, New Delhi.

GOI (Government of India)., 2006, Towards a Faster and More Inclusive Growth, An Approach Paper for 11th Five Year Plan, Planning Commission

Jha B. (2006) Rural non-farm employment in India: Macro-trends, Micro-evidences and Policy options, Institute of Economic Growth Working Paper

Reardon, T., Berdegue, J., Barrett, C.B., Stamoulis, K., 2007. Household income diversification into rural non-farm activities. In: Haggblade, S., Hazell, P., Reardon, T. (Eds.), Transforming the Rural Non-farm Economy: Opportunities and Threats in the Developing World. Johns Hopkins University Press, Baltimore.

Visaria, P., 1995. Rural non-farm employment in India: Trends and issues for research. Indian J. Agric. Econ. 50(3), 398-409.

Status of Vocational Training in Haryana.

Manoj Kumar Goel[*]

Meaning of vocational training: In general, when we use the term " training" together with the adjective "vocational" in a conversation, we refer to a certain type of training whose main objective is preparing people for work. According to another view, it is also possible to state that vocational training should not only train people for all types of work and their modalities but also for community life in order to understand social and working relations and to act in a transforming way. Therefore, it could be said that vocational training means both training for work and training for citizenship. A vocational training was broadly defined as a training, which prepared an individual for a specific vocation or occupation. Governments, entrepreneurs and workers are now increasingly interested in it since they are becoming aware of the importance of its contributions to the distribution of employment opportunities in general, to the rise in productivity and the improvement of quality and competitiveness, to the achievement of appropriate and healthy working conditions as well as the possibility for social dialogue at various levels.

Can vocational training be useful as a tool for organizing workers?: Vocational training is an instrument that serves simultaneously to multiple objectives. Some of them are framed with in the employer's interests while others are more related to the interests of workers. In fact, through the attainment of objectives such as the increase in productivity and the improvement of enterprise competitiveness, it may favour scenarios of employment assurance and possibility of wage or extra wage increase. From the point of view of the individual worker, it is clear that the access to higher levels of qualification improve their opportunities to keep their jobs and improve their working conditions in many aspects. Therefore, workers will always be interested in improving their qualifications. The mere consideration of these reasons leads to the conclusion that it is important for trade unions to get interested in vocational training: it can improve working conditions and defend worker's employment and, at the same time, it echoes a demand made by those who integrate the union and those represented by it.

Current View on vocational training: Vocational training has become a very important factor with the advent of new ways of organizing and managing production and work. This is so because knowledge has gained an unusual prominence with respect to other productive factors such as land, capital goods or technology. Vocational training is an advantageous means to access such knowledge and spread it.

Type of vocational training:

Broadly vocational training are of two types:-

a)   Formal vocational training
b)   Non-formal vocational training.

a) Formal vocational training: The vocational training that took place in education and training institutions which followed a structured training program and led to certificates diplomas or degrees, recognized by State/Central Govt., Public Sector and other reputed concerns is considered to be formal vocational training.

b) Non-formal vocational training: The expertise in a vocation or trade is sometimes acquired by the succeeding generations from the other members of the households generally from the ancestors, through gradual exposures to such works. The expertise gained through significant 'hands-on' experience enables the individual to take up activities in self-employment capacity or makes him employable. Such training is called non-formal vocational training.

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Status of vocational training in Haryana: The department of Industrial Training & Vocational Education, Haryana promote technical/vocational education in the State. It's main objective is to reduce unemployment among the educated youth by providing them technical training for employment/self employment. There are mainly three schemes are running at present in Haryana:-

1) Craftsman Training Scheme.
2) Vocational Education Scheme
3) Apprenticeship Training Scheme.

1) Craftsmen Training Scheme: The main objectives of the Craftsmen Training Scheme is to provide skilled craftsmen to industries according to their requirements and also to provide self-employment opportunities to educated youth by giving them industrial training. The scheme was started in 1950 and transferred to state in 1956. In 1966 there were 48 ITIs with seating capacity of 7156 trainees. At present under this scheme, training is being imparted in 41 Engineering and 12 Non-Engineering trades. The total sanctioned seats in Industrial Training Institutes under this scheme are 15104. National Council of Vocational Training (NCVT) conducts final trade test and National Council of Vocational Training (NCVT) awards National Trade Certificate. The total sanctioned units are 992. Out of 992 trade units, 80 designated and Non-designated trade units, not affiliated with National Council of Vocational Training (NCVT), are being run under State Council of Vocational Training (State Scheme) and final trade test of these trade units are conducted by State Council of Vocational Training(SCVT) and certification is also done by State Council of Vocational Training(SCVT). 23 private Industrial Training Institutes is being run by this department with a sanctioned seat of 1326.

At present there are 78 Industrial Training Institutes including ITI (Women). Out of these, 31 institutes are running exclusively for women. As per the Govt. policy, the women students are exempted from payment of tuition fee. For practical, the training grants @ Rs. 200/ per trainee per month for Engineering trades and Rs. 150/- per trainee per month for Non-Engineering trades is provided by the State Government.

Strength of trainees under craftsmen training scheme

Govt. Institutes

1.	ITIs	=	14506
2.	ITI(W)	=	2095
3.	Govt. Art School Rohtak	=	60
4.	Govt. Footwear Institute Rewari	=	50
5.	TTCs	=	252
	Sub Total	=	16963

Private Institutes

6.	Private TTCs	=	36
7.	Private ITCs	=	2686
8.	Private Art & Craft TTCs	=	4320
	Sub Total	=	7042

2) Vocational Education Scheme (VES): Vocational Education Scheme is a centrally sponsored scheme through the Ministry of Human resources Development, Government of India. Presently 98 Vocational Education Institutes (VEIs) are being run under Non-Plan scheme while 14 under State Plan Scheme. Under this scheme, Vocational Education is being imparted in 19 vocations. The final 10+2 examinations are conducted and certificates are awarded by the Board of School Education Haryana, Bhiwani. The total sanctioned seats in 107 Vocational Education Institutes under this scheme are 18900.

Function of State Institute of Vocational Education (SIVE) is to provide Research and Development support to the Vocational Education Program (VEP) at the State level. Functions include development of curricula and instruction material, conducting district vocational surveys, providing

academic support to SCVE, in service teacher training and to organize training, vocational guidance and placement activities.

3) Apprenticeship Training Scheme: The object of this scheme is to provide training facilities to the maximum number of people in different trades in various establishments under Apprenticeship Act 1961. Under the act, all employers are bound to engage prescribed number of apprentices as per ratio determined by the Central government for each designated trade on the basis of the survey conducted by the department. The number of seats available 7468 for engagement of apprentices located in 967 Industrial establishments against which 5876 apprentices have been engaged by the Industrial establishments for Apprenticeship training. There are 140 trades in formal sector and 13 trades in informal sector. This department is also making efforts to locate and engage Apprentices in informal sector. 53 seats have been located in informal sector by conducting survey in Haryana State. Efforts are being made to locate more seats and engage more Apprentices in both the formal and informal sectors. ITI passed candidates are encouraged to go for apprenticeship training to improve their skill and standard. Freshers are engaged only in those trades in which training facilities are not provided under the Craftsman Training Scheme or in those trades, which have not been introduced in the Industrial Training Institutes of this State. In this way the youth who complete their training successfully under Craftsman Training Scheme are provided opportunities for engagement as apprentices in the various Industrial establishments. After the completion of apprenticeship training, apprentices are required to take National Apprenticeship Trade Test and those who pass this test are awarded National Apprenticeship Certificate. During Apprenticeship Training, basic training is imparted in ITI's.

In the Department of Industrial Training & Vocational Education, Haryana following institutes are functioning.

1.	Industrial Training Institutes	:	48
2.	Industrial Training Institutes (Women)	:	31
3.	Teacher Training Course Centres	:	08
4.	Vocational Education Institutes	:	107
5.	Govt. School of Arts Rohtak	:	01
6.	Govt. Footwear Institute Rewari	:	01
7.	Advanced Vocational Training Centres at Faridabad & Yamuna Nagar.	:	02
8.	Basic Training Centre at Faridabad	:	01
9.	Industrial Training Centres (Private)	:	41
10.	Private Art & Craft Teacher Training Centres	:	36
11.	State Institute of Vocational Education, Panchkula	:	01
	Total number of Institutes under the Department	:	277

Sum up: The concept of vocational training and its practical application has changed throughout history and keeps doing so. If we compare it to regular general education, in spite of the already mentioned changes, vocational training still maintains a close link with the labour world. Thus vocational training is not oriented nowadays to training for the performance of a specific job post; on the contrary, it tries to provide broader abilities that may allow workers to act in a wide range of working situations: occupations, occupational clusters and the labour market in general.

QUICK TABULATION ON 61ST ROUND OF NSS (July2004-June 05)

Chandana Banerjee*

[Abstract: The Government of India conducts regular nationwide socio-economic survey through NSSO. The Directorate of Planning, Statistics and Evaluation has participated in conducting Integrated Survey during the NSS 61st Round (July 04-June 05) covering Household Consumer Expenditure and Employment and Unemployment. The NSSO has designed the questionnaire in this regard and selected units and blocks (24 each from rural and 36 urban) comprising the State Sample. The data has been collected through oral enquiry by trained statistical personnel*

The study reveals that Self Employed in Non-Agricultural households were about 18% rural sector and 31% urban households were Self Employed in urban sector. In case of marital status in never married category found almost equal i.e. 48% and 49% in rural and urban sectors respectively. The religion matter i.e. Hindu found almost equal i.e. 61 and 64% in rural and urban sectors respectively. However, 8% rural & 1% urban hhs. were ST as Social groups in rural and urban sectors respectively.

About 2% rural and 4% households had source of lighting as kerocene. About 44% rural households found <1000 MPCE as compared to 38% in urban households.

About 52% rural households reported that they were using LPG as the main source of fuel for cooking whereas 80% urban households reported using LPG.

It is observed that about 96% of the total villages were having bus stop and, 71% villages Health Sub Centre, 38% villages community center within village. Almost all villages were having Primary schools and All whether road within village. About 54% villages were having secondary education facility with in village whereas higher secondary facility was available within the villages in 25% villages.

Out of 24 village units it was observed that all villages were having Electricity facility.]

Introduction: The Government of India regularly conducts nationwide socio-economic surveys through National Sample Survey Organization (NSSO). The data so collected provides useful inputs for policy and research purposes. The utility of NSS data is increasing and it is being subjected to through scrutiny.

Objective: The main objective of the 61st round was to collect information on Household Consumer Expenditure and Employment and Unemployment .

Selection of sample: Goa has 49% urban population and 51% rural population as per 2001 Census. Accordingly, 60 sample units (24 rural and 36 urban) were selected by using appropriate sampling technique. The selected units were drawn by SDRD, (NSSO), Kolkata. At the time of field survey 2 urban blocks found Zero case category.

The results presents here are based on data collected from 240 rural and 340 urban households.

Study period: The survey of this round was conducted during one year (July 04 - June 05)

Method of data collection: The well designed, pre-tested Questionnaire were canvassed and the data was collected through oral enquiry method by trained investigators

Household Consumer Expenditure:

Findings/ Analysis

The survey reveals that the percentage of population among males and females and Never married status almost equal in both rural and urban areas (table no. 1& 2).

Table no. 1

Percentage distribution of Population by Sex

Sex	Rural	Urban
Males	50	49
Females	50	51
Total	100	100

Table no. 2
Percentage distribution of Marital Status by Sector

Marital Status	Rural	Urban
Never married	48	49
Married	44	46
Widow	8	5
Divorsed	0	0
Total	100	100

It was observed that in Rural Sector 18% found were Self–Employed in Non-Agriculture and 9% belonging to Self Employed in Agriculture whereas 31% were Self Employed and 51% were Regular wage / Salary earning in Urban Sector. (Table No. 3)

Table no. 3
Percentage distribution of household types by Sector

Household Type	Rural
Self –Employed in Non-Agriculture	18
Agriculture Labour	14
Other albour	8
Self-Employed in Agriculture	9
Others	51
Total	100

Household Type	Urban
Self –Employed	31
Regular Wage / Salary earning	51
CACasual labour	4
Others	14
Total	100

Table No. 4 reveals that about 60% and 64% households were Hindus whereas Christians found 38% and 27% in Rural and Urban sectors respectively.

Table no. 4
Percentage distribution of religion By Sector

Religion	Rural	Urban
Hindu	60	64
Muslim	2	9
Christian	38	27
Sikh	0	0
Total	100	100

During survey it was found that 8% and 1% persons were STs whereas 80% and 94% were Others in Rural and Urban Sectors respectively. (Table No. 5)

Table no. 5

Percentage distribution of Social Status by Sector

Social Status	Rural	Urban
ST	8	1
SC	3 9	1
OBC	80	4
Others		94
Total	100	100

About 60% rural households reported that they were using firewood and kerosene as the main source of fuel for cooking. In rural and urban areas while 39% and 77% households respectively were using LPG for cooking, 13% households in urban areas were using kerosene for cooking.

Table no. 6
Percentage distribution of households type of main source of cooking

Main source Of fuel	Rural	Urban
Coke / Coal / Charcoal	46	-
Firewood	-	15
LPG	52	80
Gobar Gas	2	-
Kerocene	1	5
Electricity	-	-
Others	-	-
Total	100	100

The study revealed that 2% and 4% rural households using Kerocene and 98% and 95% were using Electricity as Source of Lighting in Rural and Urban Sectors respectively.

Table no. 7
Percentage distribution of Source of Lighting

Source of Lighting	Rural	Urban
Kerocene	0	0
Electricity	100	99
Others	0	1
Total	100	100

In Table No.8, the status of MPCE of Households is found not much change because 44% and 38% of the households were MPCE having Rs. < 1000.

Table no. 8
Percentage distribution of MPCE by Sectors

MPCE(Rs.)	Rural	Urban
<1000	44	38
>1000	56	62
Total	100	100

205

Employment and Unemployment

Table No. 1 reveals that about 62% and 57% households were Hindus whereas Christians found 37% and 32% in Rural and Urban sectors respectively.

Table no. 1

Percentage distribution of religion By Sector

Religion	Rural	Urban
Hindu	62	57
Muslim	1	11
Christian	37	32
Sikh	0	0
Total	100	100

During survey it was found that 11% and 1% persons were STs whereas 71% and 92% were Others in Rural and Urban Sectors respectively. (Table No. 5)

Table no. 2

Percentage distribution of Social Status by Sector

Social Status	Rural	Urban
ST	11	1
SC	2 16	2
OBC	71	5
Others		92
Total	100	100

Table no. 9 shows that the percentage of Unemployment in rural Males and Females was 8%and 4% whereas in urban sector 5% in both Sexes. However, Not in Labour Force in Rural Sector was 46% and 84% in Males and Females whereas it was 42% and 80% in Urban Sector.

T**able no. 3**

Percentage distribution of usual activity status

Usual Activity status	Rural		Urban	
	Male	Female	Male	Female
Employed	46	12	53	15
Unemployed	8	4	5	5
Not in Labour force	46	84	42	80
All	100	100	100	100

Village facilities: In the survey, information was collected about various facilities available in the villages. Bus stop facility was available in about 96% villages within villages. However, all whether road facility was available 96% villages within villages About 96% of the villages were having Primary Schools and 54% villages were having Post offices within village. About 54% villages were having secondary education facility with in village whereas higher secondary facility was available within the village in 25% villages. Electricity facility was available in all the villages. It is interesting that about 67% of the villages were having PCO.

206

Some Field Experiences Of The 61st Round Of Socio-Economic Survey On Household Consumer Expenditure And Employment-Unemployment

Dr. A. K. Yogi, Servesh Kumar & Bhaskar Mishra*

Introduction:

0.1   The National Sample Survey (NSS) 61st Round of Socio-economic survey (July 2004 – June 2005) was devoted to the twin subjects on Household Consumer Expenditure and Employment-Unemployment. It was the seventh quinquennial survey on Consumer Expenditure and Employment-Unemployment. The first quinquennial survey on these subjects was undertaken in 1972-73 (27th Round). The repeat surveys have since been undertaken in 1977-78 (32nd Round), 1983 (38th Round), 1987-88 (43rd Round), 1993-94 (50th Round) and 1999-2000 (55th Round).

0.2   Household Consumer Expenditure surveys formed a regular feature of the NSS activities since its inception in 1950. It was an annual feature till 26th Round (1971-72) and from 27th Round it became a quinquennial survey integrated with employment-unemployment surveys. An annual series of Consumer expenditure surveys on thin sample again commenced from the 42nd Round (1986-87) to meet the persistent demand of planners and researchers. Since 45th Round (1989-90), the item coverage of Consumer expenditure survey was widened to include important key characteristics of employment-unemployment in order to generate an annual series of Consumer expenditure and employment-unemployment data. Starting 60th Round (January-June 2004), a separate schedule on employment – unemployment was introduced in annual Rounds also (on the lines of quinquennial Rounds) to cater to the request of Planning Commission for making available data on the current daily status of employment and unemployment annually.

0.3   Consumer expenditure and employment- unemployment surveys being regular surveys as such did not pose any major technical or conceptual challenges as concepts, definitions etc. are more or less well established over the years and undergo alterations as and when required. However, every Round of surveys throws some unique field experiences which need critical examination for suggesting improvements for future repeat Rounds. Such exercise on a continual basis helps in meeting the numerous and ever growing challenges for collection of reliable and accurate data from field. In this paper, an attempt has been made to present the experiences of FOD in the conduct of the survey for the 61st Round and also suggest appropriate remedial measures for future. The paper has been divided into the following four sections for better appreciation of the issues viz,

> **SECTION–I**   **:** Objective & Coverage
>
> **SECTION–II** **:** Field experiences
>
> **SECTION–III** **:** Quality Control Measures
>
> **SECTION– IV** **:** Brief Summary and Suggestions.

SECTION-I: OBJECTIVE AND COVERAGE

1.1 Objective: The Consumer expenditure data as revealed through the quinquennial Rounds having large sample size is primarily used by the Planning Commission to estimate incidence of poverty at the national and state levels every five years. The Consumer expenditure data through annual Rounds on a smaller sample size helps in mapping these trends on year-to-year basis. Such data are also used to analyse the distribution of expenditure among different sections of population, pattern of consumption of different commodity groups and demand of different commodities for private consumption. In line with Consumer expenditure, the data on employment-unemployment is required to assess the volume and structure of employment and unemployment in the country on a regular basis. The survey also yields estimates on various characteristics pertaining to employment and unemployment at national and state levels. All these are not only important but relevant too for planning and policy formulations.

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1.2 Collection of Information: Information was collected during July, 2004 to June, 2005 in the form of 4 sub-Rounds of three months each by uniformly staggering the samples. In all, 12984 FSUs viz 8376 sample villages and 4608 urban blocks were covered in the central sample across 35 States/UTs. The information was collected from 10 households each for Schedule 1.0 (Consumer Expenditure) and Schedule 10 (Employment- Unemployment) from each of the selected sample village/urban block. At the second stage, households were classified into three strata for both the schedules on the basis of relative affluence in rural areas and by MPCE classes in urban areas for obtaining representative sample of households.

1. 3 Enquiry Schedules: There were three types of schedules canvassed during 61st Round namely;

   i)   **SCHEDULE 0.0 : List of Households**
   ii)   **SCHEDULE 1.0 : Household Consumer Expenditure**
   iii) **SCHEDULE 10 : Employment and Unemployment**

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

<div align="center">SCHEDULE 0.0 : List of Households</div>

Block 5:	List of households and record of selection of Households
Block 5.1:	Working sheet for identifying relatively affluent households (for rural households only) to stratify the households
Block 7:	Distance of the village from nearest facility

<div align="center">SCHEDULE 1.0 : Household Consumer Expenditure</div>

Block 3:	Household characteristics
Block 4:	Demographic and other particulars of household members
Block 5:	Consumption of food, pan, tobacco and intoxicants during last 30 days
Block 6:	Consumption of fuel and light during last 30 days
Block 7:	Consumption of clothing and bedding during last 30 days.
Block 8:	Consumption of footwear during last 30 days.
Block 9:	Expenditure on education and medical(institutional) goods and services(during last 30 days and last 365 days)
Block 10:	Expenditure on miscellaneous goods and services including medical(non-institutional), rents and taxes during last 30 days
Block 11:	Expenditure for purchase and construction(including repair and maintenance) of durable goods for domestic use during last 30 days and last 365 days
Block 12:	Perception of household regarding sufficiency of food

<div align="center">SCHEDULE 10 : Employment and Unemployment</div>

Block 3:	Household characteristics
Block 3.1:	Indebtedness of rural labour household as on the date of survey
Block 4:	Demographic particulars of household members
Block 5.1:	Usual principal activity of household members
Block 5.2:	Usual subsidiary economic activity particulars of household members
Block 5.3:	Time disposition during week
Block 6:	Follow-up question for persons unemployed on all the 7 days of the week
Block 7.1:	Follow-up question on availability for work to persons working in the usual principal or subsidiary status
Block 7.2:	Follow-up question on change of nature of work and/or establishment to persons working in the usual principal status or subsidiary status
Block 8:	Follow-up question for persons with usual principal activity status 92(attended domestic duties only) or 93(attended domestic duties and was also engaged in free collection of vegetables, firewood etc.)
Block 9:	Household consumer expenditure

1.4 Important changes in the Schedules vis-à-vis previous Rounds especially last quinquennial survey i.e. 55th Round (1999-2000).

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

a)   The reference period of 'last 30 days' was used for consumption items- all food; pan, tobacco & intoxicants; fuel & light; miscellaneous goods and services and both 'last 30 days ' and 'last 365 days' for consumption items - clothing, bedding, footwear, education and medical (institutional) and durable goods.

b)   The practice of collecting data with respect to two reference periods i.e. last 7 days and last 30 days from the same household for food, pan, tobacco and intoxicants as introduced during the 55th Round was done away with (in fact this was done away with from 56th Round onwards).

c)   Besides, information on quantity measured in kilograms or litres was recorded up to 3 decimal places instead of 2 as also the information on land area in hectares to be recorded up to 3 decimal places.

d)   The two items ginger and garlic were shifted to vegetables sub-block from the sub-block on spices.

e)   In addition, some new items were added to ascertain whether (i) the household possesses a ration card and, if so, what type, (ii) any household member earns regular wage/ salary income, and (iii) any member has been a beneficiary of a scheme such as Food for Work, Annapoorna, ICDS and Mid-day Meal.

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

   i)   A minimum of 30 days work in the subsidiary capacity during last 365 days was quantified (instead of working for a shorter duration) for a person to be considered as having subsidiary economic activity.

   ii)   Along with the usual principal economic activities, the details of only one usual subsidiary economic activity pursued for relatively more time was to be recorded in case more than one subsidiary economic activity has been reported unlike 55th Round wherein both were recorded.

   iii)   Certain probing questions to collect information on informal employment were posed to all the workers, whether engaged in the usual principal status or in the subsidiary status, engaged in non-agricultural sector as well as in the agricultural sector as covered in the Economic Census 1998.

   iv)   In order to assess the quality of earnings two probing questions viz., 'Is the employment remunerative?' and 'What amount per month would be considered remunerative?' were asked to those engaged in self-employment.

   v)   For persons of age 15 to 29 years, information on 'whether receiving/received any vocational training' was collected along with details on the 'source from where degree/diploma/certificate received', 'duration of training' and 'field of training'.

   vi)   Information on 'voluntary participation without remuneration in production of services' was collected for those members of the household who were not workers, considering both principal and subsidiary status, as per existing production boundary followed by NSSO.

   vii)   Instead of collecting information on skills, information on 'seeking or available or suitable for the type of occupation' was collected for persons of age below 75 years who were either unemployed or out of labour force in the usual principal status.

   viii) Information on 'period of seeking/availability for work during the last 365 days' was collected for all persons of age 5 years and above instead of collecting it for those who were unemployed in the usual principal status as done previously.

   ix)   Along with the information on current attendance in educational institution for all the household members below 30 years, information on type of institution was also collected.

   x)   For getting data on participation of persons in specified activities the coverage was extended to all members of the household usually engaged in household chores from females usually engaged in household chores.

SECTION-II: FIELD EXPERIENCES

2.   General Observations

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

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

2.3   Specific Observations

         During the conduct of the 61st Round, the following difficulties were encountered.

2.3.1   Employment – Unemployment (Schedule 10):

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

         Normally rural labourer households are indebted to rich people of the locality or moneylenders because institutional finance is still inaccessible to them. In most of the cases, the loans are consolidated frequently i.e. when need arises households already indebted to a moneylender take a fresh loan from the same person and this fresh loan is added in the previous loan. Sometimes, loan is taken in the form of food and clothing etc. It was also observed that the purpose of taking loan was different each time a fresh loan is taken. Since this was observed to be a continuous process in many cases, recording separate entries for different loans taken were found difficult in respect of consolidated loans as informants could only tell about outstanding loan amount.

         It is, therefore, suggested that provision should be made to record the total loan amount outstanding along-with the source and the purpose for latest consolidation in such cases.

(ii)   Block 4, Column 11(currently registered with employment exchange): In many cases, the respondents reported that they had registered themselves with the employment exchange but were unable to confirm whether their name was still live on the register or not. Many respondents could not even recollect when they last renewed their registration and this compounded the matter.

         Initially, no lower age limit was specified. However, after field queries, it was clarified that the lower age limit may be taken as the minimum eligibility age for registration with employment exchange i.e. 14 years. In majority of the States this is the minimum eligible age for registration. Thus, this column became relevant only for the household members between 14-65 years of age. However, there was no appropriate code for members below 14 years or above 65 years. As per SDRD advice, code '2' i.e. "not registered" was recorded for such person also. Further, the upper age limit of 65 years for registration with employment exchange also appeared to be superfluous and void of gRound reality. A person of that age registered with employment exchange was rarely found. It should be reduced considerably to have focus on better data collection. Similarly, the lower age limit should also be raised to particularly cover the persons registered with Employment Exchange. A separate code '3' should be provided for household members falling outside the prescribed age limit.

(iii)   Block 4, Column 16: Only the household member availing regular benefits under schemes like "Annapurna", "Mid-Day Meal", "ICDS" and "Food for Works" etc. should be considered as a beneficiary and not those receiving occasional benefits. Instructions in this regard should have been more elaborate and clear to ensure uniformity of concept in the field.

(iv)   Block 5.1, Column 11(number of workers in the enterprise): At times it was difficult to ascertain the number of workers of the enterprise particularly in big organizations like L&T, Reliance etc. When the informants were housewife or other members of the household, it was very difficult for them to provide this information.

(v)   Block 5.1 Column 16: In the block for usual principal activities of household members, information about all persons aged 5 years and above was collected. However, response was negative in most cases of children going to school (age 5-14). The lower age-limit could have been more pragmatic.

(vi)   Block 5.1, Column 17: Under this column information was to be collected for persons of age below 75 years and who 'did not work but was seeking work/available for work' or those who were 'out of labour force'. Majority of the 'out of labour force' respondents when asked about the suitability of occupation could not respond properly. In many cases the respondents gave vague answers and the investigators found it difficult to record appropriate answers/codes.

(vii)   Block 6, Column 5-10: It was very difficult to collect information from the unemployed casual workers as they could not say anything about their last employment.

(viii)   Block 7.1, Column 11: Under this column information about the desired level of earnings in a month for the self employed household members was to be recorded. It was observed that in a number of cases the informants gave insincere or inconsistent response by quoting very high figures and as a result code '6' i.e. more than 3000/- was recorded in majority of cases. The vagueness of such responses needs re-thinking for future Rounds

(ix)   Block 9:   Schedule 10 consisted of very elaborate and detailed information for each and every member of the household and informants very often found to get irritated due to response fatigue during the course of interview. In such a situation, addition of Block 9 having 36 items was like virtually adding a complete schedule 1.0 to be canvassed from the same household. In order to get information on these 36 items covering the entire gamut of consumption expenditure, considerable amount of time was required, which certainly added to the respondent fatigue. In fact filling up of this block alone consumed major share of the total time (average time taken was varying between 45-50 minutes) taken to canvass schedule 10. Therefore for reducing both respondent and investigator fatigues it is suggested that such a detailed summary block may be avoided. If, at all, it is required it should be taken on the pattern of Schedule 25.2 of the 64th Round.

2.3.2   Household Consumer Expenditure (Schedule 1.0):

As regards schedule 1.0, it was observed that:

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

ii)   Respondents were found to recall better for the last 30 days reference period than 365 days.

iii)   Reliable information on purchase of jewellery and ornaments was, as usual, very sensitive question leading to suspicion in the minds of the informants and had negative impact in collection of data on remaining items specially in urban areas in general and the affluent households in particular.

iv)   As regards information on perception of food adequacy (Block 12), there was a tendency among respondents to exaggerate in case of marginal better off poor households. This being a very delicate question exposing the extent of poverty, the investigators had to be very tactful while soliciting correct information and this aspect needs re-emphasis in RTCs.

v)   It is also felt that canvassing of short schedules 1.0 and schedules 10 in SE Rounds, other than quinquennial Rounds, may be considered for dropping. However, in quinquennial Rounds efforts are required to gradually shorten the schedule 1.0 by grouping of items.

vi)   **Block 5 Column 3 & 4:** There are certain items viz. Turmeric, Black pepper, Leaf Tobacco etc. in block 5 which are home produced hence, relevant columns for these items may not be shaded.

vii)   Block 10: Due to change of consumption pattern, a few more items like CNG/LPG used as fuel for vehicle, Water Filter, Inverter etc. being used commonly need be added in block 10.(Water filter and Inverter have been added in the schedule for 64th Round).

2.3.3   Listing Schedule (Schedule 0.0):

(i)   Block 5, Column 8: It has been observed that for single member households (students staying at hostels/hired accommodation, drivers of the high dignitaries residing in servant quarters etc.) the Monthly Per Capita Expenditure (MPCE) generally becomes quite high. As a result, most of such households got code '1' and were categorized under SSS-1 in urban areas. SSS-1 is intended to capture households who were economically in higher strata and thus the very purpose of stratification was defeated frequently when single member household of economically lower strata i.e. drivers, students etc. were selected. It has often been experienced that an affluent household was substituted by his driver in case former household refused to provide information. It is therefore felt that criteria for selection of relatively affluent households need be reviewed so that households who actually qualify for second stage strata-1 are actually captured. This may be done by restricting single member households (students, drivers etc.) who by virtue of having more MPCE qualify under it despite the fact that they belong to lower economic strata.

(ii)   Block 5.1: For identifying relatively affluent households in the FSUs/ Hamlet Group in the rural areas, different criteria based on ownership of Motor Car/ Jeep/Tractor/Combined Harvester/Truck/Bus, consumer durables like Telephone/Mobile/TV etc., cultivable/irrigated land, number of heads of cattle & buffaloes and any member being doctor/advocate/in high salaried job were followed. If the household satisfied at least one of the criteria, it was considered to be an affluent household and listed in block 5.1. From the field point of view, it was however found that mere possession of telephone/mobile did not suffice to categorise a household as affluent as many average households were found to have such facilities due to easy availability.

Problems were also faced while selecting 10 relatively affluent households as the investigator had to apply his judgment in the field. Also getting information for items 12 and 13 i.e. cultivable and irrigated land owned, heavily depended upon the availability of right respondent and at times necessitated re-visits to the household thus consuming more time. Strange it was, to observe although in few cases that despite having a very big ancestral house, the households were passing through a bad economic condition as compared to households living in kutcha houses.

Further, a good number of households which were classified as non-affluent households at listing stage were economically better off than those of affluent households at detailed enquiry stage. Also, the affluent households were relatively reluctant to provide information on possession of motor car/jeep/truck/bus etc. fearing imposition of income tax.

 The limit of 7 hectare cultivable land criteria was also found to be on higher side and the decision of affluency on the basis of a household member being doctor/advocate was also misleading.

 Similarly, the criteria for selection of relatively affluent households in rural areas also need a re-look. Some of the items like telephone, mobile phone, colour TV, VCR/VCD have lost their affluence character hence should be deleted from the block. This may be done by including some objective and relevant affluence criteria which can serve as the benchmark for classification of households as relatively affluent households. The selection procedure should be such that there is minimal subjectivity on the part of Investigators.

(iii)   Block 7: Petrol Pump should be added as an additional item in this block, since consumption of petroleum products has increased substantially in rural areas also owing to increase in number of Tractors, Pump Sets, Motorcycle, Cars etc.

SECTION III: QUALITY CONTROL MEASURES

3.1 Effective Supervision and Inspection: As usual the quality of the data collected during 61st Round was ensured through desk scrutiny of the filled-in schedules as well as field inspections. The fieldwork was undertaken by the Investigators under the direct supervision of Senior Investigators which in turn was inspected by the Superintendent and other higher officers. A minimum of 50 per cent samples were inspected in the first two sub-Rounds and 40 per cent in the third & fourth sub-Rounds. The filled-in schedules submitted by the first level supervisor were subjected to cent per cent scrutiny by the officer in charge of the SRO/NSRO. Besides, at least one set of filled-in schedules of each SRO/NSRO in every month was scrutinized by the respective Regional Heads before being dispatched to concerned Data

Processing Centre (DPC). This had given them an opportunity to asses the quality of schedules scrutinized by the Senior Investigators and Sr. Superintendents/Superintendents and put appropriate checks whenever required. Based on the scrutiny observations, consolidated clarifications were also circulated to the field staff for collecting quality data.

3.2 Monthly Meetings and Feedback: The monthly meetings held at the end of every month or the first week of the subsequent month at Regional Offices (ROs) and Sub Regional Offices (SROs) were very useful fora for discussing problems faced by the field staff along with the scrutiny observations and rendering appropriate guidance and clarifications for maintenance and enhancement of quality of data collected. Besides, 5% of the total completed FSUs were super-scrutinized at the Zonal offices and quarterly scrutiny observations of the Zones were circulated to all ROs/SROs for subsequent quality improvement.

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SECTION IV: Brief Summary and Suggestions

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4.1   Employment – Unemployment (Schedule 10):

In **Block 3.1(Indebtedness of rural labour household)** it was difficult to provide all the details sought in this block because in majority of the cases, respondents were unable to distinguish between different loans and what they could remember was only the consolidated outstanding amount. Owing to the fact that most of the loans were taken from local Moneylenders or Shopkeepers, there were hardly any documentary proof to verify the facts. In substantial number of cases, households were not able to provide the exact details of credit purchase due on the date of survey. At times, there were problems in evaluating the borrowings taken in kind.

Normally rural labourer households are indebted to rich people of the locality or moneylenders, recording separate entries for different loans taken was found difficult in respect of consolidated loans as informants could only tell about outstanding loan amount. **It is, therefore, suggested that provision should be made to record the total loan amount outstanding along-with the source and the purpose for latest consolidation in such cases.**

In **Block 4, Column 11(currently registered with employment exchange)**, the respondents reported that they had registered themselves with the employment exchange but were unable to confirm whether their name was still live on the register or not. Many respondents could not even recollect when they had last renewed their registration and this compounded the matter.

Initially, no lower age limit was specified. However, after field queries, it was clarified that the lower age limit may be taken as the minimum eligibility age for registration with employment exchange i.e. 14 years. However, there was no appropriate code for members below 14 years or above 65 years and as such code '2' i.e. "not registered" was recorded for such person also. Further, the age limit of 65 years for registration with Employment Exchange was void of ground reality. **Code structure for this item may be reviewed and a separate code '3' should be provided for household members falling outside the prescribed age limit.**

Only the household member availing regular benefits under schemes like "Annapurna", "Mid-Day Meal", "ICDS" and "Food for Works" etc. should be considered in Block 4, Column 16 as a beneficiary and not those receiving occasional benefits. **Instructions in this regard should have been more elaborate and clear to ensure uniformity of concept in the field.**

In **Block 5.1, Column 17** majority of the 'out of labour force' respondents when asked about the suitability of occupation gave vague answers and the investigators found it difficult to record appropriate answers/codes. Similarly in **Block 6, Column 5-10**, it was very difficult to collect information from the unemployed casual workers as they could not say anything on their last employment. **How to capture correct information on these items need examination.**

In **Block 7.1, Column 11 it was observed that in many cases the self-employed informants gave insincere or inconsistent response by quoting very high figures of their earnings and as a result code '6'i.e. more than 3000/- was recorded in majority of cases. The vagueness of such responses needs re-thinking for future Rounds.**

Block 9 of the Schedule 10 consisted of very elaborate and detailed information for each and every member of the household and informants very often found to get irritated due to response fatigue during the course of interview. **For reducing both respondent and investigator fatigues it is, therefore, suggested that such a detailed summary block may be avoided and it should be taken on the pattern of Schedule 25.2 of the 64th Round.**

4.2   Household Consumer Expenditure (Schedule 1.0):

As regards schedule 1.0, **it was observed that as usual in most of the cases, informants after initial co-operation were reluctant to give further information due to lengthy schedule. This problem was however, more acute in case of economically well-off families in urban areas. Also the respondents were found to recall better for the last 30 days reference period than 365 days. Reliable information on purchase of jewellery and ornaments was as usual very sensitive question leading to suspicion in the minds of the informants and had negative impact in collection of data on remaining items specially in urban areas in general and the affluent households in particular. Dropping of this item from the schedule may be considered.**

With regard to information **on perception of food adequacy (Block 12), there was a tendency among respondents to exaggerate in case of marginal better off poor households.**

Dropping of schedules 1.0 and schedules 10 from SE Rounds other than quinquennial Rounds be considered.

Due to change of consumption pattern, **a few more items like CNG/LPG used as fuel for vehicle, Water Filter, Inverter etc. being used commonly need be added in block 10.**

4.3 Listing Schedule (Schedule 0.0):

The criteria for selection of relatively affluent households in rural and urban areas need a re-look. The selection procedure should be such that there is minimal subjectivity on the part of Investigators.

Petrol Pump should be added as an additional item in Block 7, since consumption of petroleum products has increased substantially in rural areas also owing to increase in number of Tractors, Pump Sets, Motorcycle, Cars etc.

General: In 61st Round, General Education Code in schedule 10 and 1.0 were different which created problems in the field. **Coding pattern for all types of schedules of a particular Round for similar types of items should be compatible with each other to avoid misunderstanding in the field.**

During the last 57 years of NSSO existence lot of theoretical and operational innovations have taken place in the conduct of large scale nation wide sample surveys. However, **no systematic study or analysis has been made as to how the survey environment and respondents behavior have undergone change over these years except a limited analysis undertaken by Yogi(2000). There is an urgent need to take up such studies as well as an effective publicity campaign to make the NSSO as *The Brand Household Name'* for better quality response. Also, there is need for motivation of field workers by introducing incentives and exposing them to better communication skills to meet the challenges in data collection in the changing environment.**

References

[1.]   National Sample Survey Organisation (2004), 'Instructions to Field Staff, Volume-I, Designs, Concepts, Definitions and Procedures, Socio-Economic Survey, NSS 61st Round (July2004 - June 2005).

[2.] National Sample Survey Organisation (2004) 'Instructions to Field Staff

(Volume -II), Schedules of Enquiry (July2004 - June 2005).

[3.] Feedback Reports on 61st Round of NSS from various field offices of NSSO, (FOD).

[4.] Yogi, A. K.(2000): Dealing with Informants Behaviour: An NSSO

Experience; Report of NSSO Golden Jubilee Celebrations State Capital Seminar, Jaipur.

ACKNOWLEDGEMENTS

A STUDY ON RESPONDENT RESISTANCE IN NSS 61ST ROUND

Dr. T. K. Saha & Ajay Baksi*

Abstract :   *Respondents play a crucial role in the system of data collection being followed in NSS. Some of the NSS surveys take considerable time of the respondents. Time availability of respondents, specially after major changes in the economy, has not been considered in NSS. The issues like respondent's fatigue, respondent's resistance are oft-quoted in different forums. The common complaint about NSS survey has been the virtual non-cooperation from affluent households in general, and in urban areas in particular. Another issue keeps on coming is whether affluent households give less time in comparison with average time to fill in these schedules. In this paper an attempt has been made to look at these issues using NSS 61st round data as evidence.*

1. Introduction:

1.1   NSSO has been collecting information on different socio-economic characteristics in its various survey rounds for more than fifty-five years. In these surveys, data is collected generally through formal interviewing of the respondents, except a few record based approach followed in the enterprise surveys, where selected enterprises maintain books of accounts. Especially interview approach is followed in different household enquiries. Field officials use schedules in which items, for which information is to be collected, are listed one by one. The NSS schedules are designed in such a way that the similar items are kept in one folder (called blocks). The blocks are arranged / numbered keeping the contents of the blocks in mind; and information for these blocks is sought to be collected sequentially - first block to come first. For obvious reasons, in NSS, respondents play a very important role in providing the required information to field investigators. If the respondent himself is not in a position to give data for some of the items, he takes help of other household members to give information to the investigator during the interview.

1.2 The success of the interview approach depends on :

i)   capability of the respondent to provide information sought for,
ii)   extent of cooperation of the respondent and
iii)   spare time available to the respondent.

1.3   To understand the issues involved in the first two cases, P. C. Mohanan, in his paper "Profile of informants in NSS household surveys", has discussed in details about the characteristics like education level, gender, age-group etc. of the respondents in NSS. He used data of NSS 55th round (quinquennial) survey for his analysis of the characteristics of respondents. But the important factors- like availability of time of the respondents for responding to NSS investigators and appropriate period of enquiry (day time, evening time or holiday) have never been considered seriously in NSS. These factors have assumed much more significance in the recent years, than what were during fifteen years back, because of large scale industrialization, urbanization and economic reforms those are being pursued in the countryside. The issues like respondent's fatigue, respondent's resistance are often quoted in different forums. These issues could be direct impact of the taxing of the respondents by the lengthy interview period and inconvenient time of the interview.

1.4 There is not much scope available in the schedules used in NSS surveys for taking up an appropriate study of these problems. Because of this, possibly, sincere efforts could not be made to measure the respondent resistance for taking appropriate action. In NSS an originally selected household, for canvassing a particular type of schedule, is substituted by another household because of some specific reasons and those reasons are recorded in terms of codes. Similarly a grading of the respondents by the investigator according to the degree of his cooperation as well as his capability to provide the required information is also recorded. Time taken to complete the data collection from each of the households is also available. In this analysis an attempt has been made to use these information to study the issues raised here.

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2. Substitution of households:

2.1 In NSS, in a selected village or urban block (called first stage unit) or part of it (known as hamlet group in the case of village, sub-block in the case of urban block) all available households are listed. This list becomes the frame of households from where pre-specified number of households is again selected for canvassing one particular type of schedule. These households are termed as original households identified for covering one particular schedule. But due to different reasons some of these originally selected households may not be available for data collection. In the event of non-availability of an originally selected household, that particular household is substituted by another household from the same group of households. If the substituted household is again not available for data collection then again another household substitutes that household. If the second time-substituted household also turns out to be not available then further substitution is not done. A household is considered to be not available for data collection if

          (i)   the respondent is available but busy,
          (ii)   household members are away from home,
          (iii)   respondent is available but not cooperative and
          (iv)   similar others reasons.

2.2 Let us now see the number of originally selected households had to be substituted because of these reasons in NSS 61st round. Little less than 3 percent of the total of 1,24,644 households selected for canvassing schedule 1.0 (household consumer expenditure) were substituted. Incidence of substitution was less in the rural areas than in the urban areas. In the urban areas, 4 percent of the total of 45,346 households covered were substituted households; while in the rural areas 1,572 (2 percent of the total) substituted households were approached for data collection out of a total of 79,298 households covered. Though the percentage of households (selected for schedule 1.0) substituted was not high, but one should try to know what forced the NSS investigators to substitute 3,373 households. (For details please see Table 1.)

Table 1 : Number of households substituted per thousand households surveyed			
	number of households surveyed	number of households substituted	number of households substituted per thousand households surveyed
(1)	(2)	(3)	(4)
For schedule 1.0			
All-India	124644	3373	27
Rural India	79298	1572	20
Urban India	45346	1801	40
For schedule 10			
All-India	124690	3353	27
Rural India	79306	1547	20
Urban India	45374	1806	40

2.3 In NSS 61st round another schedule (schedule 10 for employment & unemployment survey) was taken up for data collection in the selected households. This set of households was different from the set of households selected earlier for schedule 1.0. Same substitution procedure was followed for this schedule also. Interestingly more than three thousand households had to be substituted, 1547 rural households and 1806 urban households, for schedule 10 also for similar reasons.

Table 1A : Number of households substituted per thousand households surveyed for schedule 1.0 in NSS 55th round.			
	number of households surveyed	Number of households substituted	Number of households substituted per thousand households surveyed
(1)	(2)	(3)	(4)
All-India	120309	2833	24
Rural India	71385	1048	15
Urban India	47079	1785	36

2.4 If incidence of substitution during 61st round (2004-05) survey is compared with the same of 55th round (1999-2000) survey for schedule 1.0 it can be seen that more respondents have become resistant during this five year period. In 55th round 2,833 households were substituted out of a total of 1,20,309

surveyed households as against 3,373 households out of a total of 1,24,644 surveyed households in 61st round. Table 1A gives number of households substituted per thousand of households surveyed in NSS 55th round for schedule 1.0.

2.5 We have already seen that more households had to be substituted in urban areas than in rural areas in the last quinquennial round of NSS. Obvious question arises - whether pattern of substitution was same in different states. Table 2 gives number of households substituted per thousand households surveyed in some states where rate of substitution was high. More substituted households had to be approached for data collection in Delhi, Maharashtra, Chandigarh, Kerala, West Bengal, etc. Incidence of substitution was maximum in Delhi – in both rural and urban households. More than 12 percent households had to be changed in Delhi. About 9 percent originally chosen urban households had to substituted in Maharashtra. Similarly Chandigarh urban recorded more than 8 percent substituions. This high percentage of substitution in the urban areas of Delhi, Maharashtra and Chandigarh could be due to existence of major metropolitan towns in these states.

Table 2 : Number of households substituted per thousand households surveyed in some states				
State	Urban area	Rural area	Urban area	Rural area
	Schedule 1.0		Schedule 10	
Andhra Pradesh	43	30	46	31
Delhi	128	186	123	123
Goa	67	119	83	62
Himachal Pradesh	32		48	
Kerala	50	51	51	51
Maharashtra	90	34	86	32
Orissa	34		40	
Punjab	39	30	45	32
Rajasthan	52	38	45	32
Sikkim	50	32	60	54
Uttar Pradesh	38			
West Bengal	39		51	
Andaman & Nicobar Is.	45		76	
Chandigarh	83	38	70	38
Daman & Diu	0		75	75
Pondicherry	32	88	55	44

2.6 As mentioned above, when a household is substituted, reason for its substitution is also recorded. Table 3 shows per thousand distributions of substituted households by reasons. It is seen that majority of the households (about 76 percent for schedule 1.0) were substituted because of the reason that no body was available in these households when NSS investigators visited these households. Remaining 24 percent households were substituted due to other reasons. For schedule 10, respondents of the originally selected households could not be contacted for about 79 percent of the substituted households. This problem of non-availability of any respondent in the originally selected households is equally spread in both rural villages and urban blocks as evident from table 3 for both 1.0 & 10 schedules.

Table 3 : Per thousand distribution of substituted households by reason for substitution			
	Reason for substitution (per 1000 of substituted households)		Total no. of substituted households
	Informants away from home	Others*	
(1)	(2)	(3)	(4)
For schedule 1.0			
All-India	760	240	3372
Rural India	787	217	1572
Urban India	737	263	1802
For schedule 10			
All-India	788	212	3353
Rural India	800	200	1547
Urban India	777	223	1806
*Others include respondent busy, non-cooperative and others (unspecified)			

3. Substitutions by reasons for substitution:

3.1. We have seen that in the case of schedule 1.0 about 24 per cent of the substituted-households were substituted due to other reasons, and for schedule 10 it was about 21 percent. The other reasons include respondent busy, non-cooperative and similar other unspecified reasons. Table 4 gives per thousand distributions of substituted households by detail reasons for substitution. This shows that the respondents of little less than 5 percent of the originally selected households for canvassing schedule 1.0 avoided the interview when NSS investigators visited them. In another about 13 percent households NSS investigators could not conduct interview, as those respondents were non-cooperative. About 6 percent respondents did not allow interview because of some other reasons.

3.2 The distribution of substituted households by detail reasons is given in table 5 for some of the states where a good number of households were substituted. It can be seen that in some of the states (Delhi, Maharashtra and Kerala) number of respondents did not cooperate with the investigators was as high as 17 percent of the total households substituted in that state. **It can now be said that these cases of not helping the NSS investigators (i.e., busy, non-cooperative and others) are clear cases of respondent resistance**. A major portion of the substitution, where investigators could not meet respondents for interview because of non-availability of the respondents, could have been avoided, had the interview been arranged during evening time or on holidays.

Table 4 : Per thousand distribution of substituted households by detail reasons for substitution				
	respondents way from home	respondents busy	respondents non-cooperative	others
For schedule 1.0				
All-India	760	48	134	58
Rural-India	787	53	101	59
Urban-India	737	43	162	58
For schedule 10				
All-India	788	39	118	55
Rural-India	800	45	94	61
Urban-India	777	34	139	50

Table 5 : Per thousand distribution of substituted households by detail reasons for substitution in some states (taking rural and urban together.)					
	respondents way from home	respondents busy	respondents non-cooperative	others	total no. of substituted households
For schedule 1.0					
Delhi	855	0	112	33	152
Goa	543	29	429	0	35
Kerala	868	19	57	57	265
Maharashtra	744	56	169	31	620
For schedule 10					
Delhi	869	7	97	28	145
Goa	700	0	300	0	30
Kerala	892	26	30	52	269
Daman & Diu	0	0	0	1000	12

4. Substitution of affluent households:

4.1 In NSS 61st round for both schedule 1.0 and schedule 10, households listed in a village or urban block or in the selected hamlet group/ sub-block were further divided into three subgroups (called second-stage-strata (SSS)) following certain criteria, for netting at least some households, from different income strata of the society. In the case of rural households- relatively affluent households were taken in SSS1, households having principal earning member from non-agricultural activity in SSS2 and rest in SSS3. The urban households were grouped depending on the monthly per capita expenditure (MPCE) reported by the households.

4.2 The common complaint about NSS survey, in different forum, has been the virtual non-cooperation from affluent households in general, and in urban areas in particular. In the face of respondent resistance, one would expect the household to be substituted by another household. It would be useful to check if incidence of substitution has been significant among the households in the affluent stratum. Table 6 gives distribution of substituted households as per second stage strata. It is observed, for schedule 1.0, that in the case rural households, out of a total of 1,572 substituted households, 305

households were substituted from affluent stratum, 611 from non-agricultural earning member stratum and 656 from the third stratum. In the case of 1,801 urban substituted households, 496 from affluent stratum, 942 from middle income stratum and 363 from the low income stratum. In other words, little less than 2 percent of the rural households surveyed in the affluent stratum were substituted and 2 percent households were substituted from each of other two strata formed in rural areas. About 5 percent of the total households surveyed in the urban affluent stratum were substituted. The corresponding figures for other two urban strata were about 5 percent and 2 percent. The incidence of substitution was more or less same in the case of schedule 10. Details are available in table 7.

Table 6: Distribution of substituted households as per second stage stratum (SSS)

	SSS1	SSS2	SSS3	all
For schedule 1.0				
Rural India	305	611	656	1572
Urban India	496	942	363	1801
All	801	1553	1019	3373
For schedule 10				
Rural India	313	613	621	1547
Urban India	514	937	355	1806
All	827	1550	976	3353

4.3 The extent of substitution from the affluent stratum, specially in urban areas of some of the states, where incidence of substitution was high, can be seen from table 8. In Delhi only 1 percent of the total households surveyed in the urban affluent stratum were substituted, where as more than 10 percent of the households surveyed in the other two strata were substituted. In urban Maharashtra, the extent of substitution in the affluent and middle income strata were of the order of 10 percent of the households surveyed and about 5 percent in the lower income stratum. Similarly in the states of Kerala, West Bengal and Chandigarh incidence of substitution of households from the affluent stratum was not substantial as compared to incidence in other two strata.

Table 7: Distribution of substituted households as per second stage strta (SSS)

	SSS1		SSS2		SSS3	
	Substituted per thousand of household surveyed	Total surveyed	Substituted per thousand of household surveyed	Total surveyed	Substituted per thousand of household surveyed	Total surveyed
	For schedule 1.0					
Rural	19	15858	20	30993	20	32447
Urban	48	10408	49	19106	23	15832
All	31	26266	31	50099	21	48279
	For schedule 10					
Rural	20	15828	20	30916	19	32562
Urban	49	10452	49	19150	22	15722
All	32	26280	31	50066	20	48334

4.4 This shows that the data presented here does not support the common complain that respondent resistance is more in the segment consisting of affluent households. This is equally true for both rural and urban affluent strata.

Table 8: Distribution of substituted households as per second stage strata (SSS) in urban areas of a few states where substitutions are more

	SSS1		SSS2		SSS3	
	substituted per thousand of household surveyed	total surveyed	substituted per thousand of household surveyed	total surveyed	substituted per thousand of household surveyed	total surveyed
	for schedule 10					
Delhi	11	229	136	558	108	332
Maharashtra	103	1303	102	2193	47	1512
Kerala	55	402	68	790	32	758
West Bengal	79	659	54	1215	28	1015
Chandigarh	52	77	114	131	22	92

5. Time taken for interview:

5.1 Time taken to canvas some of the NSS schedules has been a matter of debate for quite some time. Especially this issue has been discussed in different technical meetings with reference to collecting information on consumer expenditure as a classificatory variable in the schedules relating to employment & unemployment, migration, health, etc. Another issue keeps on coming is whether affluent households give less time in comparison with average time to fill these schedules. Attempt has been made to address these issues here.

5.2 Average time a rural respondent had to give to complete interview for filling in schedule 1.0 in 61st round is about two and half hours as against little less than two and half hours time by his urban counterpart. It is interesting to note that an affluent respondent took as much time as it took by the respondents of the other two strata. This is true for both rural and urban respondents. All these figures are available in table 9. To be precise, a rural affluent respondent took on an average 157 minutes for schedule 1.0, while average time to fill in schedule 1.0 was 152 minutes. An urban affluent respondent on an average took 141 minutes against 143 minutes average time to fill in schedule 1.0.

Table 9 : Average time taken to canvass schedules 1.0 & 10 separately for each second stage stratum for each response code

second stage strata (SSS)	cooperative and capable	cooperative but not capable	busy	reluctant	others	all
	For schedule 1.0					
RURAL						
SSS1	154	168	178	159	147	157
SSS2	147	161	175	158	151	151
SSS3	148	161	171	161	153	152
All	149	162	174	159	151	152
URBAN						
SSS1	139	149	155	137	154	141
SSS2	140	152	153	140	142	142
SSS3	141	154	162	146	144	144
All	140	152	156	141	146	143
	For schedule 10					
RURAL						
SSS1	112	123	143	122	123	114
SSS2	106	117	139	120	110	109
SSS3	107	117	136	125	117	110
ALL	108	118	139	122	115	111
URBAN						
SSS1	95	101	110	104	115	96
SSS2	97	105	116	101	106	99
SSS3	99	107	122	106	90	101
All	97	105	116	103	102	99

5.3 In the case of schedule 10, rural respondents of different strata took more or less equal time (111 minutes) to provide detail information. NSS investigators had to spend on an average about 99 minutes to fill in schedule 10 in the urban households. Rural affluent households took on an average 114 minutes, while on an average 99 minutes were enough to collect information for urban affluent households. **Thus it is evident from table 9 that affluent households do not give less time to NSS investigators in comparison with average time required to fill in these schedules**.

5.4 As mentioned earlier, investigators, at the end of the interview, were asked to classify the respondents according to the degree of their cooperation as well as their capability to provide the required information. The grading were cooperative and capable, cooperative but not capable, busy, reluctant and others(unspecified). As expected, cooperative and capable respondents took less time to complete the data collection in comparison with the busy and reluctant respondents for both the schedules irrespective of location (rural or urban) of the households. This is true for affluent as well as non-affluent households. A rural affluent busy respondent took almost three hours to provide information for schedule 1.0, where a cooperative and capable rural affluent respondent took about two and half hours – which was the average time for filling the schedule. Respondent's resistance is evident here. (For details please see table 9.)

5.5 We have seen that on an average a respondent took about two and half hours time to provide detail information for schedule 1.0. Because of vast change in the economy people in general have become busy. So there is a felt need to devise a technique for collecting information on household consumer expenditure with a reasonable time of one hour or so. Otherwise, because of respondent's fatigue the last few blocks of a lengthy schedule may get less time and attention from the respondents. Experiments are being made with detail schedule, abbreviated schedule, one page worksheet, etc. but appropriate schedule is yet to come. Another problem is collection of information on consumer expenditure, through one page worksheet, for using as a classificatory variable, when theme of the main schedule is health, employment and unemployment, migration, etc. The schedules related to health, employment & unemployment, migration, etc. normally do not take much time. But addition of consumer expenditure related questions to these schedules increases time requirements for interview considerably. In 61st round schedule 10 one-page worksheet on consumer expenditure was attached for using as classificatory variable. Investigators were asked to record time required for data collection of the entire schedule and of worksheet separately. We have seen from table 9 that a rural respondent on an average needed 111 minutes time for furnishing information on the entire schedule, while requirement of urban respondent was 99 minutes. It would be interesting to see the time required for the worksheet alone. Table 10 gives this information by second stage strata and type of respondents. It can be seen that as usual the busy and reluctant respondents took little more time to canvass worksheet than the cooperative and capable respondents. There is not much difference between the affluent and non-affluent respondents in terms of time taken to cover the worksheet. On an average a respondent took about 40 minutes to complete the worksheet for consumer expenditure (Rural 41 minutes , Urban 38 minutes). In other words, if this worksheet had not been attached with schedule 10, about one hour would have been enough for getting information on schedule 10 only. Table 11 gives average time taken to canvass schedule 1.0, entire schedule 10 and worksheet of schedule 10 separately for different states in rural and urban India.

Table 10 : Average time taken to canvass worksheet of schedule 10 separately for each second stage stratum for each response code

| Second stage strata (SSS) | category of respondents | | | | | |
	Cooperative and capable	Cooperative but not capable	busy	reluctant	others	all
RURAL	For schedule 10					
SSS1	42	44	47	44	37	43
SSS2	40	43	43	46	36	41
SSS3	40	43	41	49	37	41
ALL	41	43	44	47	36	41
URBAN						
SSS1	37	40	43	39	41	38
SSS2	38	41	44	40	36	39
SSS3	38	41	46	42	35	39
All	38	41	44	40	37	38

6 Conclusion: NSS generated schedule specific household level survey data for different rounds are now available in CDs for public use almost after one year of completion of the survey. So cooperation of the NSS respondents, in terms of figures /estimates, is available for public scrutiny. The present study shows that respondent's resistance is not much in NSS system of data collection and Indian relatively affluent households are as cooperative as non-affluent households so far as NSS data collection is concerned. Still to minimize the resistance, efforts should be made to create awareness of the respondents about the survey to be undertaken in a round through print as well as electronic media. Since time is an important factor, NSS should develop model schedules especially for household consumer expenditure (without loss of generality and comparability) requiring about one hour time for data collection. Efforts need to be made to collect data from the originally selected households by visiting the household during the period convenient to the respondents. If necessary, these households should be visited during holiday.

State/ UT	Rural India				Urban India			
	Schedule 1.0	Entire schedule 10	worksheet of schedule 10		Schedule 1.0	Entire schedule 10	worksheet of schedule 10	
Andhra Pradesh	144	101	38		145	106	37	
Arunachal Pradesh.	106	85	39		84	69	35	
Assam	201	146	49		197	140	48	
Bihar	212	175	57		203	165	55	
Chattisgarh	140	88	32		139	89	32	
Goa	93	82	25		96	75	25	
Gujarat	166	118	43		151	102	39	
Haryana	149	106	42		145	101	41	
Himachal Pradesh	150	106	35		150	106	34	
Jammu & Kashmir	154	119	42		153	108	40	
Jharkhand	202	155	60		205	155	62	
Karnataka	146	100	32		131	90	31	
Kerala	147	111	36		140	102	34	
Madhya Pradesh	130	91	34		129	87	35	
Maharashtra	117	77	35		117	69	33	
Manipur	124	80	40		125	82	35	
Meghalaya	193	133	60		195	131	58	
Mizoram	110	85	37		132	86	41	
Nagaland	188	151	44		190	148	49	
Orissa	162	120	44		163	119	44	
Punjab	153	94	30		144	88	32	
Rajasthan	100	74	29		100	73	28	
Sikkim	112	85	42		95	80	39	
Tamilnadu	153	103	37		146	97	35	
Tripura	124	89	37		131	96	41	
Uttaranchal	165	128	39		164	126	38	
Uttar Pradesh	147	108	40		141	99	40	
West Bengal	190	142	59		180	128	54	
A & N Islands	98	68	29		104	67	30	
Chandigarh	100	74	39		103	71	40	
Dadra & Nagar Haveli	170	91	52		171	85	57	
Daman & Diu	168	115	47		166	120	42	
Delhi	89	53	20		82	51	24	
Lakshadwep	130	101	43		107	82	31	
Pondicherry	176	125	47		165	110	45	
All India	152	111	41		143	99	38	

Table 11 : Average time (in minutes) taken to canvass schedule1.0, entire schedule10 and worksheet of schedule 10 separately for different states in rural and urban India

Data Processing Experiences in 61st Round of NSS DPD, NSSO, Kolkata

A paper by DPD

A. New Features in 61st Round :

Sch. 1.0
- Reference periods
  - *30 days* for Exp. on food, fuel, misc. goods
  - *both 30 days & 365 days* for Exp. on clothing, footwear, education, medical, durable goods
- Information on Quantity: Measured in Kg or Litres to be recorded in 3 places of decimal
- Land Area figures: Recorded in 0.000 ha
- Possession of Ration card & type: Two new items introduced in Bl.3
- Whether beneficiary of schemes(Annapurna, food for work, mid day meal, etc.) new in Bl.3
- If any hhd. member is regular salary earner,   item introduced in Bl.3
- Ginger & Garlic: Shifted from 'spices' sub-block to 'vegetable' sub-block in Bl.5

Sch. 10
- Minimum of 30 days work in subsidiary capacity during last 365 days required for a person to report subsidiary economic activity
- If more than one subsidiary activity - details of only one usual subsidiary activity (pursued for relatively more time) will be recorded
- No separate activity status code for beggars, prostitutes. To be included in 'others' (code 97)
- Self-employed persons (code 11-21) asked about remuneration to assess quality of employment in terms of earning
- Vocational training particulars collected for persons of age 15-29 yrs. in demographic block
- Information on 'seeking/available/suitable for type of occupation collected (instead of 'skill') for persons < 75 years
- Self-employed persons (code 11-21) asked about remuneration to assess quality of employment in terms of earning
- Vocational training particulars collected for persons of age 15-29 yrs. in demographic block
- Information on 'seeking/available/suitable for type of occupation collected (instead of 'skill') for persons < 75 years

B. Major Data Processing Problems encountered due to :

(i) Conceptual Problems

➔ Hamlet-group formation/selection: Serious conceptual problems found in formation & selection of hamlet groups

➔ Wrong stratification: Faulty formation of SSS or compensation for shortfall etc. often resulting into wrong selection of hhd. which cannot be rectified later

(ii) Schedule Design Defects

➔ Sch.1.0: Expenditure for an item for 30 days were reported less than exp. for 365 days in some cases. This involved correction in all related fields including MPCE
➔ Sch.10: When some of the blocks / cols. in the blocks were to be filled up for persons of a particular age-gr.or NIC, there were instances of <u>omission for eligible</u> cases, or <u>commission for ineligible cases</u>
➔ Sch.1.0: Expenditure for an item for 30 days were reported less than exp. for 365 days in some cases. This involved correction in all related fields including MPCE
☛ Sch.10, Bl.8, item 6: Cells were shaded by mistake. This however was taken care of in Field.

☛ Sch.10, Bl.8: Most of the items in the block were to be reported as '1' or '2'(yes or no). Some other items appearing in between (e.g. item 10-14, 20) with different codes were also filled with '1' or '2'. The difference in items & admissible codes may be highlighted by the size/structure of cells

(iii) Non-uniformity in Codes

⊃ Sch.1.0, Bl.3, item 17 & 18: Primary source of energy code for cooking & lighting are different even for the same source like kerosene (07 & 1)or electricity(08 & 5)
⊃ General Education level code: Code list different in demographic blocks of sch.1.0 & 10. Except for code '01' (not literate), for all other gen edu.level, codes are different in sch.1.0 & 10

(iv) Ambiguity in Instructions

► Replacement of hhd. for sch.10 in sch.0.0 in Listing Sch.
If no. of hh in any SSS is small & do not permit replacement, then both the schs. were to be canvassed in same set of hh. This was often not done & shortfall compensated in other SSS

► Sch.1.0, Bl.5: For rice products (chira, muri etc.) or milk products (curd, ghee etc.) which are often prepared at home, col.3 & 4 (consumption out of home produce) were shaded but total consumption reported in col. 5 & 6 with source code'2' (i.e. only home grown).

(v) Missing Important Information

► In sch.0.0: Approx. present population, hamlet-grp wise population often left blank.
► In Bl. 5, sch.0.0: 'H' & 'h' values for different SSS were not filled up in large no. of cases
► Schedules with incomplete demographic particulars for the members of hhd especially from N.E.states. These being classificatory variables poses serious problem
► NIC & NCO codes or description missing
► Quantity figures are often missing for items like electricity, milk etc.
► Sch.1.0,bl.12 (Exp. on Durables): whether possessed(Col.3), no. purchased etc.(col.8 &9) frequently found blank, only value given.
► In sch.10, bl.4, technical education code often left blank, though '01' is code for 'no technical education'
► Essential remarks were missing for many cases of unusual entries.

(vi) Wrong reporting of units/ places of decimal

● Total time taken to canvass sch. Often not given in proper unit or in decimals in place of whole nos.
● Land Particulars in Bl.3, sch.1.0 or 10: To be recorded in 0.000 ha, but was not done so in many cases
● In sch.1.0, Bl.5, 6 & 7: The quantity figures were given either not in proper unit or not in 3 places of decimal or both in a large no. of cases. This required extensive correction at PDES stage.
● Expenditure or Value figures in both the schs. were often reported in places of decimal where they were to be given in whole nos.
● Decimal error in entries for either Quantity or Value or both also necessitated thorough checking of quantity & value figures at final stage for all cases of doubtful unit value or per capita consumption

C. Other important Observations :

Sch.1.0
● Large no. of single member hhd. :
  Rural areas   3364 (4.2% of total hhd)
  Urban areas   4154 (9.2% of total hhd)
The proportion is probably over-estimated specially in urban areas b'coz of inclusion of student hhds. in hostel. For many such hhd. food exp. is zero or negligible.

- By ignoring the imputed cost of cooked meals received by members free of cost from school or employer or on charity on fairly regular basis, the exp.on food for such hhd. and their MPCE may get seriously under-evaluated & poverty overestimated.
- For some student hhds., the 'stipend' received from school reported as
  - aimed at meeting food/other expenses of student in hostel
  - varying from student to student
  - no item-wise break-up available & all the blocks left blank.
  - but MPCE in Bl. 3 was given as equal to 'stipend amount'.
  In such cases where no item wise information is possible, the hhd. should be substituted
- Free collection of firewood: Doubtful high figs were reported from N-E states with imputed rate 4 to 5 times higher the market rate of firewood there. This is due to valuation of free collection at local retail price vis-à-vis subsidized purchase price.
- In large no. of cases, monthly expenditure from 30 days and from 365 days differ from each other by more than 50% mainly due to high expenditure on medical / education / durable goods etc.
- In Rural sector Per capita cereal consumption for those who 'get enough food daily for only some months of the year' is higher than 'those who get enough food throughout the year' even at All India level

D. Experience in Tabulation :

(1)   In 61st round, Employment and Unemployment schedule was canvassed through Schedule 10 for full one year. Many of the employment characteristics have usual seasonal variations. A good number of tables were included in the tabulation plan which required sub-round-wise tabulation so as to analyze seasonal effect of employment and unemployment. However, the sampling design of 61st round did not permit sub-round-wise estimate. When it was identified at a later stage, a Committee under the Chairmanship of Prof. Bimal Roy, ISI, Kolkata was requested to devise special estimation procedure for building sub-round-wise estimate under the sampling design of 61st round. Apart from the normal multipliers giving the estimate with respect to full round, separate sub-round-wise multipliers were computed for this purpose. In the unit level data that was disseminated, both the full round multiplier as well as the sub-round-wise multiplier were kept.

Suggestions : In any full year survey covering a subject having seasonal variations, sampling design should be such that sub-round-wise estimate is possible.

(2) In each round of NSS urban sampling is carried out by first classifying the towns into their size class under each state region. Suitable size of sample (UFS) are then drawn for each town class which is further aggregated to arrive at state level estimate for urban areas. In 61st round for the first time, town class approach was withdrawn. The million plus cities were considered as separate strata and the remaining urban areas were stratified based on districts. But in the tabulation plan a few tables were included for generation of estimates for each town class as it was done in earlier rounds.

The problem was solved by indirect approach. The UFS blocks were post-stratified into town classes and estimates were built up for each such town class. This had an obvious effect on the reliability of the estimates.

Subsequently, there was a demand from the data users to provide the codes for Town Class in the Unit-level data. This could not be met by DPD.

Suggestions: Provision could have been in the Schedule for Town Class code.

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Alternative Reference Periods in Measuring Household Consumption:
The Implications for Poverty Estimation

Prabir Chaudhury[*]

[Abstract: *On a priori grounds, the URP (Uniform Reference Period of 30 days) distribution of MPCE should have more extreme MPCE values than the MRP (Mixed Reference Period) MPCE, which uses some 365 days data. As a result, estimated inequality measures will be higher if based on URP. Also, engel elasticities estimated from the URP distribution will be misleading, while MRP will give a truer picture of "normal" or "usual" MPCE.*

What is less obvious is the difference in case of poverty estimation. It can, after all, be argued that food and fuel expenditures account for a very large share of total consumption expenditure of the poor, while the share of the infrequently purchased categories (clothing, durables, etc.) is quite insignificant by comparison. The MRP and URP measures of MPCE do not differ in the measurement of food and fuel consumption, therefore they should not, perhaps, differ appreciably for poor households.

But the Planning Commission's findings on poverty based on 61st round data are, on the contrary, that, of those judged to be poor by URP measurement of MPCE, 23%, in rural India, and 16%, in urban India, are pulled above the poverty line if one goes, instead, by MRP. Further, this phenomenon is observable, with minor differences in extent, in every State/UT. In view of the above, the reference period choice in measurement of household MPCE assumes great significance.

The traditional argument for not using MRP, namely, that recall errors pull down reported 365-day expenditures, is not borne out by 61st round data.

All-India poverty estimates can even be worked out by the Planning Commission for rounds of the annual series (for which MRP data are available but not URP data) with suitably constructed all-India poverty lines, to check on the poverty estimates (MRP) of the quinquennial series years.

In view of the above, there is a strong case for making the MRP measure of MPCE the standard measure, and the URP measure a related curiosity of academic interest, instead of the other way round (as has been done in the past).]

1. The NSS Consumer Expenditure Surveys: Quinquennial and Annual Series

1.1 The National Sample Survey Organisation (NSSO) conducts regular consumer expenditure surveys as part of its "rounds", each round normally of a year's duration and covering more than one subject of study. The surveys are conducted through household interviews, using a random sample of households covering practically the entire geographical area of the country. Nowadays every round of NSS includes a consumer expenditure survey (CES), giving rise to an annual series of consumption data. Every 5 years or so, a larger-than-usual-scale CES is conducted as the main enquiry of a round. This gives rise to a "quinquennial series" of CES's. The sixth quinquennial CES was conducted in 1999-2000 in the 55th round of NSS and the 61st round CES is the seventh.

1.2 Because of the larger number of villages/blocks and households covered by the larger-scale quinquennial surveys, these surveys are considered more suitable than others for estimating the number and proportion of the poor, especially at State level.

2. The MPCE Distribution and its Use for Poverty Estimation

2.1 The consumer expenditure survey of NSS generates an estimated distribution of the rural and urban population at State and all-India level by level of monthly per capita household consumer expenditure. Usually, the percentage of population in twelve ranges of monthly per capita expenditure (MPCE) are provided in the published reports of NSSO; more detailed classification may be either attempted by the user through interpolation, or if necessary, made available through special tabulation by NSSO. The proportion of rural and urban population of a State below any particular level of per capita consumer expenditure can be obtained using the rural and urban MPCE distributions for the State. This provides a way of estimating the number and proportion of poor as the number and proportion of population with MPCE below the poverty line.[1]

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[*] The author is working as Director in NSSO (SDRD). The views expressed in this paper are those of the author and not of the institution to which he belongs.

[1] The poverty line serves as a cut-off line for separating the poor from the non-poor, given the size distribution of population by per capita consumer expenditure classes. Population with per capita consumer expenditure levels below the level defined by the poverty line is counted as poor. The data on the size distribution of population by expenditure classes is obtained from the household consumption surveys of the NSS. The ratio of the population below the poverty line to the total population is the poverty ratio, also known as the head-count ratio of poverty.

3. Reference Period for Collection of Consumption Data

3.1 It is generally agreed in the literature on measurement of income or consumption that if collection of data were no problem, the accounting period for income/consumption data should be one year for all item groups; food as well non-food. In fact, an average of several years would be still better. Periods shorter than one year would give data vitiated by seasonality and other short–run fluctuations (transitory elements). In practice, however, because food and fuel consumption have a monthly regularity, and consumption of miscellaneous minor goods and services cannot be recalled over a long period, collection of data on these categories is usually done with a recall period of last 30 days.

3.2 Response errors in retrospective surveys may arise in several ways: (i) omissions, i.e. failure to report some past events (over-reporting may also occur), (ii) event displacement, i.e. errors in locating the events correctly in time, and (iii) sampling variability. When event displacement results in erroneous moving of events into and out of the boundaries of the reference period, such errors may be called end effects.

3.3 A longer reference period captures more events so that the sampling variability is reduced. But it has been believed, traditionally, that with a longer reference period, errors of omission tend to increase. Errors due to event displacement (end effects) vary with the length of the reference period in a more complex manner. They may be high for very short or very long intervals and minimum for some intermediate value.

3.4 It can be strongly argued that using longer reference periods helps to get a better picture of the shape of the MPCE distribution. The "last 30 days" reference period usually performs badly for the infrequent, lumpy expenditures – some incurred with an annual periodicity, others at much longer intervals, such as durables, and some unforeseeable contingencies, such as major medical expenses. Thus the measurement of household MPCE gets affected by transitory elements – seasonality and other short-term fluctuations.

3.5 Now, it is true that as far as the estimate of average MPCE is concerned, the ups and downs in data inherent in a short reference period cancel out in a large-scale sample survey, as long as interviews of sample households are reasonably evenly spaced throughout the survey period, usually of one year. But in the picture of the distribution of MPCE built up from household-level data, the fluctuations do not cancel out. One gets households which appear to have very high and very low per capita expenditure levels because the measurement is based on the expenditure incurred during the last 30 days; if the same households had been asked to report expenditures for last 365 days, the monthly irregularities would have disappeared, and a picture of the households' true or permanent consumption level would have been obtained.

3.6 However, it is arguable that estimation of the lower tail of the MPCE distribution – which is really relevant for poverty calculations – is less dependent on the reference period for the infrequently purchased non-food items. This is because for households considered as poor, food and fuel expenditures take up a very large share of total expenditure and very little expenditure on durables, education, etc. takes place in any month.

3.7 The NSS household enquiries on consumer expenditure had been employing last 30 days as the reference period for all items of the budget from round 7 (October 1953 – March 1954) to round 28 (October 1973 – June 1974). In round 32 (1977-78) an additional reference period of last 365 days was introduced for a few item-groups, namely, clothing/bedding, footwear, and durables. This approach was retained in the next three rounds of the quinquennial series, that is, round 38 (Jan-Dec 1983), round 43 (July 1987 – June 1988), and round 50 (July 1993 – June 1994). From round 50, two other item-groups, namely, education and (institutional) medical care, were added to the list of item-groups for which the "double" reference period was used. However, the NSS Reports continued to be based on data relating to the last 30 days even for the item-groups mentioned above.

3.8 The use of last 365 days reference period for selected item-groups (consisting mostly of infrequently purchased items) naturally reduces the degree of inequality of the size distribution of population by MPCE. Data from one round have in the past been used to show that the Lorenz Curve of MPCE moved inward when last year data were used, instead of last month data, for the five item-groups mentioned above. A more subtle effect of reference period was examined by Suchismita Ghose in her Ph. D. thesis

227

submitted to ISI: it appeared that the engel elasticities of consumption of major items moved towards 1, when last year data were used, in place of last month data, for computation of MPCE, the independent variable in engel curve estimation.

4. The Two Measurements of Household MPCE

4.1 Using the "last 365 days" data for the item groups for which they are available and the "last 30 days" data for the rest gives a different measure of household MPCE. This is often referred to as the mixed reference period MPCE, or $MPCE_{MRP}$. The usual measure, using the "last 30 days" data for all items uniformly, is called, by contrast, the uniform reference period MPCE or $MPCE_{URP}$.

Table 1: NSS Rounds 43, 50, 55, 61 (last four surveys of the quinquennial series): differences in reference period used for data collection & tabulation

| Rd | Period | Ref. period* | | Tabulation available | Tabulation possible |
		I-type groups	Rest		
43	July 1987 – June 1988	30 & 365	30	30 for all item groups (URP)	Both URP and MRP
50	July 1993 – June 1994	30 & 365	30	30 for all item groups (URP)	Both URP and MRP
55	July 1999 – June 2000	365	7 & 30	365 for I-type groups, 30 for rest (MRP)	Only MRP
61	July 2004 – June 2005	30 & 365	30	Both URP and MRP	Both URP and MRP

Abbreviations:

30: last 30 days   365: last 365 days

I-type groups:

50th, 55th & 61st rounds: clothing, footwear, education, institutional medical care, durables

43rd round: clothing, footwear, durables

4.2 Among the last four quinquennial surveys, the 1999-2000 survey was unique in that it used, experimentally, a "double reference period" for *food* items – apart from information on food consumption for the last 30 days, information for the last 7 days was also sought. The purpose was to compare the estimates obtained according to the two methods, though it was the 30 days-based estimates that were officially released. There is some evidence that the unconventional use of the extra reference period of "last 7 days" in the 1999-2000 survey affected the reporting of the last 30 days' consumption – estimates for some important food groups have been seen to be somewhat out of tune with those of the 1993-94 and 2004-05 estimates (see *NSS Report No.509: Household Consumption of Various Goods and Services in India, 2004-05*).

4.3 As mentioned in paragraphs 3.4 and 3.5 above, there are reasons to expect the $MPCE_{MRP}$ distribution to have more extreme values – both on the low and on the high side – than the $MPCE_{URP}$ distribution. It follows that if the distribution of $MPCE_{MRP}$ is used in poverty calculations in preference to the distribution of $MPCE_{URP}$, the poverty ratio can be expected to be lower. This has indeed happened in the case of the 61st round consumer expenditure survey (see Table 2).

Table 2: Percentage of poor in 2004-05 through alternative measurements (URP and MRP) of MPCE

State/UT	Rural		Urban		Rural + Urban	
	URP	MRP	URP	MRP	URP	MRP
1 Andhra Pradesh	11.2	7.5	28.0	20.7	15.8	11.1
2 Arunachal Pradesh	22.3	17.0	3.3	2.4	17.6	13.4
3 Assam	22.3	17.0	3.3	2.4	19.7	15.0
4 Bihar	42.1	32.9	34.6	28.9	41.4	32.5
5 Chhattisgarh	40.8	31.2	41.2	34.7	40.9	32.0
6 Delhi	6.9	0.1	15.2	10.8	14.7	10.2
7 Goa	5.4	1.9	21.3	20.9	13.8	12.0
8 Gujarat	19.1	13.9	13.0	10.1	16.8	12.5
9 Haryana	13.6	9.2	15.1	11.3	14.0	9.9
10 Himachal Pradesh	10.7	7.2	3.4	2.6	10.0	6.7
11 Jammu & Kashmir	4.6	2.7	7.9	8.5	5.4	4.2
12 Jharkhand	46.3	40.2	20.2	16.3	40.3	34.8
13 Karnataka	20.8	12.0	32.6	27.2	25.0	17.4
14 Kerala	13.2	9.6	20.2	16.4	15.0	11.4
15 Madhya Pradesh	36.9	29.8	42.1	39.3	38.3	32.4
16 Maharashtra	29.6	22.2	32.2	29.0	30.7	25.2
17 Manipur	22.3	17.0	3.3	2.4	17.3	13.2
18 Meghalaya	22.3	17.0	3.3	2.4	18.5	14.1
19 Mizoram	22.3	17.0	3.3	2.4	12.6	9.5
20 Nagaland	22.3	17.0	3.3	2.4	19.0	14.5
21 Orissa	46.8	39.8	44.3	40.3	46.4	39.9
22 Punjab	9.1	5.9	7.1	3.8	8.4	5.2
23 Rajasthan	18.7	14.3	32.9	28.1	22.1	17.5
24 Sikkim	22.3	17.0	3.3	2.4	20.1	15.2
25 Tamil Nadu	22.8	16.9	22.2	18.8	22.5	17.8
26 Tripura	22.3	17.0	3.3	2.4	18.9	14.4
27 Uttar Pradesh	33.4	25.3	30.6	26.3	32.8	25.5
28 Uttaranchal	40.8	31.7	36.5	32.0	39.6	31.8
29 West Bengal	28.6	24.2	14.8	11.2	24.7	20.6
30 A & N Islands	22.9	16.9	22.2	18.8	22.6	17.6
31 Chandigarh	7.1	3.8	7.1	3.8	7.1	3.8
32 Dadra & N. Haveli	39.8	36.0	19.1	19.2	33.2	30.6
33 Daman & Diu	5.4	1.9	21.2	20.8	10.5	8.0
34 Lakshadweep	13.3	9.6	20.2	16.4	16.0	12.3
35 Pondicherry	22.9	16.9	22.2	18.8	22.4	18.2
36 All-India	28.3	21.8	25.7	21.7	27.5	21.8

Source: Govt. of India, Press Information Bureau (March 2007): Poverty Estimates for 2004-05

4.4 Not only at all-India level but also for each State/UT, the same pattern is seen:, on the average about 23% in rural areas and 16% in urban areas among those judged poor going by $MPCE_{URP}$ are lifted above the poverty line if one goes by $MPCE_{MRP}$.

Table 3: Difference in average MPCE by uniform and mixed reference period, 50th and 61st rounds

characteristic	50th round		61st round	
	R	U	R	U
1. average $MPCE_{URP}$ (Rs.)	281.40	458.04	558.78	1052.36
2. average $MPCE_{MRP}$ (Rs.)	286.16	464.24	579.17	1104.60
3. % difference [(2-1)/1]	1.7%	1.4%	3.6%	5.0%

Source: NSS Report Nos. 402, 404, 508

4.5 It is interesting to note that as far as estimation of *average MPCE* is concerned, there is very little difference in $MPCE_{URP}$ and $MPCE_{MRP}$. Thus, in the results of the 61st round, average $MPCE_{MRP}$ exceeds average $MPCE_{URP}$ by only 3.6% for rural India and only 5% for urban India (see Table 3). For the 50th round, the difference in average MPCE (all-India) is even more imperceptible: 1.7% for rural and 1.4% for urban. On the other hand, for the purpose of poverty estimation, the question of which MPCE is to be used makes, as we have seen, a very big difference. In view of the above, the reference period choice in

measurement of household MPCE assumes great significance. This is recognized by the Planning Commission when it says that the poverty estimate from the 55th round (which was necessarily an MPCE$_{MRP}$-based estimate) is not comparable with the MPCE$_{URP}$-based estimates of poverty from the 61st round. The Commission, pointedly, uses the MPCE$_{MRP}$-based poverty estimate from the 61st round for comparison with the 55th round estimate, and keeps the MPCE$_{URP}$-based estimate of poverty from the 61st round for comparison with the 50th round estimate, which was also MPCE$_{URP}$-based (Table 4).

Table 4: Change in proportion of poor over time using the same method to measure MPCE

All-India

Period	Year	Percentage of poor (using URP measurement method)		
		Rural	Urban	Rural+Urban
11 years	1993-94	37.3	32.4	36.0
	2004-05	28.3	25.7	27.5
Period	Year	Percentage of poor (using MRP measurement method)		
		Rural	Urban	Rural+Urban
5 years	1999-2000	27.1	23.6	26.1
	2004-05	21.8	21.7	21.8

Source: Govt. of India, Press Information Bureau (March 2007): Poverty Estimates for 2004-05

5. Should the Double Reference Period Continue?

5.1 The 61st round survey used the strategy of the 50th (1993-94) and earlier rounds of the quinquennial series of collecting data, for the "infrequent-expenditure" item categories, for both the "last 30 days" and the "last 365 days" reference period. But the purpose, this time, was not so much to compare the effects of the two reference periods – the more important purpose was to have the same method of data collection as the 50th round survey did, to maintain comparability. In other words, given the sensitivity of reported consumption to recall periods, any schedule of enquiry using a "double" reference period for a particular item of consumption was recognized as a different *method of data collection* from a schedule using only one reference period for that item. Therefore the method of the 50th round was copied in the 61st, so that (inter-temporal) comparison of estimates from the two rounds might stay free from the "reference period effect". This is one good reason for continuing with the "double" reference period in future surveys of the quinquennial series.

5.2 It was mentioned in paragraph 3.3 that errors of omission are expected to increase with longer reference periods. This has been the main reason for continuing with MPCE$_{URP}$ for most purposes. However, study of the results obtained from the 50th (1993-94) and 61st (2004-05) rounds – especially the latter – does not reveal much evidence of the errors of omission that the "last 365 days" reference period has traditionally been suspected of. Table 5 shows, for two rounds, the 50th and 61st, pairs of estimates of monthly per capita expenditure – one from "30 days" data and the other from "365 days" data – of rural and urban per capita consumption of each of the 5 categories of items. Of the 10 pairs for the 50th round, 5 show a higher value obtained by the "30 days"-based estimate – the urban estimate for education, and both rural and urban estimates for medical (institutional) and durables. Of the 10 pairs for the 61st round, however, only one – the rural estimate for medical (institutional) – shows a higher value obtained by the "30 days"-based estimate. This shows that the "last 365 days" estimates are less affected by errors of omission than might be supposed on *a priori* grounds.

5.3 Another advantage of using the MPCE$_{MRP}$ from the quinquennial rounds is that it is easily comparable with the MPCE distribution obtained from NSS surveys of the annual (non-quinquennial) series. In all the surveys of the annual series since the 56th (2000-01), the reference periods used have been as follows: "last 365 days" (only) for the "infrequent-expenditure" categories; "last 30 days" (only) for the rest. This means that only one measurement of household MPCE is possible for the data from the annual series surveys, and that is the MPCE$_{MRP}$. It has been seen, in fact, that the estimates from the 61st round become comparable with those of the 62nd round only if the MPCE$_{MRP}$ distribution from the 61st round is used, and not if the MPCE$_{URP}$ is used (Table 6).

Table 5: Estimates of average per capita monthly expenditure of 5 "infrequent-expenditure" item groups at current prices (in Rs.) from NSS 50th and 61st rounds: all-India

item group	sector	reference period	round 50	round 61
clothing	R	*30*	15.12	25.33
		365	21.18	39.05
	U	*30*	21.43	42.09
		365	32.74	61.65
footwear	R	*30*	2.48	4.24
		365	2.81	5.86
	U	*30*	4.19	7.17
		365	5.56	11.36
education	R	*30*	4.07	14.90
		365	4.22	18.06
	U	*30*	19.41	52.69
		365	17.91	73.70
medical (inst.)	R	*30*	2.52	10.03
		365	1.84	9.41
	U	*30*	5.54	13.05
		365	3.56	15.88
durables	R	*30*	7.67	19.23
		365	6.57	21.74
	U	*30*	15.17	42.81
		365	12.17	47.17

Table 6: Shares of food and non-food in total expenditure, 2004-05 and 2005-06: all-India
NSS 61st and 62nd round surveys

Measure-ment of MPCE	Commodity group	RURAL per capita cons. exp. (Rs.) 61st round (July '04-June '05)	RURAL per capita cons. exp. (Rs.) 62nd round (July '05-June '06)	URBAN per capita cons. exp. (Rs.) 61st round (July '04-June '05)	URBAN per capita cons. exp. (Rs.) 62nd round (July '05-June '06)
Uniform reference period	Food	308 (55.1)	-	447 (42.5)	-
	Non-food[URP]	251 (44.9)	-	605 (57.5)	-
	All[URP]	559 (100.0)	-	1052 (100.0)	-
Mixed reference period	Food	308 (53.2)	333 (53.3)	447 (40.5)	468 (40.0)
	Non-food[MRP]	271 (46.8)	291 (46.6)	658 (59.5)	703 (60.0)
	All[MRP]	579 (100.0)	625 (100.0)	1105 (100.0)	1171 (100.0)

Figures in parentheses indicate percentages to total (food+non-food).
Source: *NSS 62nd round data and NSS Report No.508*

5.4 Over a one-year period, the shares of food and non-food in total expenditure (all-India estimates of which are extremely stable) are not expected to change significantly. This is borne out by the MPCE$_{MRP}$ data but not by the MPCE$_{URP}$ data of the 61st round.

5.5 At present, estimates of poverty are worked out only on the basis of the larger-scale consumer expenditure surveys of the quinquennial series. This is prudent, but there arises a problem of checking

whether the measures are on the right track. Since the difference in poverty estimates between the current quinquennial survey and the previous one is supposed to show the extent of improvement over time, the closeness of the two estimates to one another cannot be taken as an indicator of the reliability of the results. Now, for the intervening rounds, MPCE distributions (with MRP data) are available. It should not be very difficult for the Planning Commission to work out suitable <u>all-India</u> poverty lines for these relevant years, and from these, all-India estimates (only) of rural and urban poverty, which will not be released to the public, but used to check on the all-India poverty estimates (MRP) from the quinquennial series.

6. Summary and Conclusions

6.1   It is generally agreed that if collection of data were no problem, consumer expenditure data should be based on a recall period of a year. Now, because food and fuel consumption have a monthly regularity, and consumption of minor miscellaneous goods and services cannot be recalled over a long period, collection of data on these categories is in practice done with a recall period of last 30 days. But for the infrequently purchased categories (clothing, footwear, education, institutional medical care and durables), last 365 days data can be argued to have some obvious advantages.

6.2   On a priori grounds, the URP (Uniform Reference Period of 30 days) distribution of MPCE should have more extreme MPCE values than the MRP (Mixed Reference Period) MPCE, which uses some 365 days data. As a result, estimated inequality measures will be higher if based on URP. Also, engel elasticities estimated from the URP distribution will be misleading, while MRP will give a truer picture of "normal" or "usual" MPCE.

6.3   What is less obvious is the difference in case of poverty estimation. It can, after all, be argued that food and fuel expenditures account for a very large share of total consumption expenditure of the poor, while the share of the infrequently purchased categories (clothing, durables, etc.) is quite insignificant by comparison. The MRP and URP measures of MPCE do not differ in the measurement of food and fuel, therefore they should not, perhaps, differ appreciably for poor households.

6.4   But the Planning Commission's findings on poverty based on 61st round data are, on the contrary, that, of those judged to be poor by URP measurement of MPCE, 23%, in rural India, and 16%, in urban India, are pulled above the poverty line if one goes, instead, by MRP. Further, this phenomenon is observable, with minor differences in extent, in every State/UT. In view of the above, the reference period choice in measurement of household MPCE assumes great significance.

6.5   The traditional argument for not using MRP, namely, that recall errors pull down reported 365-day expenditures, is not borne out by 61st round data; on the contrary, 365-days-based estimates from the 61st round are almost invariably higher than the corresponding 30-days-based estimates.

6.6   All-India poverty estimates can even be worked out by the Planning Commission for rounds of the annual series (for which MRP data are available but not URP data) with suitably constructed all-India poverty lines, to check on the poverty estimates (MRP) of the quinquennial series years.

6.7   In view of the above, there is a strong case for making the MRP measure of MPCE the standard measure, and the URP measure a related curiosity of academic interest, instead of the other way round (as has been done in the past).

Employment and Unemployment Survey in NSS 61ˢᵗ Round:
Some Observations

A Paper by SDRD

1 Introduction

1.0 The National Sample Survey Organisation (NSSO) has conducted a number of surveys on employment and unemployment to assess the volume and structure of employment and unemployment, starting from the 9ᵗʰ round (May-September, 1955). Since the 1970's, based on the concepts and definitions recommended by the Dantwala committee, seven detailed surveys on employment and unemployment have been undertaken once in every five years in the 27ᵗʰ (October 1972-September 1973), 32ⁿᵈ (July 1977-June 1978), 38ᵗʰ (January-December 1983), 43ʳᵈ (July 1987-June 1988), 50ᵗʰ (July 1993-June 1994), 55ᵗʰ (July 1999-June 2000), and 61ˢᵗ (July 2004-June 2005) rounds. In addition, to meet the need for an annual series of key indicators on employment and unemployment, data on selected items on employment and unemployment particulars of the household members were collected through the annual survey on household consumer expenditure (Schedule 1.0) from the 45ᵗʰ round (July 1989-June 1990) of NSS. In the annual rounds, 'usual activity status' and 'current weekly activity status' of the household members, along with the industry of work (at 2 digit level of NIC code) only were collected in the demographic block of the consumer expenditure schedule. Besides, to meet Planning Commission's requirement for collection of employment and unemployment data on 'current daily status', a separate schedule on employment and unemployment, a slightly different from that used in the quinquennial rounds, was canvassed in the 60ᵗʰ round survey of NSSO (January 2004–June 2004). In the 60ᵗʰ round, particulars of employment and unemployment according to 'usual activity status', 'current weekly activity status' and 'current daily activity status' of the household members were collected. In the 62ⁿᵈ round survey, a separate schedule on employment and unemployment was also canvassed on the line of the schedule canvassed in the 60ᵗʰ round.

1.1 In all the annual rounds till NSS 59ᵗʰ round, data on employment and unemployment have been collected in respect of usual status and current weekly status approaches only. While collecting data in the cws approach, one-shot question 'whether worked for at least one hour on any day during the last 7 days preceding the date of survey' was put to the informant and the information so collected was used to derive the current weekly status of the individuals.

1.2 Keeping the basic concepts and definitions unchanged in collecting data on employment and unemployment indicators in these rounds of survey, some minor modifications either in the procedure of data collection or in the coverage of production boundary had been necessary to tune with the national and international requirements. At present, while defining the coverage of *economic activities* based on the United Nations Systems of National Accounts, the NSSO has, included all activities other than that with the *processing of primary products for own consumption.* This apart, some items of information of current interest have always been added and some have been modified or discarded from time to time.

1.3 It has been observed in the past that there are some mistakes and inconsistencies such as recording wrong code, quantitative variables in the prescribed units and formats, mismatch of same entries in different fields of information, etc. Such inconsistencies and mistakes are generally set right logically, with the help of entries in the related fields of information, at the data processing stage in the Data Processing Division itself. In some extreme cases, when the entries in the related fields of information do not suggest any appropriate entry for the suspected entry, reference is made, as a common practice, to the field offices for verification.

1.4 In this note, an attempt has been made to record some observations in respect of the changes in the concepts and procedures, new items of information that have been collected in this round, and inadequacy of the sample size in providing estimates at the sub-national level.

2. Changes in Some Concepts and Sample Design

2.0 In this section we have studied some of the changes that were incorporated over different NSS quinquennial rounds, in the concepts used to collect data and the related results for different NSS quinquennial rounds. We have also dealt with the sample design adopted in NSS 61ˢᵗ round, which was

a little different from those used in the earlier quinquennial rounds. The difficulty in providing estimates for certain domains and sub-rounds-wise estimates have also been discussed.

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

2.1.1 Particulars of one usual subsidiary economic activity particulars of the household members were collected in all the quinquennial rounds of NSS, except in the NSS 55th round where particulars of two subsidiary economic activity particulars of the household members were collected. Moreover, in all the rounds, no minimum number of days of work, during the last 365 days, was specified to classify subsidiary economic activities and a departure was made, for the first time, in NSS 61st round when a minimum of 30 days of work, during the last 365 days, was considered necessary for classification as usual subsidiary economic activity.

2.1.2 It is seen, from Table 1, that though there were minor variations in the concepts used to collect data on usual principal and usual subsidiary economic activities over the different quinquennial rounds, the worker population ratio (WPR) do not show any corresponding change.

2.2 *Method of determination of current weekly activity (CWS) status*: Prior to NSS 50th round, current weekly activity particulars, in the quinquennial rounds, were determined by asking a single-shot question, viz., whether got work for at least one hour on any day during the last 7 days preceding the date of survey. However, in the NSS 50th, 55th and 61st rounds, the current weekly activity was determined from the time disposition of the household members for the 7 days preceding the date of survey. It is seen from Table 2 that the change in the method of determining the current weekly activity had resulted in increasing in the WPR in current weekly status approach - more so for the females in both rural and urban areas than the males. The trend observed in the NSS 50th round in respect of the WPR according to CWS, due to the change in the methodology for data collection was retained in NSS 55th and NSS 61st rounds also when the current weekly activity particulars were derived from daily time disposition data.

Table 1: Number of persons employed per 1000 persons (i.e., WFPR or WPR) according to usual status during 1972-73 to 2004-2005

all-India

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

38th (1983)	ps	528	248	391	500	120	320	521	218	374
	ss	19	92	54	12	31	20	17	78	46
	all (ps+ss)	547	340	445	512	151	340	538	216	420
32nd (1977-78)	ps	537	248	395	497	123	319	529	224	371
	ss	15	83	49	11	33	22	14	73	52
	all (ps+ss)	552	331	444	508	156	341	543	297	423
27th (1972-73)	all (ps+ss)	545	318	*	501	134	*	*	*	*

ps = principal status;   ss = subsidiary status;   ps+ss: principal and subsidiary status taken together
: proportions not derived for NSS 27th round

Table 2: Number of persons employed per 1000 persons (WPR) according to current weekly status and current daily status during 1972-73 to 2004-2005

all-India

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

2.3 Coverage of Economic Activities: Prior to NSS 50th round, the concept of 'gainful' activity was used in NSS surveys. The coverage of 'gainful' activity was similar to that of economic activity used now, except the 'own account construction of fixed assets'. In fact, in NSS 43rd round, a question was put to all the individuals 'whether engaged in own account construction of fixed assets during last 365 days' to understand the magnitude of persons engaged in such activities. The magnitude of such persons was found to be less than 1 per cent in the NSS 43rd round. It was felt that the inclusion of such activities within the gainful activities will not affect the comparability of employment and unemployment indicators over NSS rounds. In NSS 50th round survey, thus, the own account construction of fixed assets was included within the production of ISNA, which was similar to the coverage of economic activity of SNA.

2.3.1 Prior to NSS 61st round, activities under 'smuggling' were kept outside the economic activity. In assigning the activity status of an individual in the field, probing is perhaps not extended to ascertain whether the production of goods and services is carried out in the form of smuggling. Thus, in practice, production of goods and services in the form of smuggling has actually been considered as economic activity in NSS surveys. In view of this, activity status of a person was judged, in 61st round, irrespective of the situation whether such activity is carried out illegally in the form of smuggling or not. In fact from the 61st round survey, all activities under ISNA production boundary were covered under the economic activities in NSS.

2.4 Problems Faced Due to Sample Design

2.4.1 *Procedure for generating sub-round wise estimates*: A brief of the sampling design adopted in the 61st round survey has been given Annexure-A. As per sample design adopted in this round, each sub-stratum had only two sample FSUs. Therefore, all the sub-rounds could not be allocated to a sub-stratum. In order to generate sub-round estimates, alternative procedure had been adopted. All the substrata of each stratum of a State × sector were merged together. Multipliers (i.e., weights) were calculated afresh for the combined sub-samples only. Number of FSUs surveyed was calculated for each stratum × sub-round. Within FSU multipliers remained unchanged. Further, sub-sample wise estimates are not possible for sub-rounds.

235

2.4.2 *Generating estimates by size class of towns*: In NSS 55th and 50th rounds, all cities and towns within a district were stratified into different size classes as given in Table 3. As such stratum estimates were directly available for different size classes of towns in NSS 50th and 55th rounds. In the 61st round, however, each district was treated as separate strata and if there were one or more towns in a district with population 10 lakhs or more as per population Census 2001, each of these formed a separate basic stratum and the remaining urban areas of the district was considered as another basic stratum. Thus, from NSS 61st round survey the estimates of each of the class 1 cities were directly available from the stratum estimate, whereas estimates for the class 2 and class 3 towns were not directly available as stratum estimate. These were derived considering those first stage units (urban blocks) which were surveyed in a particular class 2 or class 3 towns within the district of the state. This procedure may lead to void sample size for some class 2 and class 3 towns. It is also likely that the variability of the estimates for some class 2 and class 3 towns in the 61st round may be on the higher side compared those of the 50th and 55th rounds.

Table 3: Different size classes of towns and corresponding population as in the NSS 50th, 55th, and 61st rounds

size class of towns	50th (As per Census 1991)	55th (As per Census 1991)	61st (As per Census 2001)
(1)	(2)	(3)	(4)
Class 1	towns with population less than 50,000	towns with population one million and above	towns with population one million and above
Class 2	towns with population of 50,000 to less than 2,00,000	towns with population of 50,000 to less than one million	towns with population of 50,000 to less than one million
Class 3	towns with population of 2,00,000 to less than one million	towns with population less than 50,000	towns with population less than 50,000
Class 4	towns with population one million and above	-	-

3 New Items of Information on Employment and Unemployment Indicators

3.0 In NSS 61st round, data on some new items were collected. This necessitated introduction of new concepts which were operationalised in the field for data collection. Since data on these items were not available from the earlier NSS surveys, the estimates of these new indicators have been presented to have some idea about whether the purpose for which information on these new indicators were collected were served.

3.1 *Voluntary participation without remuneration in production of goods and services:* Information on voluntary participation without remuneration in production of goods and services was collected for persons who were not employed in usual principal status and also in usual subsidiary status. It may be noted that 'production of goods and services' relates to the activities those are economic in nature when they are not done voluntarily. As per the concepts used, in NSS surveys, to classify a person as worker, those who participate in the voluntary production of goods and services are not considered as workers. Thus, if the estimated proportion of persons who participate voluntarily in the production of goods and services are added to the proportion of workers in the usual status (ps+ss), it will provide the dimension of total number of persons engaged in the production process. Some of the estimates obtained from NSS 61st round are given in Table 4. Merely 1 per cent of the non-working people in the rural areas had participated voluntarily in the production of goods and services at least for 30 days during the period of 365 days preceding the date of survey. The proportion is found to be much less than 1 per cent in the urban areas. Secondly, among the people who participated voluntarily in the production of goods and services, in the rural areas, a large proportion were engaged in the production of goods (76 per cent) and remaining were engaged in the production of services. The corresponding proportion was much lower at 25 per cent in the urban areas where a majority was engaged in the production of services. Using these results, one may attempt to adjust the worker-population-ratio (WPR) considering 'voluntary production of goods' or 'voluntary production of services' or both as economic activity. However, it appears that the sample size at the all-India level is too small and the effect of adjustment may not be significant. Moreover, the industry of activity at 3-digit level of NIC-1998 was collected for those who participated in voluntary production of goods and services. The results show that industry of activity were not reported for about 39 per cent of such voluntary workers in the rural areas and 29 per cent in the urban areas.

Table 4: Number of persons participated in voluntarily production of goods and services per 1000 non workers according to the usual status (ps+ss), and number of persons participated in the production of goods per 1000 persons who participated in voluntarily production of goods and services

		all-India
category of persons	no. participated in voluntary production (goods and services) per 1000 non workers	no. participated in production of goods only per 1000 persons participated in voluntarily production (goods and services)
(1)	(2)	(3)
rural		
male	7 (266)	597
female	11 (693)	790
person	10 (959)	759
urban		
male	6 (157)	216
female	3 (234)	268
persons	4 (391)	245

Note: Figures in parenthesis denote the number of sample persons participated in voluntary production

3.2 *Seeking or available or suitable for the type of occupation:* In NSS 50th round, information was collected in respect of some specified skills acquired by the individuals. The results were not satisfactory as most of

the people reported to have acquired skill 'other'. This information was restricted to the non-workers (according to usual principal status) of age 15 years and above in NSS 55th round. The results showed that nearly 89 per cent of the non-workers in the rural areas and 86 per cent of the non-workers in the urban areas reported to have acquired skill 'others'. Besides nearly 3 per cent non-workers had 'not recorded' cases for skill possessed in the rural areas and 2 per cent of the non-workers had 'not recorded' cases of skill possessed in the urban areas.

3.2.1 Instead of collecting information on skill in NSS 61st round, information on 'seeking or available or suitable for the type of occupation' was collected for persons of age below 75 years who were either unemployed or were out of labour force in the usual principal status (i.e., non-workers). The results obtained from the 61st round are given in Table 5, in respect of the "proportion of non-workers (according to usual principal status) of age 15-59 years who had reported occupation division X". It may be noted that occupation division X includes those cases where occupation cannot be classified or the member is not willing or suitable for any job. The proportion of non-reported (n.r.) cases is also presented in parenthesis. These two will give an idea about the overall proportion of cases where the occupation could not be classifiable in any of the specific occupation divisions 0-9 of NCO-68. It is seen that for the unemployed persons according to usual principal status, in 9 to 21 per cent cases the type of job for which one was willing or suitable could not be classified in specified occupation divisions. However, the majority of those who were not in the labour force, could not specify the type of job for which they are suitable. Thus, the results of NSS 61st round also show that it is difficult to collect the skill level of the persons who are not in labour force.

Table 5: Number per 1000 of non-workers (according to usual principal status) of age 15-59 years who were seeking/available/suitable for the type of occupation division X of NCO-68 during 2004-05

all-India

category of persons	activity status (ps)							
	81	91	92	93	94	95	97	81-97
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
rural male	148	732	691	631	668	844	694	652
	(31)	(41)	(89)	(67)	(40)	(52)	(85)	(44)
rural female	65	741	652	569	596	914	764	614
	(15)	(41)	(39)	(51)	(63)	(15)	(112)	(45)
rural person	116	735	652	570	623	868	726	621
	(25)	(41)	(40)	(51)	(55)	(39)	(98)	(45)
urban male	189	761	747	761	748	892	802	665
	(19)	(22)	(96)	(28)	(33)	(13)	(49)	(24)
urban female	99	785	753	682	806	931	869	729
	(7)	(19)	(19)	(23)	(15)	(20)	(29)	(20)
urban person	159	771	753	683	772	905	829	715
	(15)	(21)	(19)	(23)	(26)	(15)	(41)	(20)

Note:
1. *Figures in parenthesis give the n.r. cases of seeking/available/suitable for the type of occupation.*
2. *Occupation division 'X' of NCO-68, includes those cases where occupation cannot be classified or the member is not willing or suitable for any job*

3.3 *Self-employed Persons Who Reported Their Earnings as Remunerative:* In the quinquennial round surveys, wage and salary earnings, for the work done during the week, in respect of the employees (i.e., regular wage/salaried employees and casual labours) are collected. In order to get an idea about the earnings of the self-employed, two indirect questions were asked to the self-employed persons, according to usual status (ps+ss), namely, 'do you regard the current earning from the self-employment as remunerative?' and 'what amount per month would you regard as remunerative?' Table 6 presents the proportion (per 1000) of the self-employed persons who reported their current earnings from all self-employment activities as remunerative, and their distribution over the amount of earnings regarded as remunerative by them.

Table 6: Number of self-employed persons according to usual status (ps+ss) reporting their earning from self-employment as remunerative per 1000 of self-employed persons and their per 1000 distribution by amount (Rs.) regarded as remunerative during 2004-05

category of persons	no. per 1000 of self-employed persons reporting earning as remunerative	per 1000 distribution of self-employed persons reporting earning as remunerative by amount (Rs.) regarded as remunerative						all-India
		0 - 1000	1001 - 1500	1501 - 2000	2001 - 2500	2501 - 3000	more than 3000	all (incl. n.r.)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
rural male	511	129	175	165	114	129	273	1000
rural female	514	342	235	154	89	72	99	1000
rural person	512	212	197	160	105	107	205	1000
urban male	609	49	82	99	72	122	565	1000
urban female	509	328	202	126	77	81	183	1000
urban person	586	104	106	104	74	115	489	1000

3.4 *Information on Informal Employment:* Certain probing questions were asked to collect information on informal employment to all the workers, whether engaged in the usual principal status or in the subsidiary status in non-agricultural sector as well as in the agricultural sector as covered in the Economic Census 1998, i.e., excluding growing of crops, market gardening, horticulture (industry group 011 of NIC -98) and growing of crops combined with farming of animals (industry group 013 of NIC -98) of the agricultural sector. In NSS 55th round, some information was collected for enterprises of persons working in non-agricultural enterprises (NIC-98 divisions 10-99). In Table 7, per 1000 distribution of workers according to usual status (ps+ss) in different industry divisions/ groups is presented. It can be seen that industry division/groups 012, 013, 014 02-05 shared only 7 per cent of the total workers in the rural areas and 2 per cent of the workers in the urban areas. From the coverage of workers in the enterprises (i.e., NIC-98 divisions/groups 012, 014, 015, 02, 05, 10-99) for the purpose of collecting information on informal employment further information on conditions of employment was collected from the employees (i.e., regular wage/salaried and casual labours). The particulars of the conditions of employment were

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

Table 7: Per 1000 distribution of usual status (ps+ss) workers in different industry divisions/ groups during 2004-05

category of persons	industry groups/ divisions			all-India
	011, 013	012, 014, 015, 02, 05	10-99	01-99
(1)	(2)	(3)	(4)	(5)
rural				
male	631	34	335	1000
female	690	143	167	1000
person	653	74	273	1000
urban				
male	49	13	939	1000
female	129	52	819	1000
person	66	21	912	1000
rural+urban				
male	480	28	492	1000
female	609	130	261	1000
person	523	62	415	1000

Ref: NSS Report No. 515 (Employment and Unemployment Situation in India, 2004-05)

3.4.1 *Sample sizes:* Table 8 gives the number of sample employees surveyed in different industry divisions/groups. It can be seen that the number of sample employees for the industry groups/divisions 012, 014, 015, 02, 05, even at the all-India level is very small and as such this poses severe limitation in drawing valid inferences on the basis of the estimates for such category of employees even at the all India level. However, for the industry divisions 10-99, i.e., for the non-agricultural sector the number of sample employees is found adequate.

Table 8: Number of sample employees (i.e., regular wage/ salaried workers, casual labourers) according to usual status (ps+ss) engaged in the non-agricultural (NIC-divisions 10-9) and NIC groups/divisions 012, 014, 015, 02, 05 during 2004-05

all-India

category of persons	status in employment								
	regular wage/ salary			casual labour			all workers		
	industry groups/ divisions								
	012, 014, 015, 02, 05	10-99	012, 014, 015, 02-99	012, 014, 015, 02, 05	10-99	012, 014, 015, 02-99	012, 014, 015, 02, 05	10-99	012, 014, 015, 02-99
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	rural								
male	296	13723	14019	537	10207	10744	833	23930	24763
female	27	2987	3014	203	1905	2108	230	4892	5122
person	323	16710	17033	740	12112	12852	1063	28822	29885
	urban								
male	122	20605	20727	180	7680	7860	302	28285	28587
female	6	5652	5658	38	1861	1899	44	7513	7557
person	128	26257	26385	218	9541	9759	346	35798	36144
	rural + urban								
male	418	34328	34746	717	17887	18604	1135	52215	53350
female	33	8639	8672	241	3766	4007	274	12405	12679
person	451	42967	43418	958	21653	22611	1409	64620	66029

3.4.2 *Type of job contract:* As mentioned earlier, information on type of job contract was collected for the employees. In Table 9, total number of sample employees (regular wage/salaried and casual labours) in the industry groups/divisions 012, 014, 015, 02-99 is presented. It can be seen that for the casual labours only 408 sample casual labours had written job contract of different durations. For the regular wage/ salaried employees, however, sufficient number of sample employees were surveyed who had written job contract.

Table 9: Number of sample employees surveyed with different types of job contract during 2004-05

all-India

Type of employees	no	less than 1 year	1 year or more	all (incl. n.r.)
(1)	(2)	(3)	(4)	(5)
rural				
regular/wage/salaried	8084	344	7808	16682
casual labours	12070	93	119	12682
urban				
regular/wage/salaried	15163	437	10192	26139
casual labours	9258	81	115	9675
rural+ urban				
regular/wage/salaried	23247	781	18000	42821
casual labours	21328	174	234	22357

3.4.3 *Eligibility of social security benefits and paid leave:* In Table 10, the number of sample employees (regular/ wage salaried employees and casual labours) who were eligible for social security benefits is presented and in Table 11, the number of sample employees who were eligible for paid leave is presented. It is seen that at the all-India level, sufficient number of employees who were covered under the different social security benefits were surveyed. Similarly, it appears that adequate number of sample employees who were eligible for paid leave sufficient was netted in the survey.

Table 10: Number of sample employees eligible for different social security benefits during 2004-05

		all-India
category of persons	eligible for some of the social security benefits	not eligible for social security benefits
(1)	(2)	(3)
rural male	8201	15723
rural female	1459	3482
rural person	9660	19205
urban male	10781	17287
urban female	2375	5034
urban person	13156	22321

Table 11: Number of sample employees eligible for paid leave during 2004-05

		all-India
category of persons	eligible for paid leave	not eligible for paid leave
(1)	(2)	(3)
rural male	9144	14781
rural female	1854	3101
rural person	10998	17882
urban male	12074	15973
urban female	2978	4427
urban person	15052	20400

4 Observations on Some Other Items of Information:

4.0 There are some items of information are collected regularly in quinquennial surveys on employment and unemployment which are insignificant in proportion or there are some problems in presenting them in an uniform manner at the sub-national level. They are presented below.

4.1 *Follow up questions for persons engaged in domestic duties in the usual principal status:* NSSO have been collecting information about the participation in some specified activities along with domestic duties in the quinquennial rounds. However, the coverage has been generally been the whole population who were engaged in the domestic duties in the principal status, except for NSS 55th round, wherein the coverage was restricted to the females only. In NSS 61st round, the follow-up questions were put to both males and females who were engaged in the domestic duties in the principal status. However, the proportion of persons engaged in domestic duties was found to be 37.9 per cent among females but only 0.4 per cent among males at the all-India level. As such the quality of the estimates for males is likely to be subject to high Relative Standard Errors (RSEs).

4.2 In the quinquennial rounds, information is collected on some aspects of labour mobility, such as whether changed *establishment*, *status*, *industry*, *occupation*, etc. during the period of last two years. However, in some cases, even at the all-India level the sample sizes are not sufficient and in others though the sample sizes are sufficient at the all-India level, yet at the State level the sample sizes may not be sufficient at all to draw valid inferences based on these estimates. Besides, as is known, in the quinquennial rounds, separate reports are brought out for 'Social Groups' and 'Religious Groups'. One need to have a look at the sample sizes for different social and religious groups, specifically at the State-level, for proper analysis of the results.

4.3 *Labour mobility:* In Table 12, the number of sample workers (as per usual principal status) who have changed establishment, work status, industy (2-digit) and occupation (division) during the last 2 years have been presented. It can be seen that except for the sample number of persons who have changed establishment, the sample number of workers who have changed work status or industry division or occupation division is not smaller at the all-India level.

Table 12: Sample number of usual principal status workers of age 15 years and above who have changed establishment, status, industry, occupation during 2004-05

all-India

category of persons	establi- shment	work status	industry division	occupa- tion dn.
(1)	(2)	(3)	(4)	(5)
rural male	5583	779	989	1030
rural female	2509	149	147	190
rural person	8092	928	1136	1220
urban male	2984	482	696	660
urban female	787	64	110	102
urban person	3771	546	806	762

4.4 *Sample sizes for different social groups and religious groups:* In order to form a judgment about the reliability of estimates pertaining to various social groups and religious groups at the state/union territory level, one may like to have an idea of the respective sample sizes based on which the survey results/estimates have been obtained. Table 13 gives the number of households surveyed in the 61st round by social group for different states/union territories and at the all-India level with rural-urban break-up and the corresponding figures are presented for major religious groups in Table 14. These two tables show that there are good numbers of states/union territories where the number of surveyed households for some social groups/religious groups are rather low. These create problems for intra-state and inter-state comparability over social groups/religious groups.

5 Reliability of the Estimates of Broad Indicators of Employment and Unemployment :

5.0 The main indicators of employment-unemployment study are worker-population ratio (WPR[1]), proportion of unemployed (PU[2]) and labour force participation rate (LFPR[3]). These indicators are generally studied by sex, age and by rural and urban residence. The assessment regarding the reliability of the estimates of WPR and PU has been done by examining the magnitudes of the relative standard errors (RSE) of the estimates. The RSE of the estimate of WPR and PU has been obtained based on NSS 61st round data for all-India/state/ut. The estimates of WPR and the corresponding RSEs are presented in Table 15 and in Table 16 estimates of PU and the corresponding RSEs are presented. It is seen that RSE of WPR for rural male according to all the three approaches, are within 5 % for most of the states except Arunachal Pradesh, Delhi, Goa and for all the union territories (except A & N islands) the RSE exceeds 5%. For rural female WPR is within 5% for most of the major states only. The RSE of WPR according to all the three approaches for urban male and females tend to be higher than 5% for even most of the major states. It may be noted that RSE of PU are higher than 5% for all the states/u.ts. in both rural and urban areas.

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[1] WPR = number of workers per 1000 population
[2] PU = number of unemployed per 1000 population
[3] LFPR = number of persons in the labour force (i.e. workers plus unemployed) per 1000 population

Table 13: Number of households surveyed in NSS 61st round by social group for each state/u.t during 2004-05

state/u.t.	rural					urban				
	ST	SC	OBC	others	all incl. n.r.	ST	SC	OBC	others	all (incl. n.r.)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Andhra Pradesh	427	941	2655	1527	5550	83	368	1314	1113	2878
Arunachal Pradesh	1089	3	26	383	1502	186	33	11	310	540
Assam	675	336	623	1709	3349	110	109	192	485	900
Bihar	38	917	2577	811	4354	11	206	803	379	1400
Chhattisgarh	636	267	924	171	1999	114	110	316	259	799
Delhi	0	7	13	37	57	16	244	151	708	1119
Goa	2	9	19	130	160	1	18	24	197	240
Gujarat	449	293	988	588	2318	139	118	608	1091	1956
Haryana	3	418	545	713	1679	5	184	289	560	1038
Himachal Pradesh	137	578	266	1164	2145	19	62	51	268	400
Jammu & Kashmir	13	241	362	1271	1887	6	105	54	720	885
Jharkhand	653	298	1106	320	2378	118	159	409	352	1039
Karnataka	213	539	1131	997	2880	73	276	869	1011	2229
Kerala	61	354	1916	967	3298	5	154	1248	543	1950
Madhya Pradesh	825	688	1612	713	3838	131	316	832	797	2076
Maharashtra	551	719	1926	1827	5023	192	824	1200	2792	5008
Manipur	1141	15	940	69	2177	71	24	861	44	1000
Meghalaya	1066	11	21	57	1159	324	7	17	87	437
Mizoram	779	0	10	5	800	1077	15	7	10	1113
Nagaland	924	0	15	19	960	258	1	17	44	320
Orissa	899	718	1460	757	3835	126	225	363	473	1187
Punjab	6	836	489	1102	2433	14	445	359	1038	1856
Rajasthan	536	713	1646	648	3543	88	287	600	648	1623
Sikkim	402	51	418	47	920	44	6	70	80	200
Tamil Nadu	15	980	3086	79	4160	24	593	3155	366	4138
Tripura	465	452	356	484	1760	40	117	107	294	560
Uttaranchal	61	313	225	865	1464	12	134	123	481	750
Uttar Pradesh	48	1838	4257	1720	7872	24	524	1492	1295	3340
West Bengal	362	1310	352	2959	4988	53	547	176	2111	2889
A & N Islands	1	0	0	267	269	2	1	0	351	354
Chandigarh	1	18	16	45	80	2	55	26	217	300
Dadra & Nagar Haveli	138	0	5	17	160	13	10	9	48	80
Daman & Diu	12	5	36	27	80	8	10	29	33	80
Lakshadweep	66	1	2	0	69	120	0	3	7	130
Pondicherry	0	60	93	7	160	0	68	447	45	560
all -India	12694	13929	30116	22502	79306	3509	6355	16232	19257	45374

Table 14: Number of households surveyed in NSS 61st round by major religious groups for states/u.ts. during 2004-05

state/ut	rural					urban				
	Hindu-ism	Islam	Christi-anity	Sikh-ism	all*	Hindu-ism	Islam	Christ-ianity	Sikh-ism	all*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Andhra Pradesh	5095	333	117	2	5550	2378	423	76	0	2878
Arunachal Pradesh	340	11	281	3	1502	311	26	47	8	540
Assam	2180	1065	100	0	3349	747	128	20	2	900
Bihar	3726	613	6	3	4354	1192	197	5	2	1400
Chhattisgarh	1934	15	37	2	1999	722	44	21	6	799
Delhi	48	2	0	6	57	971	91	9	36	1119
Goa	87	2	71	0	160	164	26	50	0	240
Gujarat	2121	165	23	0	2318	1620	245	20	6	1956
Haryana	1532	52	1	91	1679	987	27	2	17	1038
Himachal Pradesh	2043	37	1	7	2145	354	18	2	10	400
Jammu & Kashmir	657	1166	4	55	1887	417	425	4	28	885
Jharkhand	1795	327	111	1	2378	839	109	48	11	1039
Karnataka	2644	187	29	0	2880	1698	439	77	1	2229
Kerala	1871	743	684	0	3298	1175	439	334	0	1950
Madhya Pradesh	3651	137	5	17	3838	1676	333	9	8	2076
Maharasthra	4395	251	25	2	5023	3730	755	100	12	5008
Manipur	869	91	1131	5	2177	752	130	66	1	1000
Meghalaya	110	46	871	2	1159	123	8	285	1	437
Mizoram	6	1	704	0	800	32	3	1075	0	1113
Nagaland	22	6	930	0	960	51	13	255	0	320
Orissa	3710	26	94	0	3835	1091	57	34	1	1187
Punjab	473	26	38	1888	2433	1195	47	14	591	1856
Rajasthan	3312	135	1	78	3543	1288	282	1	18	1623
Sikkim	565	6	58	0	920	131	19	9	0	200
Tamil Nadu	3842	106	212	0	4160	3523	342	253	0	4138
Tripura	1572	154	14	1	1760	539	15	2	0	560
Uttaranchal	1366	75	0	18	1464	642	95	6	4	750
Uttar Pradesh	6724	1117	9	13	7872	2332	941	14	23	3340
West Bengal	3405	1505	39	1	4988	2484	384	11	1	2889
A & N Island	205	9	53	1	269	277	40	31	4	354
Chandigargh	53	2	0	25	80	260	11	2	25	300
Dadra & Nagar Haveli	151	5	4	0	160	78	1	1	0	80
Daman & Diu	77	3	0	0	80	70	10	0	0	80
Lakshadweep	2	66	1	0	69	10	118	2	0	130
Pandicherry	158	1	1	0	160	466	58	35	0	560
all- India	60741	8486	5655	2221	79306	34325	6299	2920	816	45374

* includes all religious groups

Table 15: WPR (per 1000 of persons) and the Relative Standard Errors (RSEs) of WPR according to different approaches for each state/u.t.

rural male NSS 61st round

state/u.t.	WPR			RSE of WPR		
	PS+SS	CWS	CDS	PS+SS	CWS	CDS
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Andhra Pradesh	605	582	528	1.3	1.4	1.5
Arunachal Pradesh	500	494	482	5.4	5.5	5.7
Assam	551	535	510	2.1	2.1	2.2
Bihar	477	467	436	1.7	1.7	1.8
Chhattisgarh	565	526	495	2.2	2.3	2.4
Delhi	516	516	513	35.6	35.6	35.6
Goa	524	486	468	10.3	10.7	10.7
Gujarat	593	581	549	1.9	1.9	1.9
Haryana	522	505	489	4.6	4.8	4.9
Himachal Pradesh	555	516	491	1.9	2.0	2.1
Jammu & Kashmir	552	520	509	2.2	2.2	2.1
Jharkhand	535	506	464	2.0	2.2	2.4
Karnataka	623	608	558	2.0	1.9	1.9
Kerala	559	512	432	2.3	2.5	2.6
Madhya Pradesh	544	519	495	1.4	1.6	1.7
Maharashtra	566	539	503	1.4	1.5	1.5
Manipur	524	512	504	3.9	4.0	4.1
Megahlaya	572	567	547	3.5	3.5	3.6
Mizoram	594	608	527	2.9	3.1	3.1
Nagaland	549	530	492	4.4	4.2	4.0
Orissa	586	543	502	1.3	1.5	1.7
Punjab	549	539	501	1.6	1.7	1.8
Rajasthan	510	490	479	1.4	1.6	1.6
Sikkim	554	552	550	2.6	2.6	2.6
Tamil Nadu	597	582	501	1.7	1.7	1.9
Tripura	549	546	531	2.4	2.4	2.4
Uttaranchal	523	484	467	2.7	2.7	2.8
Uttar Pradesh	496	475	456	1.2	1.2	1.3
West Bengal	574	549	494	1.2	1.3	1.4
A & N Islands	632	575	559	3.2	3.5	3.4
Chandigarh	602	602	595	33.8	33.8	35.5
Dadra & Nagar Haveli	547	539	537	11.0	10.5	10.6
Daman & Diu	591	581	581	6.8	6.7	6.7
Lakshadweep	611	585	509	21.1	24.4	19.2
Pondicherry	569	525	422	4.7	5.1	6.6
all-India	546	524	488	0.4	0.4	0.4

Table 15: WPR (per 1000 of persons) and the Relative Standard Errors (RSEs) of WPR according to different approaches for each state/u.t.

rural female NSS 61st round

state/u.t.	WPR			RSE of WPR		
	PS+SS	CWS	CDS	PS+SS	CWS	CDS
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Andhra Pradesh	483	419	350	1.5	1.8	2.0
Arunachal Pradesh	410	403	383	5.9	6.0	6.2
Assam	209	155	117	5.3	6.0	6.6
Bihar	138	116	83	4.3	4.7	5.1
Chhattisgarh	454	336	296	2.7	4.0	4.4
Delhi	47	47	37	68.9	68.9	68.0
Goa	188	159	148	16.2	13.9	15.1
Gujarat	427	390	293	2.9	3.2	3.7
Haryana	317	277	188	3.3	3.6	4.0
Himachal Pradesh	506	433	323	2.0	2.4	2.4
Jammu & Kashmir	267	200	122	4.4	5.9	5.5
Jharkhand	313	239	177	3.9	4.9	5.4
Karnataka	459	406	331	2.0	2.4	2.7
Kerala	256	211	161	3.4	3.7	4.0
Madhya Pradesh	366	283	242	2.4	3.1	3.4
Maharashtra	474	404	350	1.6	2.2	2.4
Manipur	351	315	268	7.4	8.0	9.1
Megahlaya	478	472	424	3.8	3.9	4.1
Mizoram	441	447	363	5.0	5.1	4.9
Nagaland	504	487	390	4.4	4.4	4.6
Orissa	322	225	182	2.9	4.3	4.6
Punjab	322	315	177	3.4	3.5	3.6
Rajasthan	407	337	280	2.5	2.9	3.2
Sikkim	318	315	255	5.7	5.8	5.7
Tamil Nadu	461	433	352	2.1	2.2	2.5
Tripura	85	81	73	8.9	9.2	9.2
Uttaranchal	427	344	276	3.8	4.6	5.3
Uttar Pradesh	240	197	138	2.5	2.6	2.9
West Bengal	178	148	105	3.9	4.5	4.7
A & N Islands	243	211	150	3.8	3.5	4.0
Chandigarh	54	54	54	57.6	57.6	57.6
Dadra & Nagar Haveli	478	403	275	10.9	12.8	12.7
Daman & Diu	168	151	139	59.4	62.5	64.4
Lakshadweep	50	34	30	56.2	50.3	58.4
Pondicherry	361	318	243	8.2	7.1	5.2
all-India	327	275	216	0.7	0.8	0.8

Table 15: WPR (per 1000 of persons) and the Relative Standard Errors (RSEs) of WPR according to different approaches for each state/u.t.

urban   male   NSS 61ˢᵗ round

state/u.t.	WPR			RSE of WPR		
	PS+SS	CWS	CDS	PS+SS	CWS	CDS
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Andhra Pradesh	560	547	523	3.9	3.9	3.9
Arunachal Pradesh	461	455	451	8.0	8.2	8.3
Assam	551	542	531	8.8	8.8	9.0
Bihar	452	442	429	8.4	8.1	8.2
Chhattisgarh	529	519	507	5.3	5.9	5.7
Delhi	535	533	526	7.1	6.9	6.8
Goa	534	513	495	20.7	20.7	20.7
Gujarat	578	568	561	7.0	7.0	7.0
Haryana	511	504	494	6.6	6.7	6.8
Himachal Pradesh	619	610	584	23.1	23.5	23.6
Jammu & Kashmir	526	521	514	4.0	4.0	3.9
Jharkhand	472	468	456	10.8	10.9	10.8
Karnataka	576	571	549	4.9	4.9	5.0
Kerala	547	510	450	4.5	4.7	4.8
Madhya Pradesh	525	511	494	4.3	4.3	4.2
Maharashtra	560	544	528	3.2	3.3	3.3
Manipur	456	451	448	8.5	8.5	8.6
Megahlaya	454	455	449	12.4	12.6	12.3
Mizoram	484	498	457	5.6	5.6	5.8
Nagaland	457	452	437	9.1	8.3	8.7
Orissa	504	480	465	5.5	5.4	5.5
Punjab	572	565	555	5.3	5.4	5.3
Rajasthan	508	497	483	5.3	5.1	5.2
Sikkim	545	545	545	9.6	9.6	9.6
Tamil Nadu	593	581	553	3.2	3.2	3.2
Tripura	504	503	489	7.3	7.3	7.2
Uttaranchal	519	513	510	7.5	7.6	7.7
Uttar Pradesh	524	512	500	4.4	4.4	4.4
West Bengal	595	585	554	4.5	4.5	4.5
A & N Islands	578	558	544	5.2	5.0	5.4
Chandigarh	512	505	502	10.5	10.2	10.2
Dadra & Nagar Haveli	689	670	670	8.1	7.3	7.3
Daman & Diu	652	652	646	34.2	34.2	34.4
Lakshadweep	436	402	382	13.0	14.1	15.2
Pondicherry	536	519	478	9.6	9.8	9.8
all-India	549	537	519	1.3	1.3	1.3

Table 15: WPR (per 1000 of persons) and the Relative Standard Errors (RSEs) of WPR according to different approaches for each state/u.t.

urban female NSS 61st round

state/u.t.	WPR			RSE of WPR		
	PS+SS	CWS	CDS	PS+SS	CWS	CDS
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Andhra Pradesh	224	210	192	6.5	6.9	7.0
Arunachal Pradesh	148	142	139	12.6	12.6	13.9
Assam	109	97	85	19.1	20.0	18.1
Bihar	65	60	50	16.9	17.7	17.3
Chhattisgarh	181	156	138	13.4	17.0	16.2
Delhi	88	87	83	15.9	15.9	15.5
Goa	188	183	175	22.5	23.3	22.8
Gujarat	151	141	119	9.6	9.7	9.2
Haryana	132	122	95	9.1	10.1	9.7
Himachal Pradesh	241	221	196	19.6	21.1	20.0
Jammu & Kashmir	112	104	82	6.9	6.0	6.5
Jharkhand	134	123	107	21.0	21.3	23.1
Karnataka	181	171	154	7.6	7.3	8.0
Kerala	200	165	139	6.9	7.3	7.6
Madhya Pradesh	154	130	117	7.2	6.4	6.8
Maharashtra	190	172	154	4.2	4.4	4.3
Manipur	221	215	192	10.8	10.3	11.2
Megahlaya	303	297	293	22.9	23.8	24.2
Mizoram	281	297	253	7.1	7.1	7.3
Nagaland	257	225	193	9.6	12.1	13.3
Orissa	148	121	108	8.1	9.9	10.8
Punjab	133	130	111	9.1	9.2	9.5
Rajasthan	182	159	133	12.2	11.7	8.9
Sikkim	168	166	159	14.7	14.8	16.2
Tamil Nadu	241	233	213	4.8	4.9	5.2
Tripura	100	96	92	12.6	12.9	14.1
Uttaranchal	127	113	103	12.1	16.6	16.2
Uttar Pradesh	117	105	83	7.3	6.9	7.3
West Bengal	155	146	117	8.0	8.2	8.7
A & N Islands	155	134	128	12.8	13.9	13.7
Chandigarh	142	142	142	22.6	22.7	22.7
Dadra & Nagar Haveli	194	185	112	21.9	24.0	14.5
Daman & Diu	225	179	175	62.8	62.5	63.5
Lakshadweep	108	114	102	26.4	26.6	28.1
Pondicherry	154	140	122	12.8	13.4	13.8
all-India	166	152	133	2.0	2.0	2.0

Table 16: PU (per 1000 of persons) and the Relative Standard Errors (RSEs) of PU according to different approaches for each state/u.t.

rural male NSS 61st round

state/u.t.	PU			RSE of PU		
	PS+SS	CWS	CDS	PS+SS	CWS	CDS
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Andhra Pradesh	7	20	58	15.9	10.9	5.5
Arunachal Pradesh	5	9	8	33.1	36.9	30.3
Assam	13	20	32	14.9	11.1	8.4
Bihar	9	16	32	15.5	12.9	9.1
Chhattisgarh	4	31	46	28.5	16.8	13.2
Delhi	10	10	11	82.8	82.8	82.8
Goa	52	90	104	25.3	27.3	27.4
Gujarat	5	11	27	25.4	16.8	9.9
Haryana	15	29	38	15.3	11.2	9.3
Himachal Pradesh	10	24	34	18.9	13.1	10.8
Jammu & Kashmir	9	26	31	19.5	8.5	7.6
Jharkhand	11	31	40	16.0	11.9	10.3
Karnataka	5	10	37	22.0	18.8	8.4
Kerala	30	56	116	8.8	7.2	4.7
Madhya Pradesh	4	17	31	28.0	12.7	8.1
Maharashtra	9	25	50	13.3	9.8	5.9
Manipur	7	10	10	32.1	25.8	25.2
Megahlaya	0	1	1	48.4	43.6	49.1
Mizoram	3	4	4	42.3	40.2	35.9
Nagaland	12	19	21	24.2	21.6	21.5
Orissa	18	35	52	9.9	8.9	8.1
Punjab	18	25	53	16.0	13.8	8.9
Rajasthan	6	18	26	17.7	13.1	10.2
Sikkim	16	16	17	30.9	31.4	30.9
Tamil Nadu	7	18	90	18.4	12.8	4.2
Tripura	58	59	74	10.6	10.5	9.0
Uttaranchal	10	22	29	27.4	19.1	15.2
Uttar Pradesh	3	11	21	14.6	9.5	6.3
West Bengal	13	31	61	11.2	8.5	5.3
A & N Islands	23	58	71	18.7	7.9	6.0
Chandigarh	16	16	23	87.1	87.1	91.4
Dadra & Nagar Haveli	17	26	27	58.3	48.8	45.0
Daman & Diu	1	11	11	100.0	88.5	88.5
Lakshadweep	5	31	102	100.0	55.8	36.6
Pondicherry	58	101	187	33.5	28.9	19.4
all-India	9	21	43	3.3	2.8	1.7

Table 16: PU (per 1000 of persons) and the Relative Standard Errors (RSEs) of PU according to different approaches for each state/u.t.

rural   female   NSS 61st round

state/u.t.	PU			RSE of PU		
	PS+SS	CWS	CDS	PS+SS	CWS	CDS
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Andhra Pradesh	2	19	49	25.3	14.0	6.7
Arunachal Pradesh	3	3	5	54.2	58.2	54.3
Assam	7	10	11	23.6	17.6	16.3
Bihar	0	2	6	67.5	25.7	17.3
Chhattisgarh	1	18	24	46.9	27.8	20.9
Delhi	0	0	0	0.0	0.0	0.0
Goa	34	40	41	32.8	31.3	30.4
Gujarat	1	4	9	55.0	32.6	13.7
Haryana	4	6	6	40.4	35.7	32.7
Himachal Pradesh	10	16	15	25.4	16.1	16.6
Jammu & Kashmir	4	6	6	30.0	25.0	24.6
Jharkhand	0	4	5	57.6	33.8	29.7
Karnataka	3	10	26	29.0	22.2	11.1
Kerala	65	74	85	6.9	6.1	5.5
Madhya Pradesh	0	6	12	88.7	19.5	12.9
Maharashtra	1	19	38	31.1	13.3	7.4
Manipur	3	3	3	45.7	33.1	32.4
Megahlaya	2	2	3	51.9	48.5	48.5
Mizoram	0	3	2	100.0	75.7	74.8
Nagaland	7	9	9	36.3	37.0	37.3
Orissa	29	26	26	13.8	11.1	10.0
Punjab	16	18	20	17.6	16.6	15.6
Rajasthan	0	7	10	42.0	27.5	23.2
Sikkim	5	6	5	38.2	36.0	36.0
Tamil Nadu	6	13	62	21.1	13.7	5.1
Tripura	40	40	44	16.7	16.6	15.2
Uttaranchal	2	3	3	50.9	45.4	43.4
Uttar Pradesh	1	2	2	29.4	21.8	17.8
West Bengal	6	11	13	16.0	13.8	11.7
A & N Islands	34	40	40	13.6	12.0	12.0
Chandigarh	2	2	2	100.0	100.0	100.0
Dadra & Nagar Haveli	17	26	27	71.1	57.9	57.9
Daman & Diu	0	0	0	0.0	0.0	0.0
Lakshadweep	64	75	74	71.6	64.1	64.1
Pondicherry	13	16	65	57.9	33.6	14.8
all-India	6	12	21	5.1	4.0	2.6

Table 16: PU (per 1000 of persons) and the Relative Standard Errors (RSEs) of PU according to different approaches for each state/u.t.

urban   male   NSS 61st round

state/u.t.	PU			RSE of PU		
	PS+SS	CWS	CDS	PS+SS	CWS	CDS
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Andhra Pradesh	21	29	44	15.5	13.5	10.0
Arunachal Pradesh	5	11	12	51.1	57.4	52.5
Assam	40	44	48	40.6	37.9	35.6
Bihar	33	41	49	33.8	29.5	25.7
Chhattisgarh	21	27	34	24.2	23.0	18.9
Delhi	26	28	33	26.2	25.6	25.5
Goa	44	71	84	43.7	33.9	31.1
Gujarat	14	21	24	31.8	22.7	19.1
Haryana	17	24	31	18.1	14.6	13.2
Himachal Pradesh	11	12	14	39.4	36.8	31.7
Jammu & Kashmir	20	21	25	19.1	17.2	15.4
Jharkhand	38	44	49	23.5	21.1	18.6
Karnataka	11	14	30	20.9	18.0	13.0
Kerala	36	50	94	18.9	13.2	8.6
Madhya Pradesh	17	25	35	18.7	15.8	14.3
Maharashtra	20	34	46	9.8	7.6	6.8
Manipur	26	26	26	24.3	23.8	23.7
Megahlaya	16	15	18	39.0	43.9	38.7
Mizoram	7	5	5	28.3	37.0	35.4
Nagaland	22	22	22	48.9	50.2	50.2
Orissa	49	59	63	21.1	18.5	17.5
Punjab	17	24	32	13.4	12.1	10.9
Rajasthan	15	21	33	23.7	18.1	13.6
Sikkim	19	19	18	75.1	75.1	75.1
Tamil Nadu	18	26	49	15.4	12.5	7.9
Tripura	101	101	114	25.2	25.2	22.8
Uttaranchal	23	26	29	25.5	22.9	21.4
Uttar Pradesh	18	26	34	14.3	11.8	10.8
West Bengal	35	41	61	13.0	11.6	9.9
A & N Islands	39	53	63	25.1	21.2	18.4
Chandigarh	16	22	25	61.1	51.5	47.1
Dadra & Nagar Haveli	8	23	23	86.4	31.7	31.7
Daman & Diu	19	19	20	8.6	8.6	8.6
Lakshadweep	59	72	81	25.9	19.1	14.4
Pondicherry	23	32	68	26.3	19.1	14.1
all-India	21	29	42	4.4	3.7	3.2

Table 16: PU (per 1000 of persons) and the Relative Standard Errors (RSEs) of PU according to different approaches for each state/u.t.

urban   female   NSS 61st round

state/u.t.	PU			RSE of PU		
	PS+SS	CWS	CDS	PS+SS	CWS	CDS
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Andhra Pradesh	8	13	18	22.4	19.3	16.6
Arunachal Pradesh	3	16	18	58.4	74.4	66.5
Assam	11	13	14	31.6	29.1	27.8
Bihar	3	4	4	48.7	44.0	37.2
Chhattisgarh	4	12	16	30.0	42.7	35.8
Delhi	6	8	8	37.0	37.8	37.1
Goa	26	31	36	45.4	38.7	36.0
Gujarat	4	8	9	29.2	26.1	24.3
Haryana	11	14	14	26.0	22.4	21.4
Himachal Pradesh	27	33	31	35.8	32.3	33.0
Jammu & Kashmir	14	15	15	16.5	15.6	15.9
Jharkhand	3	4	5	71.8	58.4	57.8
Karnataka	11	13	16	23.5	20.6	18.5
Kerala	101	95	101	10.1	9.8	9.2
Madhya Pradesh	2	4	6	30.0	25.7	28.4
Maharashtra	8	15	19	28.3	18.2	15.0
Manipur	15	18	17	35.6	30.3	29.9
Megahlaya	11	11	12	53.2	53.2	46.6
Mizoram	7	7	6	30.8	32.1	30.5
Nagaland	20	22	22	42.5	36.1	36.1
Orissa	54	40	41	15.9	22.0	21.9
Punjab	22	23	23	19.5	18.3	18.6
Rajasthan	6	6	7	35.3	34.4	31.5
Sikkim	9	9	9	62.8	62.8	62.8
Tamil Nadu	12	16	23	13.4	13.0	10.6
Tripura	130	130	131	18.5	18.4	18.2
Uttaranchal	15	17	17	31.5	27.2	27.2
Uttar Pradesh	3	6	5	30.0	26.7	25.2
West Bengal	14	19	19	19.5	17.8	17.5
A & N Islands	33	46	47	28.6	29.7	29.3
Chandigarh	12	12	12	67.2	64.0	65.5
Dadra & Nagar Haveli	20	21	20	100.0	100.0	0.0
Daman & Diu	8	30	30	100.0	79.2	79.2
Lakshadweep	122	106	110	26.7	21.9	23.9
Pondicherry	37	45	52	26.1	23.0	20.9
all-India	12	16	17	5.6	5.1	4.7

A Brief of Sampling Design Adopted in NSS 61st Round Survey

2.4 Sample Design: The survey period of NSS 61st round was divided into four sub-rounds of three months duration each and an equal number of sample villages/blocks (FSUs), as far as possible, were allotted for survey in each of these four sub-rounds. A stratified multi-stage sampling design for rural as well as urban areas was adopted for selection of the sample units for the 61st round survey. The first stage units (FSUs) were the census 2001 villages (panchayat wards for Kerala) for rural areas and the NSSO Urban Frame Survey (UFS) blocks for urban areas. The ultimate stage units (USUs) were the households for both rural and urban areas. Hamlet-groups/sub-blocks constituted the intermediate stage whenever these were formed in the sample FSUs.

2.4.1 *Stratification of the first stage units*: Within each district of a State/UT, two separate basic strata were formed as follows:

1. rural stratum comprising of all rural areas of the district
2. urban stratum comprising of all the urban areas of the district.

However, if there were one or more towns with population 10 lakhs or more as per population census 2001 in a district, each of them formed a separate basic stratum and the remaining urban areas of the district was considered as another basic stratum. As per census 2001, there were 27 towns with population 10 lakhs or more at all-India level.

2.4.2 *Sub-stratification of the first stage units*: Within the rural areas of a district, if 'r' number of FSUs were allocated for a rural stratum, a total number of 'r/2' sub-strata were formed within that rural stratum after arranging the FSUs in a specified manner. Similarly, within the urban areas of a district, if 'u' number of FSUs were allocated for a urban stratum, a total number of 'u/2' sub-strata were formed within that urban stratum by arranging the UFS blocks of each town according to IV unit no. × block no. in ascending order of the number.

2.4.3 *Selection of first-stage units*: From each sub-stratum of a district, two FSUs were selected with probability proportional to size with replacement (PPSWR), size being the population as per Population Census 2001 in the rural areas and with simple random sampling without replacement (SRSWOR) in the urban areas. Within each sub-stratum, samples were drawn in the form of two independent sub-samples in both the rural and urban sectors.

2.4.4 *Selection of Ultimate Stage Units within a FSU*: The sample households from each of the second stage strata were selected by SRSWOR.

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Gains and Challenges in Pooling State and Central Sample NSS Data: Case of Uttar Pradesh for 61st (2004-05) Round[1]

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Introduction: India have shown the way to the rest of world for estimation of poverty based on household survey data (Deaton & Kozel, 2005) basically collected through NSS surveys. NSS remains the only source of socio-economic data with defined periodicity at national as well as state level. Many methodological improvements in data collection and analyses have taken place over the period of five decades. NSS as a survey operation draws upon the collaborative efforts of central (NSSO) and state (DES) statistical agencies. In majority cases; state participate in the NSS on equal matching basis as far as the sample size is concerned.

State of Uttar Pradesh (UP) have been participating in the NSS since its 9th round (1955). In most of the cases state participated on equal matching basis. For 61st round the sate surveyed (2256 FSUs) the double of the central size (1128 FSUs) for three reasons namely- (1) derivation of sub-state level estimates, (2) attempt pooling to improve the reliability of data and (3) derive weights for the upgradation of the CPI in rural and urban areas. Thinking behind the enhancement in the sample size was further strengthened by the idea of pooling state and central sample to achieve the above said objectives. Present paper presents the gains and challenges of the pooling of the data of Schedule-1.0 for two samples for the state of Uttar Pradesh from NSS 61st round.

About the samples: Following statement present the details of two samples as-

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Statement 1: Sample Characteristics

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Sample characteristics	State sample			Central sample		
	Rural	**Urban**	**State**	**Rural**	**Urban**	**State**
No of FSUs	1,584	672	2,256	792	336	1128
Sample hhs	15,779	6,713	22,492	7,868	3,345	11,213
Sample persons	99213	38339	137552	47607	18387	65994
Estimated hhs ('000)	23117	5679	28797	23257	6391	29648
Estimated persons (000)	136832	30913	167745	132536	32397	164933

It is evident from the statement-1 that state sample surveyed 4 percent more persons compared to central sample but estimated number of persons exceeded only 1.7 percent. Reverse was true in case of households, where 3 percent more households were estimated from the central sample compared to state sample.

Sampling Design and Pooling Methodology: The 61st round was the seventh country wide quinquennial survey. In this round stratified multi stage sampling design was adopted. First stage of stratification was applied to the selection of FSUs and ultimate stage stratification was done during the selection of sample households. In comparison to the past rounds, design was suitably modified for district level estimation. The estimation procedures recommended by NSSO for calculating the multipliers were adopted. For pooling the procedures suggested by Minhas and Sardana (1990) were adopted and multipliers were adjusted according to the allocation as-

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Statement 2: Generation of pooled multipliers

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Sample	Separate multiplier	Pooled multiplier
State	M^s	$M^s n^s/(n^c+n^s)$
Central	M^c	$M^c n^c/(n^c+n^s)$

Where n^s and n^c are the allocations for any domain for the state and central samples.

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[1] Views expressed are of the author and do not necessarily of the organisation where he belongs.
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The computation of this paper has been done by using statistical software Stata. Estimation of standard error were done by orthodox manner (as per the formulae provided in estimation procedure) and then transformed to the command base system of Stata. 'svy' family of commands have been used to derive the standard errors. In each table, presentations are made for the estimates (Est) along with their standard errors (SE). SEs are presented with percentage Relative Standard Error (RSE) in parentheses. The RSEs have been computed as-

$$RSE(\hat{y}) = SE(\hat{y}) * 100 / (\hat{y})$$

In order to understand the gains and challenges of process of pooling the results are presented in the hierarchical order beginning from state to district in the following manner-

State ------> Regions (4) ------> Commissionaires (17) ------> District (70)

Estimates of monthly per capita consumption (MPCE) and their parts have been derived for the mixed recall period (MRP).

Results: This section is on elaboration of the results emerging from the datasets.

State Level Estimates: Tables 1A and 1B present the estimates of food, non-food and total per capita expenditure for state, central and pooled samples for rural and urban sectors of the Uttar Pradesh. Estimates for both the sub-samples have also been presented in these tables. In rural areas of state, per capita estimates from both the alternate samples (state and central) for 'food' are consistent to each other and their pooled estimate depict gains in terms of reduction in RSE. As far as 'non-food' group of consumption is concerned, estimates from state sample tend to be nearly 8 percent lower to that of the central sample, however both samples show consistency in terms of sub-sample level estimates. Gains in pooling have been observed in terms of RSEs despite constituent estimates being statically apart. The same is true for estimate of MPCE and their RSEs.

For the urban areas the state estimates from state sample is nearly 4 percent lower to the central sample for food, non-food and total expenditure. Gains in RSE have been observed after pooling despite the alternative estimates being statistically different.

Table 2A and 2B presents per capita expenditure of broad groups of consumption items. The further grouping has been devised to chase the source of divergence. The broad groups are defined as-

Statement 3: Description of broad groups of consumption

S. No	Broad group	Sub groups included
1	Main food	cereals, pulses products, milk and products, edible oil, egg, fish & meat, vegetables and sugar
2	Other food	cereal substitute, fruits-fresh, fruits-dry, salt, spices and beverages etc
3	Total Pan	pan, tobacco and intoxicants
4	Fuel & Light	fuel & light
5	Clothing & bedding	clothing and bedding
6	Education	Education
7	Medical	medical institutional and non-institutional
8	Other expenditure	footwear, entertainment, goods for personal care, toilet articles, sundry articles, consumer services excluding conveyance, conveyance, rent, cons taxes & cesses and durable goods
9	Total expenditure	All the above sub-groups taken together

According to broad groups, all the RSEs are under control (<5%) for each alternate sample and gains in RSEs have been observed. The main source of divergence in the food group may be attributed to the 'other food' however their contribution in magnitude is not alarming. The major divergence between two samples is visible in broad group 'medical' followed by 'clothing & bedding'. Since both of these broad groups contribute to the similar extent as per magnitude, 'medical expenditure' may be singled out to be one principal reason of variation. Both the sub-sample estimates of alternate sources yield consistent results.

255

In urban areas, reasons of divergence are same and 'other food' diverge most in terms of percentage. Among non-food 'medical' and 'clothing and bedding' are of almost similar order in terms of divergence and come out to be main source of divergence.

Region level estimates: To disaggregate the estimates at the region level, four natural (economic) regions have been considered for estimation. Table 3A and 3B present region level estimates of food, non-food and total expenditure for both the alternate as well as pooled samples. In the rural areas except for the 'Bundelkhand' region food estimates are consistent to each other from the both alternate sources and their pooled estimate show improvements in terms of SEs. Bundelkhand as a region is depicted as a source of divergence in food as well as non-food items.

In the urban areas the RSEs of the food, non-food and MPCE are larger compared to the rural areas. Food estimates from 2 samples are not consistent for three regions, exception being eastern region. For the non-food, central region shows greatest divergence (17%) followed by western region (7%) leaving Bundelkhand region aside. Improvement in SEs have been observed in all the regions for all the broad groups.

Table 4A and 4B show the per capita estimate of the broad groups of expenditure for regions and both the sectors. In the rural and urban areas Bundelkhand region shows complete disagreement between two alternate estimates except for 'fuel and light'. 'Other food', 'medical' and 'education' expenditure contribute mainly to the divergence of two alternate estimates for other three regions in rural and urban areas.

Commissionery (mandal) level estimates

In the rural areas of the mandals it is observed that food estimates differ up to 10 percent for 6 mandals for rest 11 mandals the divergence in the estimates is beyond 10 percent. For the non-food estimates divergence between two alternate estimates is profound as 13 mandals are depicted with 10 percent or higher divergence. For the overall MPCE half of the mandals have divergence within 10 percent. Gain in pooling may be seen on food group in terms of SEs being improved in 7 cases out of 17 cases. For non-food this improvement was prevalent for 10 mandals. The status of RSEs based on pooled estimates when compared to alternate estimates are given in the statement 4. Noteworthy that for rural areas no mandal shows RSEs more than 10 percent. For the urban areas pooled estimates are better for food and MPCE altogether but for non-food groups divergence in 6 mandals have been observed.

Statement 4: Status of SEs of pooled estimates compared to two alternative estimates at the mandal level (food & non-food)

Sector/ Group	Number of mandals				
	both within 2σ limits	either one within 2σ limits	none within 2σ limits bur rse<=10%	rse>10%	Total
Rural					
Food	6	4	7	0	17
Non-food	4	9	4	0	17
Total	6	3	8	0	17
Urban					
Food	7	7	3	0	17
Non-food	4	3	4	6	17
Total	8	4	4	1	17

Sector/broad group	Number of mandals				
	both within 2σ limits	either one within 2σ limits	none within 2σ limits bur rse<=10%	rse>10%	Total
Rural					
Main food	5	10	1	1	17
Other food	3	5	9	0	17
Pan etc	6	6	5	0	17
Fuel & light	8	7	2	0	17
Clothing & bedding	3	5	9	0	17
Education	11	5	0	1	17
Medical	3	4	2	8	17
Other expen	10	4	2	1	17
Total expen	6	3	8	0	17
Urban					
Main food	7	7	3	0	17
Other food	2	3	4	8	17
Pan etc	5	4	1	7	17
Fuel & light	12	4	1	0	17
Clothing & bedding	7	4	4	2	17
Education	0	2	0	15	17
Medical	0	2	0	15	17
Other expen	2	4	1	10	17
Total expen	8	4	4	1	17

By looking through the broad groups across the mandals (Statement 5) it is observed that pooled estimates are gainful except in cases of 'medical' where almost half of the mandals unable to stabilise the SE. In case of urban areas except one mandal all others join the club as far MPCE is concerned. Looking through the various broad groups 'medical', 'education', 'other expenditure', 'other food' and 'pan etc' could not be stabilised for more than half of the urban areas of the mandals.

District level estimates

In the light of 73rd and 74th constitutional amendments, decentralized planning is the call of the modern era. It becomes imperative to have lower level data for the purpose of such planning. Ideally most of the data must be available at the village level. In order to achieve the goal of lower level estimation, NSS data must also prove its relevance and need to be streamlined for the purpose of planning. At least district level estimates for rural and urban areas would suffice to the need of targeted planning and policy intervention in the area of development. This section presents a summary of district level estimates obtained from two alternate samples and pooled samples. To understand the degree of divergence between two estimates for food, non-food and MPCE following statement present the summary-

Statement 6: Divergence between two alternative estimates at the district level (food, non-food and MPCE)

Sector/Group	Number of districts						
	<5%	5-10%	10-20%	20-30%	30-50%	50%+	Total
Rural							
food	6	5	13	8	14	24	70
nonfood	3	6	6	7	16	32	70
total	3	3	5	7	8	44	70
Urban							
food	3	4	7	5	15	36	70
nonfood	2	2	3	3	11	49	70
total	0	2	1	1	10	56	70

Nearly 60 percent district in rural and 80 percent in urban Uttar Pradesh have a divergence of more than 50 percent between their two alternate estimates. Tables 7A to 7F present the district level estimates for food, non-food and MPCE for rural and urban areas. Following statement 7 present the status of pooled data in the light of SEs.

It is evident from the statement 7 that only 2 district lie in completely unwanted territory i.e. pooled estimates have RSEs beyond 10 percent but for the urban areas 25 such districts exist. Nearly quarter of the districts in rural and urban areas do have RSEs within the limit of 10 percent but none of the two alternate estimates lie with 2-sigma limits of the pooled estimates. In the rural areas, 55 districts have either one of both alternate estimates within the range of 2σ limits and their individual as well as pooled RSEs less than 10 percent. Same is true only for 31 districts in the urban areas.

Statement 7: SEs of pooled estimates compared to two alternative estimates at the district level (food, non-food and MPCE)

Sector/ Group	Number of mandals				
	both within 2σ limits	either one within 2σ limits	none within 2σ limits bur rse<=10%	rse>10%	Total
Rural					
Food	32	25	11	2	70
Non-food	26	23	16	5	70
Total	29	26	13	2	70
Urban					
Food	28	14	17	11	70
Non-food	17	7	10	36	70
Total	24	7	14	25	70

Both the alternate estimates are consistent within themselves and it is good to present the gain in pooling due to the size and construct of the sample. Following statement provide the details of such comparison-

Statement 8: Successive gains in pooling at the district level (MPCE)

Sector/sample	No of districts by level of RSE				No of FSU
	<5%	5-10%	>10%	Total	
Rural					
Central	23	43	4	70	784
State Subsamp-1	28	33	9	70	788
State Subsamp-2	26	36	8	70	788
State	48	18	4	70	1576
Pooled	50	18	2	70	2366
Urban					
Central	7	23	40	70	336
State Subsamp-1	23	17	30	70	335
State Subsamp-1	14	20	36	70	338
State	17	18	35	70	673
Pooled	16	29	25	70	1008

It is evident from statement 8 that increase in sample size at the state level brought forward the strength as 48 districts against 23 districts from central sample had their RSEs of MPCE within 5 percent. By pooling state and central sample 68 districts in rural areas become districts with RSEs less than 10 percent. In the urban areas as well state data had 17 districts within the limit of 5 percent RSE as compared to central sample where number of such districts was 7. After pooling 55 districts of the state had RSEs less than 10 percent.

Poverty Head Count Ratio (HCR) Estimates

The stability achieved in the estimates up to the mandal level and to some extent at the district level may be tested through the poverty head count ratio estimation. This section presents the discussion on the poverty estimation in the light of gains through pooling two alternate samples. The poverty line provided by the Planning Commission of India for 2004-05 (Rs. 365.84 for rural and Rs. 483.26 for urban areas) have been used for demarcating the poor persons (GoI; 2007). FGT class of poverty (Foster, Greer & Thorbecke; 1984) define poverty measurements as head count, depth (poverty gap) and severity

(squared poverty gap). In this paper head counts have been used for demonstration of the levels of poverty.

Region level estimates of HCR are presented in Table 8 of the annexure. It may be noted that except 'Bundelkhand' region estimates from two alternate samples are close to each other and pool very well in the case of rural and urban areas. Gains from the pooling are evident but pooling was not seemingly necessary to derive the state/ region level estimates of the HCR.

At the mandal level statement 9 present the status of RSEs. It is clear that in rural areas 12 mandals achieve RSEs below 10 percent after pooling while in urban areas it worsen the position of RSE due to degree of divergence in two alternate estimates.

Statement 9: RSEs of the HCR of poverty at the mandal level

Sector/ sample	Number of mandals by level of rse				
	5-10%	10-20%	20-30%	30-50%	Total
Rural					
state	9	6	1	1	17
cent	6	10	1	0	17
pool	12	4	1	0	17
Urban					
state	6	10	1	0	17
cent	0	10	3	4	17
pool	3	13	1	0	17

At the district level the estimates of HCR are presented in Tables 10A and 10B in the annexure. Wide variations in the estimates are observed at the district level. Status of RSEs of the HCR estimates are presented in the statement 10.

Statement 10: RSEs of the HCR of poverty at the district level

Sector/sample	Number of districts by level of rse						
	<5%	5-10%	10-20%	20-30%	30-50%	50%+	Total
Rural							
state	0	5	23	23	12	7	70
cent	1	4	17	21	16	11	70
pool	0	5	35	21	7	2	70
Urban							
state	3	11	16	17	18	4	69
cent	3	6	16	9	21	15	70
pool	0	11	25	24	7	3	70

Gains in the estimates through pooling are prevalent as in rural areas half of the districts go below the RSE level of 20 percent. In urban areas same is true for the 25 districts. That's how a great number of districts can not be indicated with the stable poverty estimate.

Discussion

In rural areas, state level estimates from alternate sources for non-food group and MPCE does not lie within 2σ limits to each other despite them being consistent thought their sub-samples. This triggers a debate if these inconsistencies pose a challenge for poolability.

Comparison of broad groups show that in rural areas 'medical expenditure' being main source of divergence along with 'education', 'clothing & bedding' and 'other food' broad groups with alternate estimates for these items being out of 2σ limits of the pooled estimate. Conversely in urban areas the all diverging non-food broad groups fall within the 2σ limits of the pooled estimate along with lower degree of divergence compared to urban areas.

Bundelkhand region have shown increase in MPCE between the periods corresponding to 55round and 58/69th rounds. DES, UP has complied a report on 'Poverty and Social Monitoring' have depicted, this

region being biggest gainer in other socio-economic characteristics as well. Thus state sample data may not be summarily surrounded by the doubts. Eastern region emerge as a point of agreement between two agencies as far food, non-food or MPCE estimates for rural and urban areas are concerned.

Mandal level estimates also depict the similar trends in terms of divergence in the estimation and gains in the RSEs in the pooling. Noteworthy that in rural areas all the mandals had MPCE's RSE under the limit of 10 percent at the same time in the urban areas only one mandal had RSE beyond 10 percent mark.

District level estimates revel that great divergence between two estimates make district level estimation unstable. The gains due to pooling are visible but not to the desired level. Urban areas show greater divergence compared to rural areas.

Gains in pooling are of the greater extent in rural areas compared to urban areas. While estimating poverty, it is noted that the mandal level estimation for the rural areas become stable and this a clear achievement of the pooling these two datasets.

It is observed that two alternate estimates of MPCE were robust within themselves but with great divergence when compared to each other. In these cases pooled estimates in some cases became unstable. This is indicative of non-sampling error. The main reason for the urban divergence also lies in the non-sampling error. Often it is noted that non-cooperation from respondents in the urban areas also affect the data quality to some extent.

The challenges of the pooling may be singled out in the form of non-convergence of two alternate samples. Another challenge in deriving district level estimation is the adequacy of the sample in all the districts. Separate exercise for the sample size determination gains much importance in the light of above discussion.

Bibliography

Deaton, A. and V. Kozel (2005). Introduction. In A. Deaton and V. Kozel (eds), The Great Indian Poverty Debate Delhi: Macmillan India Ltd.

DES Planning Department Govt of UP and The World Bank (2006). Monitoring Poverty in Uttar Pradesh: a Report on the Second Poverty and Social Monitoring Survey (PSMS-II). Lucknow.

Foster, J., J. Greer and E. Thorbecke (1984). A Class of Decomposable Poverty Measures. Econometrica, vol 52.

Guruswamy, M. and R.J. Abraham (2006). Redefining Poverty: a New Poverty Line for a New India. New Delhi: Centre for Policy Alternatives.

Kanbur, R. (1987): Measurement and Alleviation of Poverty, *IMF Staff Papers*, Vol. 36, 60-85.

Lok-Dessallien, R. Reviews of Poverty Concepts and Indicators. From website.

Minhas B. S. and M. G. Sardana (1990): A Note On Pooling Of Central And State Samples Data Of National Sample Survey, *SARVEKSHANA* (July- Sept.), 1-4.

Planning Commission, GoI (1993). Report of The Expert Group on Estimation of Proportion and Number of Poor, New Delhi.

Press Information Bureau, GoI (March 2007). Poverty Estimates for 2004-04: Press Release, New Delhi.

Ravallion, M. (1992): Poverty Comparisons, A Guide to Concept and Methods, *LSMS Working Paper No. 88, The Work Bank*, Washington, D.C.

UPVAN- Uttar Pradesh Voluntary Action Network (2006). Critical Review of the Identification Process of People Below Poverty Line in Uttar Pradesh. Lucknow.

Table 9: Head Count Ratio of Poverty for the mandals of Uttar Pradesh

Sector/Mandal	State		Central		Pool	
	HC Ratio	SE (RSE)	HC Ratio	SE (RSE)	HC Ratio	SE (RSE)
Rural						
1-Saharanpur	13.22	2.80 (21.15)	13.36	3.05 (22.83)	13.27	2.09 (15.77)
2-Moradabad	13.69	1.87 (13.66)	13.29	3.01 (22.69)	13.46	1.68 (12.47)
3-Meerut	13.22	2.02 (15.29)	7.54	1.92 (25.52)	11.56	1.56 (13.51)
4-Agra	13.12	1.72 (13.08)	19.16	2.34 (12.20)	15.01	1.49 (9.91)
5-Bareilly	36.57	2.57 (7.01)	24.37	3.05 (12.51)	32.40	2.12 (6.53)
6-Lucknow	28.14	1.93 (6.84)	26.31	1.75 (6.64)	27.51	1.44 (5.22)
7-Kanpur	23.92	2.39 (10.00)	20.81	2.57 (12.37)	22.90	1.81 (7.92)
8-Jhansi	3.62	1.40 (38.73)	11.85	2.94 (24.80)	6.33	1.65 (26.09)
9-Chitrkootdham	24.24	4.35 (17.95)	47.10	6.49 (13.78)	31.62	4.14 (13.10)
10-Allahabad	21.11	2.27 (10.76)	38.64	3.03 (7.85)	26.90	2.21 (8.20)
11-Faizabad	23.84	2.16 (9.05)	20.33	2.64 (12.97)	22.62	1.83 (8.08)
12-Devipatan	24.95	2.76 (11.07)	34.71	5.84 (16.84)	27.86	2.52 (9.05)
13-Basti	41.10	3.33 (8.11)	35.92	3.96 (11.02)	39.49	2.97 (7.53)
14-Gorakhpur	37.81	2.42 (6.40)	43.67	3.14 (7.18)	39.78	2.05 (5.15)
15-Azamgarh	44.32	3.16 (7.13)	27.45	3.25 (11.86)	39.31	2.59 (6.60)
16-Varanasi	19.68	1.93 (9.79)	24.61	1.87 (7.61)	21.12	1.72 (8.16)
17-Vindhyanchal	48.99	3.63 (7.40)	14.29	3.03 (21.19)	38.54	3.44 (8.91)
State	25.42	0.62 (2.44)	25.37	0.75 (2.97)	25.39	0.52 (2.04)
Urban						
1-Saharanpur	20.70	3.71 (17.90)	40.27	15.69 (38.96)	27.82	6.97 (25.05)
2-Moradabad	22.18	5.26 (23.69)	16.20	3.26 (20.13)	20.20	3.15 (15.59)
3-Meerut	15.74	2.28 (14.46)	18.57	6.06 (32.63)	16.77	2.95 (17.56)
4-Agra	35.22	3.76 (10.67)	27.29	5.33 (19.54)	32.50	2.99 (9.20)
5-Bareilly	37.15	3.89 (10.46)	22.16	3.53 (15.92)	32.64	4.33 (13.28)
6-Lucknow	24.87	3.34 (13.42)	19.43	3.09 (15.91)	22.90	2.46 (10.75)
7-Kanpur	20.02	1.97 (9.84)	22.58	5.72 (25.34)	20.82	2.36 (11.33)
8-Jhansi	16.45	1.26 (7.64)	32.04	8.82 (27.54)	21.98	3.93 (17.89)
9-Chitrkootdham	51.20	5.85 (11.43)	50.91	6.68 (13.12)	51.11	4.11 (8.05)
10-Allahabad	29.37	2.46 (8.37)	35.97	4.81 (13.37)	32.23	4.09 (12.68)
11-Faizabad	35.35	5.19 (14.67)	42.80	8.42 (19.66)	37.79	4.07 (10.76)
12-Devipatan	37.22	4.35 (11.67)	34.63	6.47 (18.67)	36.49	4.29 (11.76)
13-Basti	41.45	4.10 (9.89)	45.52	7.26 (15.95)	42.87	4.45 (10.38)
14-Gorakhpur	28.61	4.32 (15.08)	48.91	8.78 (17.94)	34.84	5.05 (14.50)
15-Azamgarh	58.30	4.99 (8.56)	32.80	4.66 (14.22)	51.10	4.77 (9.34)
16-Varanasi	36.34	2.64 (7.27)	20.59	6.68 (32.44)	30.74	3.23 (10.51)
17-Vindhyanchal	40.56	7.08 (17.45)	26.39	11.07 (41.96)	34.96	5.45 (15.59)
State	27.81	1.08 (3.90)	26.37	2.03 (7.72)	27.32	1.04 (3.81)

NSS Reports Based On 61st Round Data (July 2004 - June 2005)

Consumer Expenditure

Employment & Unemployment