

**Gender Differences in Labour Force Participation
in India: An Analysis of NSS data**

Swapna Mukhopadhyay
(ISST, New Delhi)

Suresh D. Tendulkar
(CDE, DSE, New Delhi)

Institute of Social Studies Trust
Upper Ground Floor, Core 6A
India Habitat Centre
Lodhi Road
New Delhi 110 003

MIMAP Gender Network Project, Phase III
2006

Sponsored by
International Development Research Centre (IDRC), Canada

Gender Differences in Labour Force Participation in India: An Analysis of NSS data

Swapna Mukhopadhyay (ISST, New Delhi)
Suresh D.Tendulkar (CDE, DSE, New Delhi)

Labour force participation of women has been a topic of interest for labour market specialists as well as feminist economists for some time now, All over the world, to a greater or less extent, patterns of work participation is different for men and women. Not only do these vary over the life cycle, primarily to accommodate women's reproductive functions, but also, generally' male participation rates dominate over women's in activities recognized to be 'economically productive', despite the longer hours of work women generally put in at home and outside in varied activities. India is no exception. What is striking in the Indian scene though is the relatively low level of recorded rates of labour force participation of women even when one uses the most comprehensive and gender-sensitive source of data available at the national level in this regard, i.e., data provided by the National Sample Survey Organization and uses the 'extended' definition of labour force participation recognized by the UN System of National Accounts. The NSSO has been producing comprehensive surveys of Employment and Unemployment in the country every five years since 1973. This paper uses this data to understand the factors that determine gender differences in patterns of work force participation in rural and urban India. The paper also uses the NSS data base to analyse some other related questions, such as the extent of gender based market discrimination in the labour market in terms of estimated earnings functions. The paper ends with a critical assessment of the NSS data base for analysing women's labour market characteristics in India and offers some suggestions for improving and utilizing this rich data base more efficiently for exploring this class of issues.

The paper is written in two parts. The first part provides a descriptive statistical analysis of women's work force participation vis-à-vis men's as obtained from the NSS 55th round Survey of Employment and Unemployment, supplemented by the recently published comparable data from the 60th round and a couple of earlier rounds for tracing various trends over the years. The second part poses some standard questions about the characteristics of women's labour force participation patterns in comparison with men's and uses the NSS data to carry out some econometric estimations.

Part I : Gender Differences in Labour Use Patterns : What the Data Show

1.1 Background

This section starts with an account of some orders of magnitude of female and male work participation in India at the latest available time-point and place(s) it in a

historical international experience of some developed countries in their early stage of industrial/ economic development. For this purpose, we focus on the estimated workforce from the latest available quinquennial National Sample Survey (NSS) of Employment and Unemployment (EUE) from the 55th round for the (July-June) 1999-2000. The estimates are based on a combination of (i) NSS based age-specific usual plus principal status (upss) worker-population ratios (WPRs) separately for (i) Rural/urban, male/female population ; (ii) inter-Censal population as on January 01, 2000, and (iii) the (nearest) census-based age-distribution of the population.¹. Thus derived, the aggregate upss WPR per 1000 population in all ages was estimated to be 534 for rural males, 295 for rural females, 527 for urban males and 140 for urban females. If we consider only the principal status workers, the corresponding WPRs were 525 (rural males), 228 (rural females), 522 (urban males) and 118 (urban females).

While it would be desirable to compare historical average WPRs for some presently industrialized countries, these data are not directly available. What is readily available is female share of total workforce for 16 industrialised countries for selected years.². We may note that the prime-age (15-59 years) total (male plus female) workforce in India for the year 1999-2000 was estimated to be 360.9 million of whom 30.5 per cent were female workers. The share of female workers in rural and urban workforce was 34.6 per cent and 18.9 per cent respectively. The historical experience indicates that the corresponding average ratios of female workers to total workers for 16 industrialised countries for which data are available, was 29.6 per cent in 1910, 30.5 per cent in 1950, 36.3 per cent in 1973 and 41.9 per cent in 1987. The ratio was lower than 30 per cent (the current Indian level) in 1910 in six countries that included Australia (23.4 per cent), Canada (13.3 per cent), Netherlands (23.9 per cent), Sweden (27.8 per cent), U.K. (29.0 per cent) and USA (21.2 per cent). By 1910, none of these countries had reached the stage of full employment that they later enjoyed during the golden age of capitalism, namely 1950-72.

The prime-age female population acted as the potential source of unlimited labour supplies and was drawn into the workforce with rising scarcity of labour in the industrialized countries raising the real returns to labour.³ Another factor that shaped increasing female participation in economic activity in the industrialized countries was the emergence of a variety of mechanized labour-saving gadgets that released female labour tied up in several routine domestic household chores. This facilitating factor may have re-inforced the impact of rising intensity of labour scarcity.

In the Indian context, the mechanized gadgets have made visible appearance only in the recent past and that too mostly in the urban areas. Undoubtedly, with limited human/physical capital accumulation, India has not yet reached the stage of limited labour supplies, except in select sectors that require specific kinds of skills that may

¹ Sundaram and Tendulkar (2005)

² Maddison (1991), page 245, Table C2.

³ Lewis, 1954

require fair amount of time to acquire.⁴ Consequently, it would not be incorrect to conclude that low female work participation in India in comparison with those prevailing currently in the developed industrialized countries appears to be shaped in large part by the low intensity of generalized labour scarcity in the economy. This reinforces the major role played by socio-cultural factors that act against female work participation.

The impact of economic and non-economic socio-cultural factors may also be expected to differ widely across different regions in the continental country characterized by enormous socio-cultural, agro-climatic and caste-based diversities.

In this section, we present stylized facts on various dimensions of female and male workforce participation from the quinquennial National Sample Surveys of Employment and Unemployment cross classified by some dominant economic characteristics. We attempt to capture the economic factors in terms of two variables that are associated with economic position of the household and the individual, namely, (a) the relative position of a household in the size distribution of monthly per capita (total consumer) expenditure (MPCE) (b) educational achievement of the worker and (c) whether the worker is associated with a 'formal' or 'informal' sector enterprise by location (rural/urban).The situation of the worker is also analysed depending on whether he or she is comes from a household below or above the poverty line.

By way of general observations regarding the variables chosen, we may note that the monthly per capita expenditure (MPCE) of the household provides a reasonably stable approximation to the living standards enjoyed by a household and is a good proxy for the income of a household from all sources. This would include factor incomes of earning members plus transfers divided by total number of members in the household that comprises of earners and dependents. It may be noted that MPCE is a household level variable and its use as a categorizing variable should not be taken as an ascription of equal distribution of household resources between different household members. Educational achievement, in contrast, is specific to an individual and depending on the degree of intensity of labour scarcity, higher educational achievement is expected to be highly correlated with earnings and hence income.

The third economic variable which has been used to cross classify labour force participation of men and women is in fact a two-dimensional criterion. It is a combination of a household level characteristic, i.e., the 'poverty line' which is based on the MPCE of the household and a specific characteristic of the individual, i.e., the nature of the enterprise that the individual works in. A question on the type of enterprise where the worker was working was canvassed for the first time in the 55th round to all workers who were engaged in non-agricultural activities. In particular,

⁴ An Example of this could be the BPO sector which uses English speaking skills. Although this has been a fast growing sector, it still continues to be a small part of the national economy. Also for a large part of the potential female labour force which has had very little exposure to formal education, acquiring this skill is not within reach in the short run.

information was gathered on whether or not the enterprise was a manufacturing establishment in the factory sector, whether it was public or semi-public, or whether it was in the cooperative or corporate sector. The listed options provide a good approximation to formal sector establishments. All others could be clubbed under the 'informal' sector. While below or above poverty line MPCE is taken to reflect the socially perceived unacceptability or acceptability of the quality of the associated employment.⁵

The quinquennial National Sample Surveys of Employment and Unemployment adopt a time criterion for measuring the labour/worker participation. The USUAL PRINCIPAL STATUS (UPS) of an individual is ascertained on the recall basis in respect of the major time spent more or less regularly during the 365 days preceding the date of interview. Each individual is classified into one of three possible broad activities on the major time criterion, namely, at work (or gainfully employed), unemployed (seeking and/or available for work) and out of labour force. The first two categories constitute the labour force, while work force consists of only the first category. For those reporting unemployment or out of labour force activity status within the UPS category, a SUBSIDIARY status is recorded with respect to whether they were at work more or less regularly but not on major time basis. The most inclusive definition of worker on the basis of the conventional national accounts-based concepts is usual principal plus subsidiary status (UPSS). While reporting of male work participation is reasonably standardized with respect to 'gainful activities' in the sense that they add to national income, female work participation is almost invariably combined with spending time on various 'domestic' chores as well as on various expenditure-saving activities which may be outside the production boundary formally defined by national accounting conventions.

As mentioned earlier, female work participation is shaped by socio-cultural factors across regions. Women are routinely engaged in household chores such as looking after children, taking care of the sick and the elderly, preparing food and generally bearing the primary responsibility for home management as part of their 'reproductive' functions. These are termed 'domestic work', which in the NSS parlance, clubbed under Code 92. In addition, women are also involved in expenditure saving activities geared mainly towards household consumption. These may include maintenance of kitchen gardens, and orchards, taking care of household poultry and cattle, free collection of firewood, fish etc., husking of paddy, grinding of foodgrains, preparation of cowdung cakes, fetching water, making baskets and mats for household use, sewing, tailoring, weaving, and tutoring children and so on. An attempt has been made in the NSS to capture these activities. For those who report code 92 as their main activity, and have attended to domestic duties were also asked if they have been also engaged in additional activities such as free collection of goods, sewing, weaving etc for household. If the answer is in the positive, these persons are coded under Code 93. One can, therefore, define an extended work participation (E-WP for short) as consisting of those who report themselves to be at work on UPSS basis plus those who report themselves under code 93.

⁵ Sundaram (2004)

Those who report code 93 are also asked some probing questions in respect of specific activities they undertake. However, NSS being a large scale sample survey conducted by trained but hired and mostly male investigators, the responses one gets to these questions from women may not be comprehensive.

There is also the question of a choice in detailed tables between work participation rate (WPR) on UPS or UPSS basis and labour force participation rate (LFPR) both normalized for the total male or female population, the difference between WPR and LFPR being those who are unemployed. In this connection it may be noted that those reporting openly unemployed on UPS in 1999-2000 were 1.26 per cent of estimated rural male (RM) population, 0.40 per cent of rural female (RF) population, 2.86 per cent of urban male (UM) population and 0.98 per cent of the urban female (UF) population. The share of unemployed population on UPSS basis would be even lower. The figures for the earlier rounds were not very much higher either. The simple point is that in the absence of government-provided social insurance, very few people can afford to remain openly unemployed for a long duration and engage in some economic activity or the other for subsistence, irrespective of very low productivity of self-employment or very low wages for hired work. Consequently the difference between WPR and LFPR would not be significant. While we focus on WPR (conventional or extended) subsequently, we note below these rates for record for the entire population. More importantly, we would examine the behaviour of unemployment rates for RM, RF, UM and UF separately across decile groups as well across educational achievement of workers in addition to that of WPR.

1.2 Labour Force and Work Force Participation rates

Table 1 presents conventional WPRs (with extended WPRs (E-WPRs) in brackets), conventional LFPRs (with extended LFPRs in brackets) by adding code 93 status (normalized for the corresponding total population) in the extended definition. These are given separately for rural males, rural females, urban males and urban females on UPS as well as on UPSS basis and for the 38th covering 1883, the 50th covering (July-June) 1993-94 and the 55th covering (July-June) 1999-2000.

We use Table 1 to make two points. One, it makes very little difference to our conclusions whether we consider work participation rates or labour force participation rates in our subsequent analysis. Rather than repeating the results for both WPRs and LFPRs, we focus on WPRs subsequently. Two, extended participation concept makes a major difference only for the female participation rates only. This is not surprising as the code 93 was indeed designed to capture non-market, expenditure-saving activities performed mainly by women. This code was reported much more frequently by women in the rural areas than in urban areas where most of the activities under this code are already in the commercial domain. Thus, in 1999-2000, 17.6 per cent (12.9 per cent) of the rural women and 7.5 per cent (8.8 per cent) of the urban women reported code 93 status on UPS (UPSS) basis. The figures imply that 27 per cent of the rural and 10 per cent of the urban women with code 93 status on the UPS basis had reported themselves to be engaged in gainful employment as a subsidiary activity in 1999-2000.

TABLE I.1
Work Force (WPR) and Labour Force Participation Rates (LFPR) for Rural Males (RM),
Rural Females (RF), Urban Males (UM) and Urban Females (UF):
Usual Principal Status (UPS) and Usual Principal plus Subsidiary Status (UPSS) for
three consecutive NSS rounds.

	1983	1993-94	1999-2000
UPS			
WPR–RM	52.86(53.38)	60.40 (60.65)	59.12(59.35)
WPR–RF	24.83(41.18)	26.20 (37.93)	26.25(43.89)
LFPR–RM	54.01(54.53)	61.60 (61.85)	60.38(60.61)
LFPR–RF	25.19(41.54)	26.57 (47.64)	26.65(44.29)

UPSS			
WPR--RM	54.73(54.18)	62.05(62.25)	60.11(60.31)
WPR--RF	33.97(44.83)	36.76(51.66)	33.91(46.78)
LFPR–RM	55.51(55.96)	62.95 (63.16)	61.16(61.36)
LFPR–RF	34.20(45.06)	37.05 (51.95)	34.27(47.14)

UPS			
WPR–UM	50.01(50.17)	56.33(56.46)	56.57(56.62)
WPR–UF	12.03(21.62)	13.30(24.25)	12.91(20.45)
LFPR–UM	53.12(53.28)	59.01(59.14)	59.42(59.48)
LFPR–UF	12.93(21.62)	14.49(25.44)	13.89(21.43)

UPSS			
WPR–UM	51.23(51.35)	57.16(57.28)	57.10(57.15)
WPR–UF	15.08(22.68)	16.98(26.48)	15.32(22.11)
LFPR–UM	53.97(54.09)	59.57(59.69)	59.79(59.84)
LFPR–UF	15.85(23.45)	18.11(27.61)	16.25(23.04)

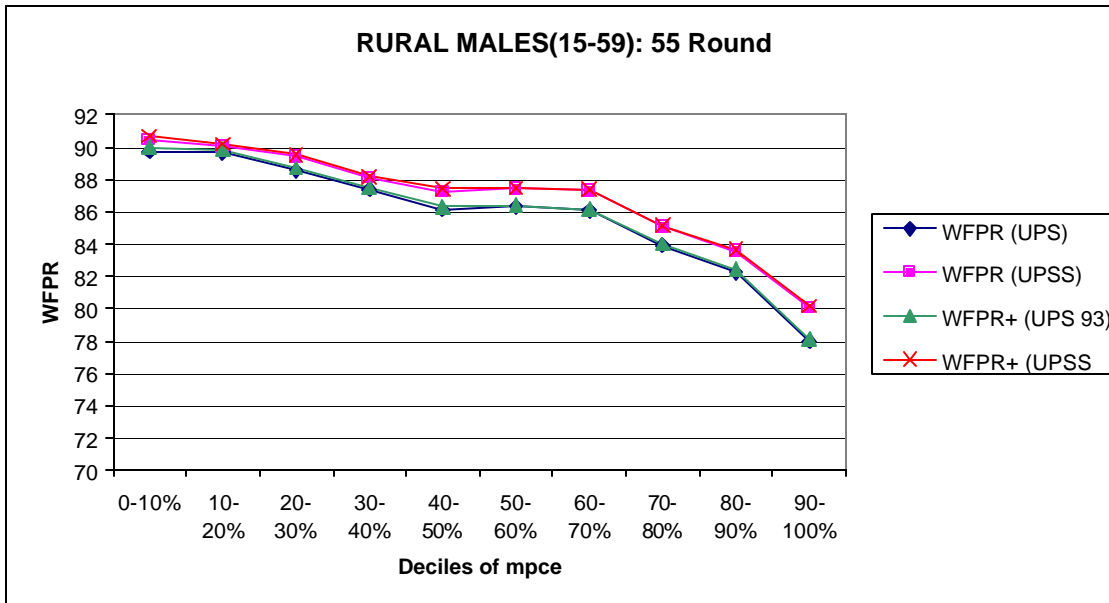
Note : Figures in brackets indicate E-WPR and E-LFPRs, the extended definitions of WPR and LFPR that include those reporting Code 93 . See text.

Table 1 also indicates that the conventional rural WPR on the UPS basis was stuck around one-fourth and on UPSS basis around one-third across the three NSS rounds. This was much higher than around 13 per cent (UPS) and 16 per cent (UPSS) reported by urban women across the three NSS rounds. Given the higher share of code 93 in the rural areas, E-WPR rose to 43.9 per cent (UPS) and 46.8 per cent (UPSS) among rural women and to 20.5 per cent (UPS) and 22.1 per cent (UPSS) among urban women in 1999-2000. The gender gap in WPR or E-WPR can be observed to be much wider in the urban than in the rural areas. Since urban women are better-educated than their rural counterparts, WPR may be expected to move inversely with education as we would observe later.

1.3. WPRs and household incomes

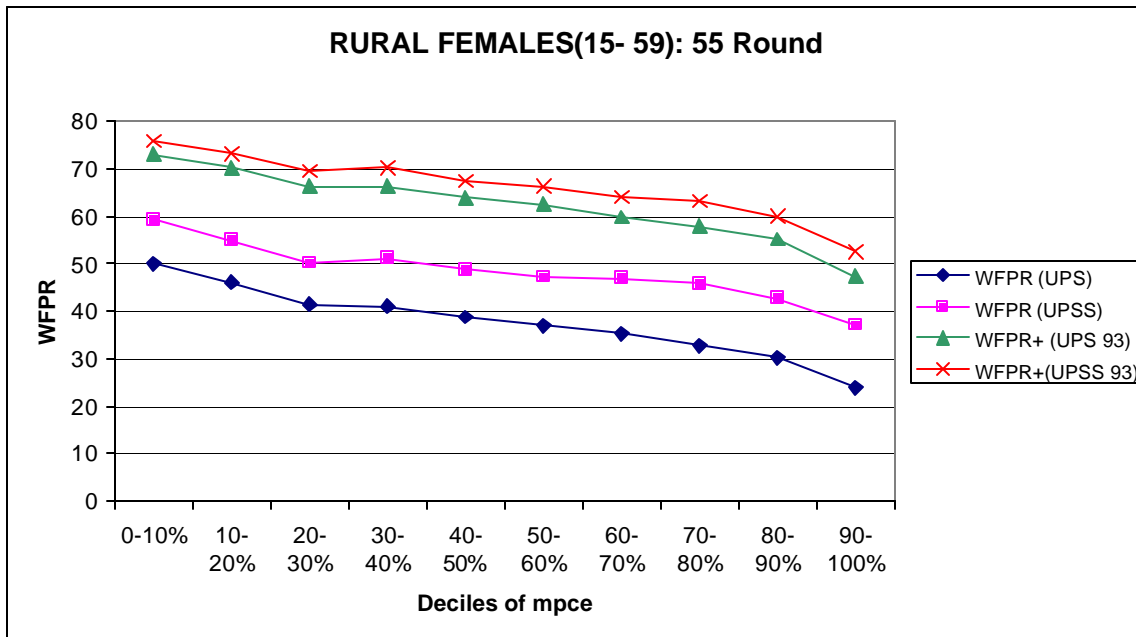
Conventional and extended WPRs are plotted against the decile-wise position of the households when households are arranged in ascending order of MPCE in the figures 1.1, 1.2, 1.3 and 1.4 for prime age (15-59 years of age) rural/urban males/female workers. There is a declining pattern of WPR/E-WPR with rising standard of living as measured by MPCE for rural male, rural female, urban male workers and urban female workers located in the bottom 80 per cent of the urban population. A rise in WPR/E-WPR for female workers is indicated for the top 20 per cent of the urban population.

Fig 1.1
WPR for Rural Males
Usual Principal Status (UPS), UPS +Subsidiary (UPSS) ; UPS and UPSS +
Extended (Code 93)



There is, however, a variation in the declining pattern across segments of the population considered. The range of decline is much narrower for the rural males (around 90 per cent for the bottom decile to 78 per cent for the top decile for conventional WPR on UPS basis while the corresponding decline for rural female workers is observed from 50 per cent to 24 per cent. For the extended WPR of rural female workers, the corresponding range is between 73 per cent and 47 per cent. In other words, the income effect appears to be associated inversely with female work participation to a much greater degree than that of the male workers in the rural areas. The urban pattern is much more fluctuating though broadly declining between 84 per cent (bottom decile) and 74 per cent (top decile) for male workers in the case of conventional WPR(UPS) with local peaks of a little lower than 82 per cent (for bottom 20 to 30 per cent of the urban population or the

Fig 1.2
WPR for Rural Females
Usual Principal Status (UPS), UPS +Subsidiary (UPSS) ; UPS and UPSS + Extended
WPR (Code 93)



3rd decile), a little lower than 80 per cent (for 5th decile) and a little above 76 per cent for the 9th decile preceded by local troughs. For urban female workers, it goes down from around 27 per cent (bottom decile) to around 13 per cent for the 7th decile and then moves up to around 20 per cent for the top decile. The corresponding variation for E-WPR (UPS) is from 40 per cent to 23 per cent (7th decile) and further to 26 percent (top decile). It may also be seen that the gap between WPR on UPS and UPSS basis is much wider for the female workers than that for male workers.

In other words, subsidiary employment is much more prevalent among female workers possibly because gainful work has to be combined with their socio-culturally determined non-market household chores.

One other rural-urban difference in WPR is notable. The gap in WPR between UPS and UPSS widens with rising household incomes for the rural male as well as female workers while it tends to narrow for the urban workers. This implies that while work participation tends to decline with the higher position of the household in the economic ladder, the demand for subsidiary work appears to rise for the rural but not for urban workers. This may be associated with the seasonal nature of predominantly agricultural rural economic activity.

Fig 1.3
WPR for Urban Males
Usual Principal Status (UPS), UPS +Subsidiary (UPSS) ; UPS and UPSS + Extended (Code 93)

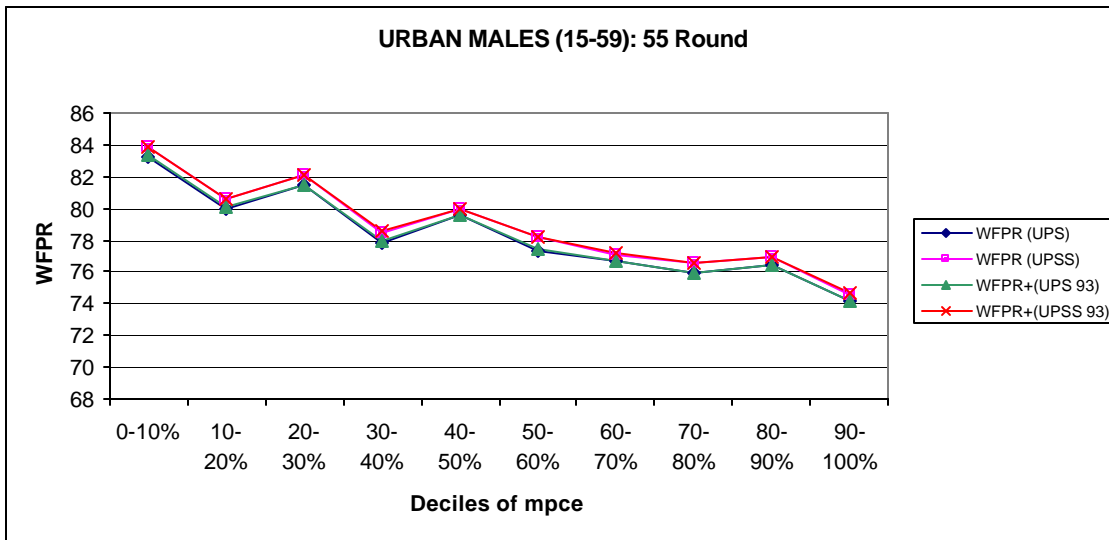
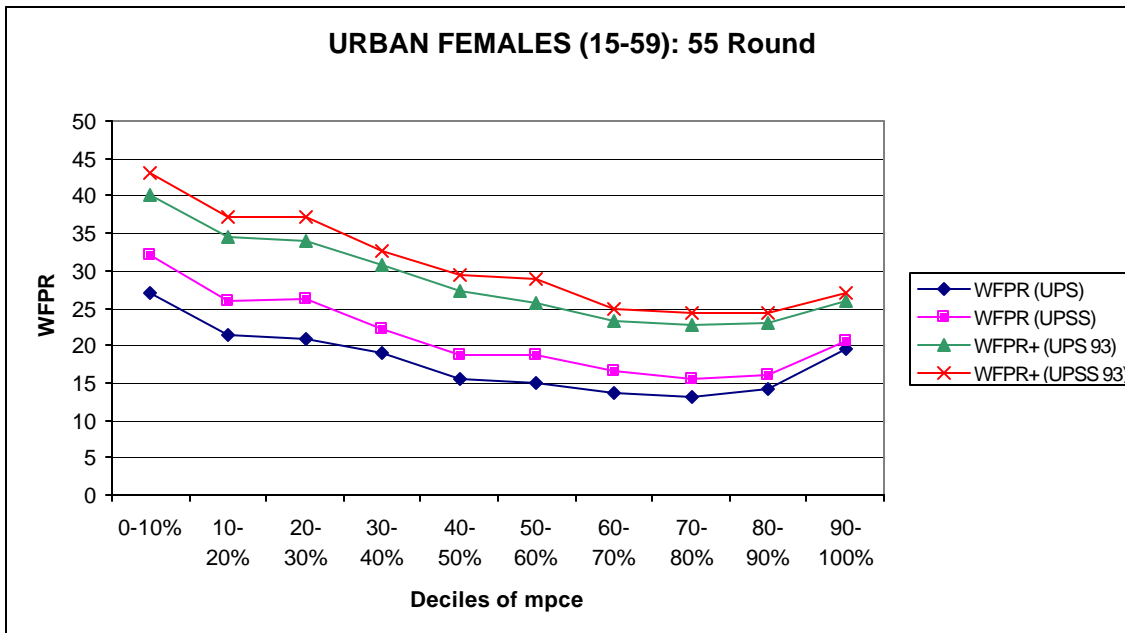


Fig 1.4
WPR for Urban Females
Usual Principal Status (UPS), UPS +Subsidiary (UPSS) ; UPS and UPSS + Extended (Code 93)



1.4 WPRs and educational levels

Both WPR and E-WPR show a declining trend with education with the exception of urban females where there is a rise in the highest education category of above higher secondary education (figures 2.RM, 2.RF, 2.UM and 2.UF). The education categories for the rural population are : Illiterate (I), literate and upto primary schooling (P), completed primary and upto secondary schooling (S) and completed secondary schooling and higher than secondary education (AS). The declining pattern is predictably steeper for the females than that for males, if we associate income effect to be correlated positively with education.(?) The pattern with respect to subsidiary work and code 93 for female workers is also replicated more sharply for educational categories. The variation for rural female workers in WPR between illiterate workers and those with higher than secondary schooling is 44 per cent to 18 per cent (UPS), 56 per cent to 24 per cent (UPSS) and 75 per cent to 34 per cent (UPSS plus 93). For the urban female workers, as noted above, WPR under UPS goes down between illiterate and upto secondary schooling from around 26 per cent to 10 per cent before rising to 19 per cent for female workers above secondary education. The corresponding variation under UPSS is from 32 per cent to 13 per cent and then up to 20 per cent and that for E-WPR from 43 per cent to 22 per cent and further to 29 per cent.

Fig 2.1
Work Participation rates for Rural Males by Education

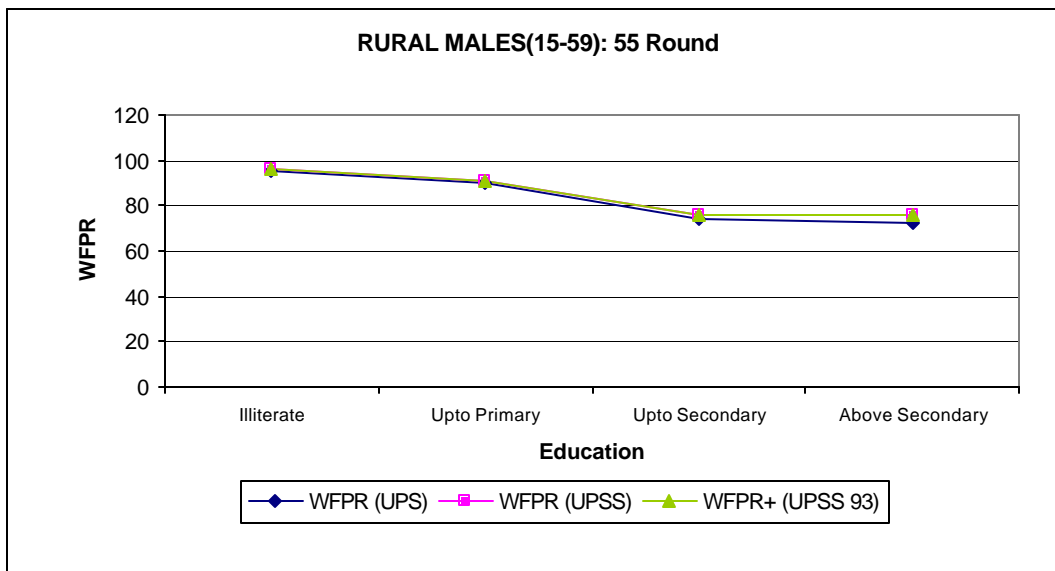


Fig 2.2
Work Participation rates for Rural Females by Education

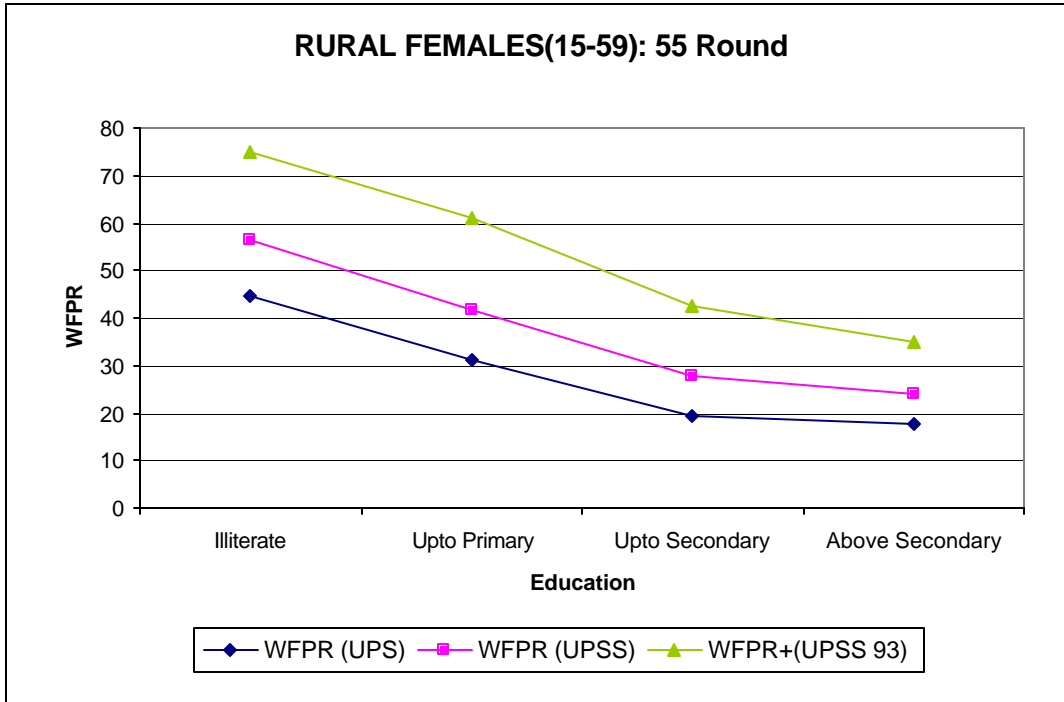


Fig 2.3
Work Participation rates for Urban Males by Education

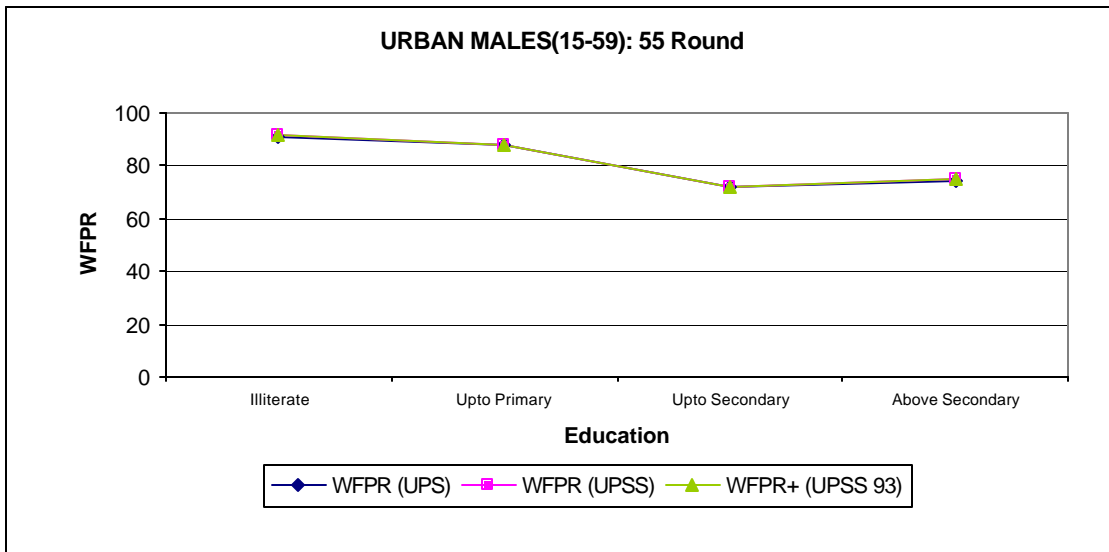
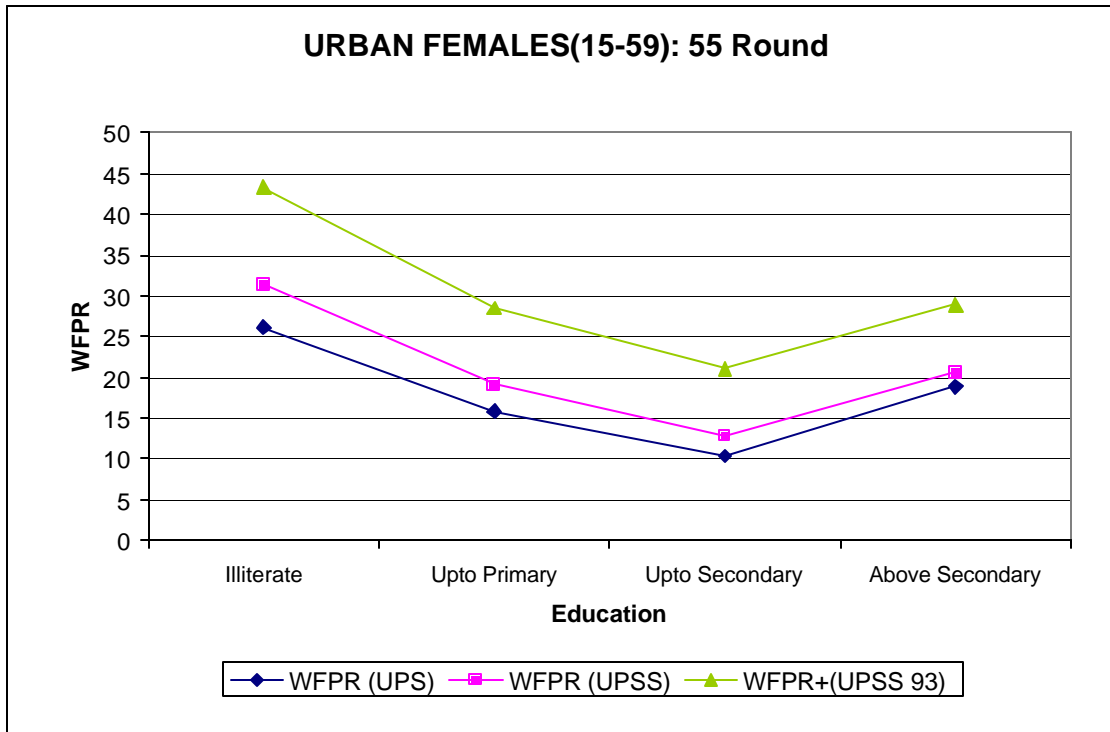


Fig 2.4
Work Participation rates for Urban Females by Education



1.5 Unemployment rates by household incomes and educational levels of the worker

We turn now to a discussion of the unemployment rate (UER) which focuses on those who report themselves as unemployed (i.e. seeking and/or available for gainful work) in relation to those who report themselves as being in labour force (those at work plus unemployed). In one sense, the shift is terms of the normalization factor from total population (in the age group 15 to 59 years considered in this paper) in the case of WPR or E-WPR to a subset of those who report themselves being in labour force under the conventional national accounting definition. This indicator is consequently more sensitive than unemployed as a proportion of total population considered in Table 1 discussed earlier. But an important difference between UER and WPR (conventional or extended) for interpretation needs to be noted with respect to the differential between UPS and UPSS. It is important to keep in mind that the subsidiary work status that accounts for the difference between UPS and UPSS raises WPR but reduces UER. In what follows, we discuss the behaviour of UER with respect to income effect given by inter-decile pattern of variation as also with respect to educational achievement.

Figures 3.1, 3.2, 3.3 and 3.4 indicate unemployment rate (UER) across decile groups and 4.1, 4.2, 4.3 and 4.4 across educational categories. A striking rural-urban difference is immediately apparent with respect to inter-decile variation. In the rural areas, with minor local peaks and troughs, income effect tends to be associated with

a rise in the unemployment rate whereas in urban areas, a broadly bell-shape curve emerges with a rise in the decile position of a household. With respect to educational achievement, on the other hand, UER shows a uniformly rising behaviour. The subsidiary work, more prevalent among female workers than their male counterparts, only shifts the curves downwards. There is no difference between male and

Even though stylized patterns do not differ across male and female workers, gender differentials do emerge with respect to numerical magnitudes of unemployment rate across rural-urban areas to which we turn. On an average, urban UER has been higher than rural UER. However, differences emerge across decile groups as well as across educational categories. At the lower end of the economic position of a household, male UERs are typically higher than female UERs. The position is reversed at the upper –end where female UERs are higher than male UERs . With a rising rural UER and broadly bell-shaped urban UER with deciles, the rural-urban gap gets virtually bridged at the upper-end for male workers. UER for urban female workers exceeds that for their rural counterparts for the top-most decile. Quantitatively, UER (UPS) rose from 1.6 per cent for the bottom decile (B) to 3.5 per cent for the top decile (T) after a local peak of 2.3 per cent for the 20-30 per cent decile in the case of rural male workers. The corresponding UER for rural female workers starts from a very low level of 0.5 per cent (B) and reaches much higher level of 5.2 per cent (T). The bell-shape UER (UPS) for urban male workers starts at 4.2 per cent (B), reaches a local peak of 6.0 per cent for 10-20 per cent decile, another local peak of 6.4 per cent for 30-40 per cent decile from a dip before declining steeply to 3.2 per cent (T). The corresponding female

Fig 3.1
Unemployment rates for Rural Males by Household Incomes

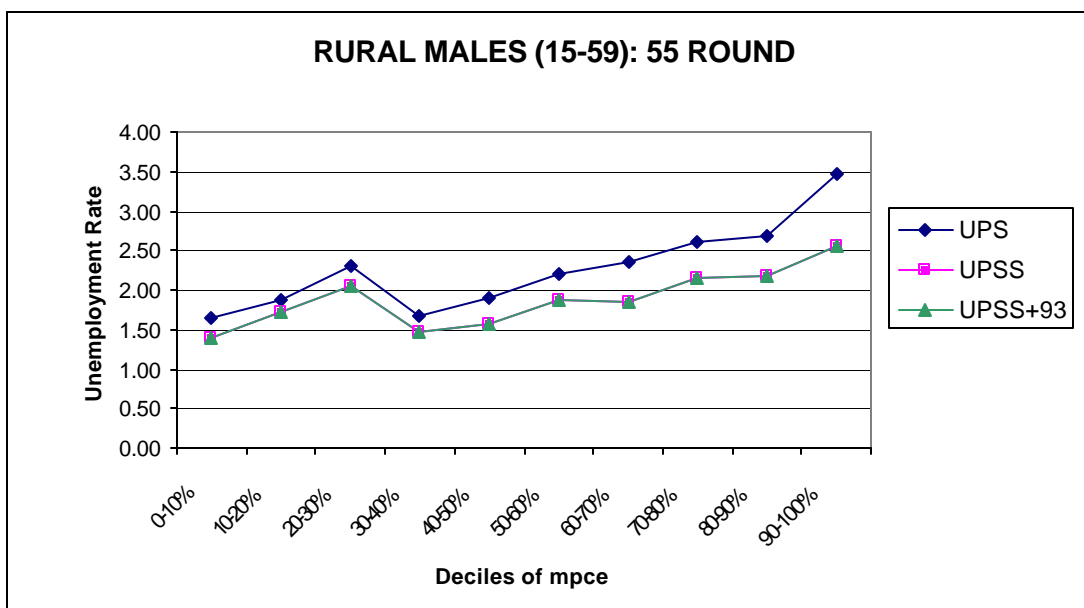


Fig 3.2
Unemployment rates for Rural Females by Household Incomes

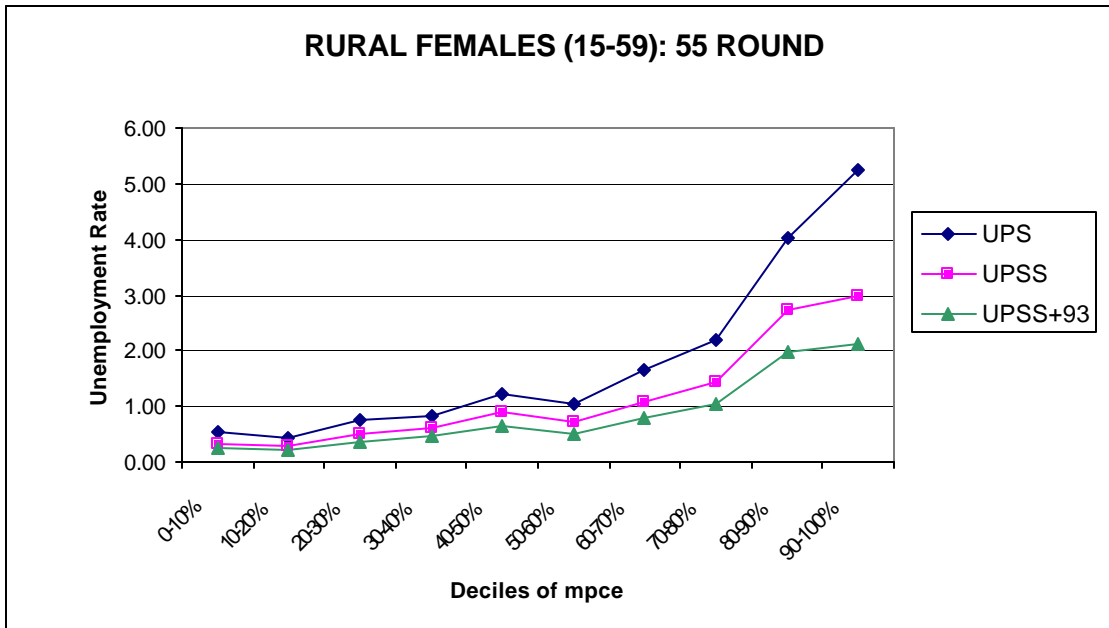
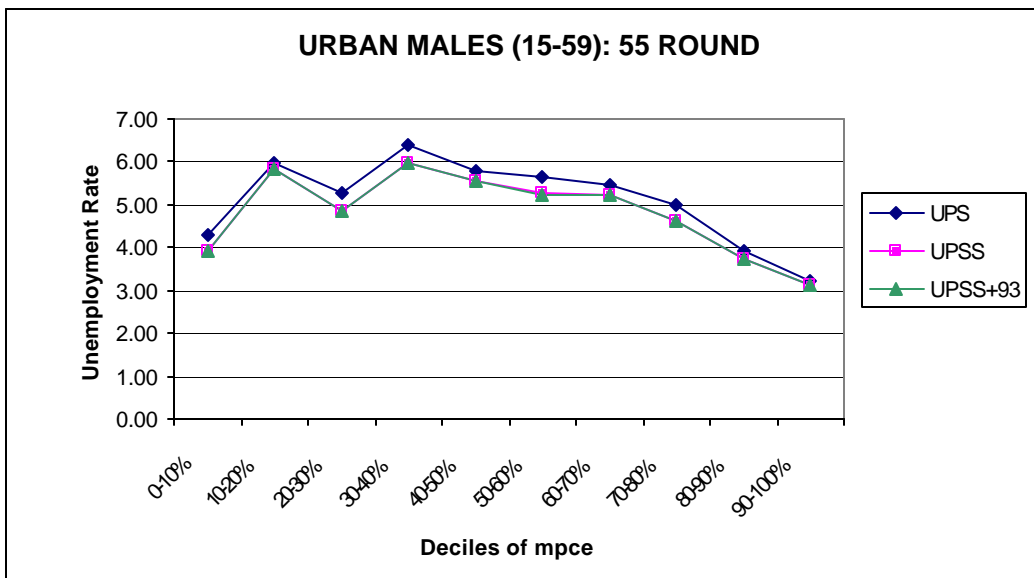


Fig 3.3
Unemployment rates for Urban Males by Household Incomes



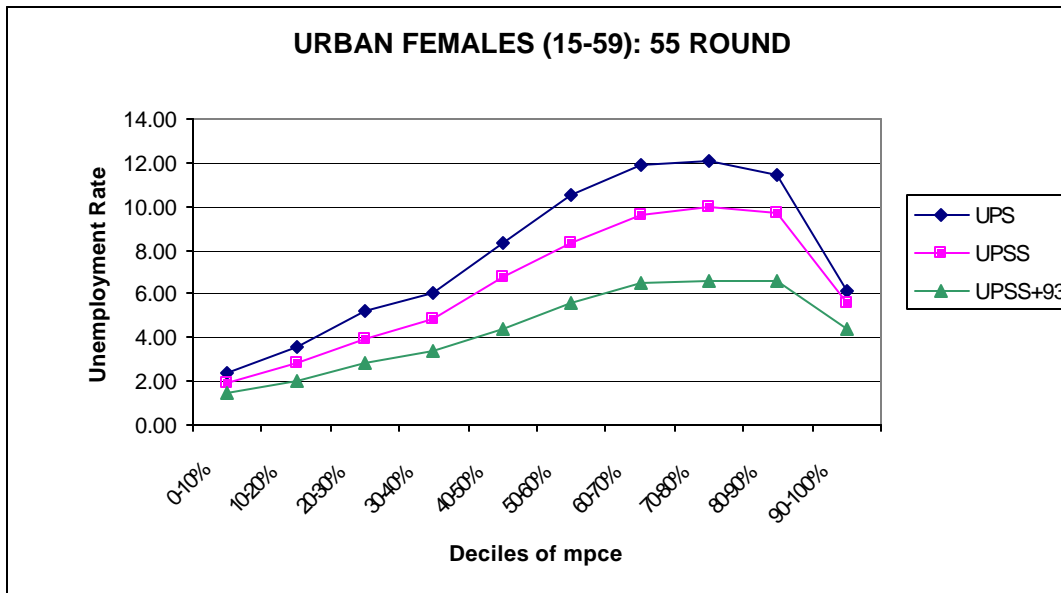
UER rises gradually from a low level of 2.4 per cent (B) to a peak level of 12.0 per cent for 70-80 per cent decile and declines to half the peak level of 6.0 per cent (T).

Female workers in these general patterns. This is not to deny gender differential in numerical magnitudes of unemployment rate as we note below. The possible reasons behind the rising pattern of rural UER with decile-based position of a worker's household and with education (both rural and urban) are easier to surmise than the

declining urban UER at higher deciles. At the lower end of the deciles, workers are mostly engaged in low productivity activities with very little human or physical capital and operating in a macro-level situation of unlimited labour supplies with competition for work. In the absence of government-funded social security, very few people can afford to remain without working for long duration captured by UPS status as they have to earn some livelihood, however meager, for subsistence. However, as the economic position of household improves with rising decile-wise position, withholding power of a worker goes up with social security provided by joint family and economic position opens up the possible choice of waiting for a job of one's choice. A similar argument holds for rising rural UER with education. It is difficult to speculate about the factors underlying the falling pattern of reported urban UER in higher deciles combined with rising pattern with education. This may possibly be associated with limited supply of skill-education mix located in the higher deciles in the urban areas.

Fig 3.4

Unemployment rates for Urban Females by Household Incomes



Variation of UER (UPS by way of example) with educational achievement of worker is much wider than that across deciles although it exhibits a uniformly rising pattern across the four segments of workers. The range between illiterate workers and those in the highest educational category of above secondary level of education is 0.4 per cent to 9.5 per cent for rural male workers, 0.2 per cent and as high as 29.2 per cent for rural female workers, 1.4 per cent and 7.4 per cent for urban male workers and 0.4 per cent and 17.2 per cent for urban female workers. Very high rates of UER for rural and urban female workers have to be placed in the context of very low WFPR (UPS) of 18 per cent each for the two segments of female workers.

Even after taking account of subsidiary work opportunities, WFPR rises only to 24 per cent for rural and only 20 per cent for urban women workers. This suggests that despite very low supply of highly educated women as reflected in low WFPRs, work opportunities for those among them who were willing to engage in gainful activities, either the demand for productive use of their educational qualifications seemed limited or alternatively, available work opportunities might not have been acceptable to them so that they might have preferred to wait for long durations reporting themselves to be seeking and/or available for work.

Fig. 4.1

Unemployment Rate of Rural Males by the Education of the Worker

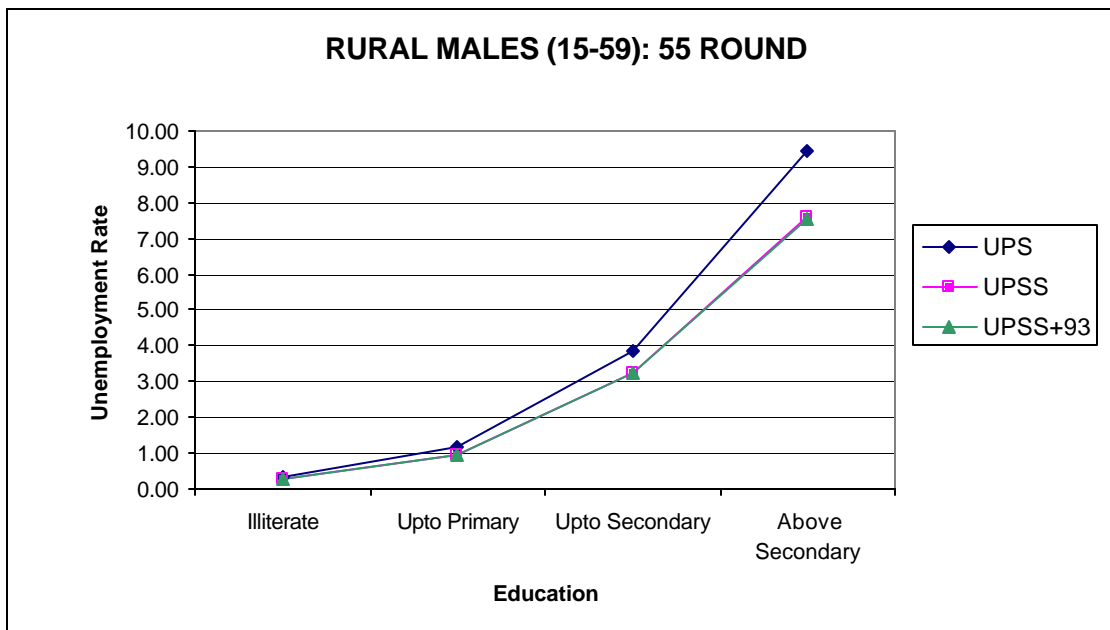


Fig. 4.2
Unemployment Rate of Rural Females by the Education of the Worker

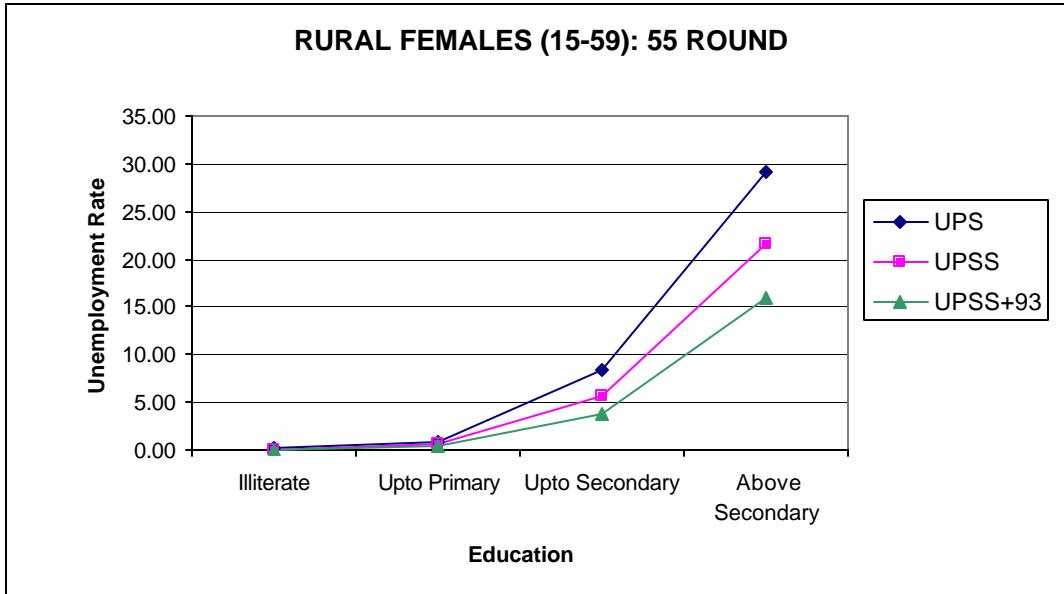


Fig. 4.3
Unemployment Rate of Urban Males by the Education of the Worker

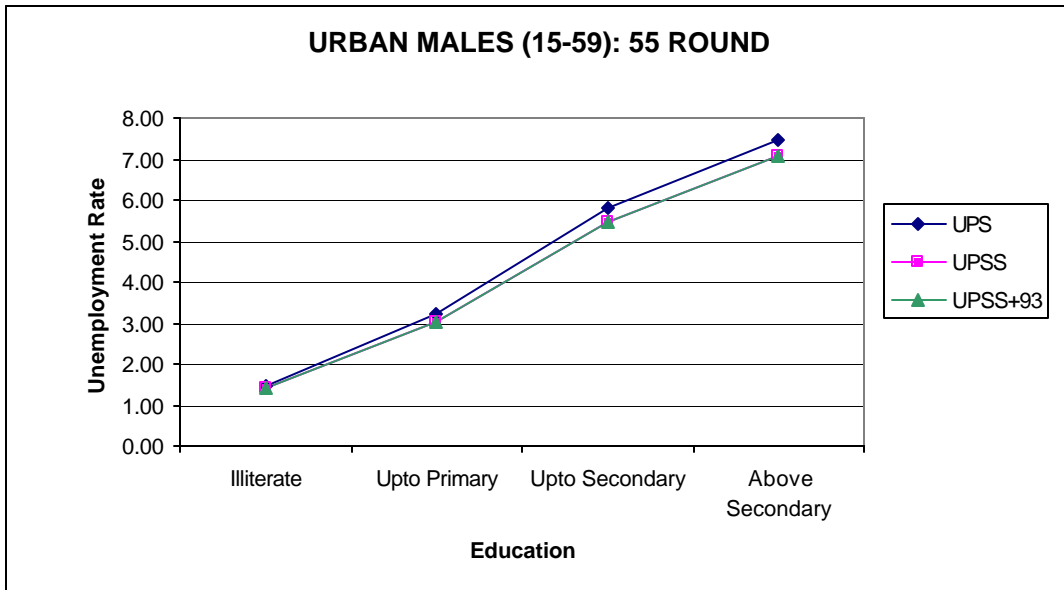
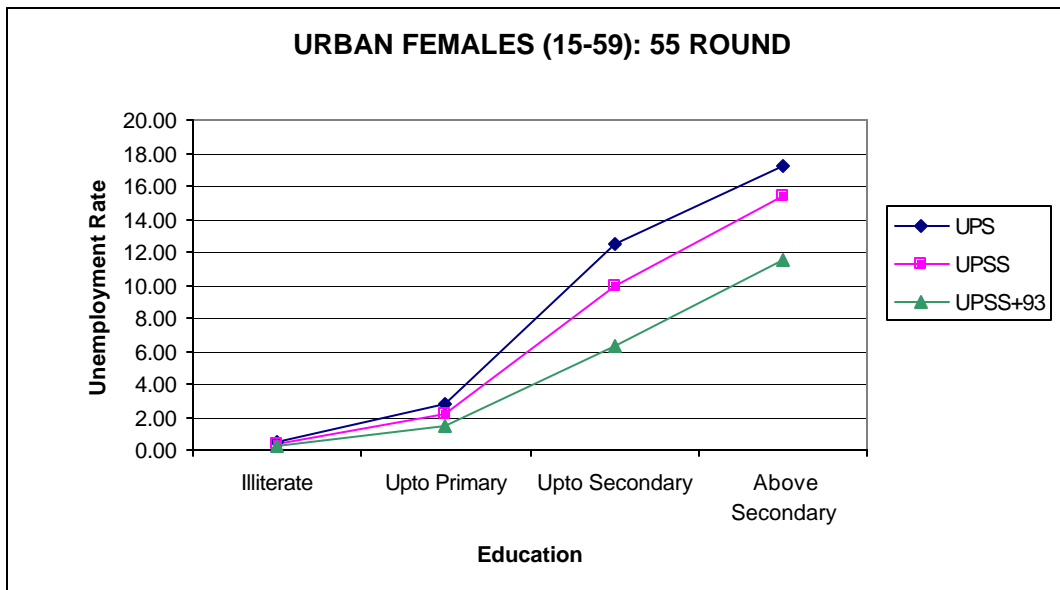


Fig. 4.4
Unemployment Rate of Urban Females by the Education of the Worker



1.6 Sector of employment

Formal sector enterprises generally have much higher than average productivity per worker which is one of the reasons which enables them to offer higher than average wages/salaries to workers. There are two possibilities of approximating formal sector employment from NSS. As mentioned earlier, the 55th round canvassed for the first time, worker-reported (as distinct from employer-reported under various Acts) information on the type of enterprise in which worker was working as also the total number of workers in the enterprise. This was confined to those working in non-agricultural enterprises only. Separate codes were assigned to enterprises in (a) public sector; (b) semi-public sector; and (c) others excluding single proprietorships and partnerships (for which separate codes were given) and including co-operatives, public limited companies, private limited companies and other units covered under the Annual survey Industries.

The second possibility of approximating formal sector employment is the employment status of regular wage/salary earning workers (RWS for short). Given that RWS employment could be also be in the informal sector enterprises and that there could be inaccuracies in reporting by workers regarding type of enterprise or the number of workers in enterprise, we take a restrictive definition. We include only those workers who work in the 'formal sector' as defined above and those that report RWS status. These workers are then subdivided into those who belong to households below the poverty line (BPL households) and those that belong to households above the poverty line (APL households) respectively). Since the cross-tabulations are tedious to present in tables, we present selected findings for the four segments of workers focusing on the gender differences. Since in the rural areas, formal sectors

enterprises are not significant because of the pre-dominance of agriculture and related primary sector activities, we confine ourselves to only those reporting RWS status and are located in non-poor households.

Starting with all workers located in non-poor households, the percentage of rural males was 74.6 per cent for rural male (RM) and somewhat lower at 70.2 per cent for rural female (RF) workers. RWS status in agriculture was reported by as low as 1.25 per cent of all male workers and 0.66 per cent of all female workers out of which around 70 per cent each were located in non-poor households. RWS status in non-agriculture was higher at 7.6 per cent of male but a meager 2.5 per cent of female workers. Of those working in non-agriculture, 90.1 per cent of male workers and 87.3 per cent of female workers were located in non-poor households. This reflected both a higher productivity per worker in non-agriculture than agriculture and the former being predominantly associated with non-poverty status of household. Female workers were found to be at a disadvantage in both respects.

Formal sector enterprises as well as RWS status are more prevalent in the urban areas because of the predominance of non-agricultural workers by the very definition of urban.

Consequently, average urban productivity per worker is higher than rural and hence also the average living standard. This is expected to be reflected in a higher proportion of non-poor in urban areas. While this is true on the average, gender differences are stark for workers located in non-poor households. While 79.8 per cent of male workers (5 percentage points higher than their rural counterparts) were in this category, a much lower 71.2 per cent of urban female workers -- almost the same as rural female workers --- are located in non-poor households. Turning to urban RWS workers, urban male (UM) RWS workers formed 41.5 per cent of all UM workers, 89.5 per cent of whom were non-poor while urban female (UF) RWS workers were 33.5 per cent of all UF workers of whom 88.0 per cent were located in non-poor households. This brings out a close correlation between RWS status and non-poverty living standard. Next, we focus on the connection between RWS status and employment in formal enterprises. While 29.0 per cent of all non-poor UM workers were employed in formal enterprises, formal sector employment accounted for 56.5 per cent of all non-poor UM RWS workers. The corresponding percentages for RF workers were 31.8 per cent of all non-poor UF workers and 57.3 percent of non-poor UF RWS workers respectively -- not very different from those for their male counterparts. Where female workers lag behind male workers is their lower share among RWS workers. We may also note an additional well known regularity that emerges from data but without quoting numbers. Large size enterprises employing more than 20 workers were preponderant in the formal enterprises. What clearly emerges from the foregoing is that RWS status, employment in formal sector enterprises, and non-agricultural sector of attachment are closely associated with the non-poverty status of a worker. We also explored the link between formal or informal type of enterprise, educational achievement of workers and poor or non-poor status. An interesting gender differential emerged in a comparison of all urban RWS workers and rural RWS workers in non-agriculture. For urban RWS workers, at each educational level, the proportion of UM workers in formal enterprises to total UM

RWS workers exceeded the corresponding proportion for UF RWS workers, both among non-poor as well as among poor urban RWS workers. In the case of rural RWS workers in non-agriculture, however, proportion of RF workers in formal enterprises to total RF RWS workers in non-agriculture exceeded the corresponding proportion for RM RWS workers in non-agriculture at each educational level. This came out clearly among the rural RWS located in non-poor households. Among rural RWS workers in poor households, the sample observations at the higher end of education were too few to give reliable estimates.

One of the major factors behind poor representation of women workers among RWS workers in non-agriculture as also in formal enterprises is recognized to be their poorer educational endowment. It is useful, therefore, to end this section on stylised facts by presenting the educational composition of UPSS workers in 1999-2000. For each educational category, we give below the percentage of RM, RF, UM, UF workers respectively in that category for a direct comparison.

Table I.2
Distribution of Workers across educational categories by sex and location

	RM	RF	UM	UF
Illiterate workers : (zero years of education)	37.59	72.95	15.30	42.20
Literate and upto primary : (upto 4 years of education)	27.37	16.06	21.50	17.68
Primary upto middle : (5 to 7 years of education)	17.25	6.48	19.13	10.58
Middle upto graduate : (8 to 15 years of education)	14.35	3.84	26.84	15.02
Graduate and above : (more than 15 years)	3.44	0.67	17.23	14.52

Part II : Gender Differences in Labour Use Patterns : Analysis of the Data

The data presented in the foregoing section demonstrates that there are substantial differences in the labour force participation patterns of men and women. This section attempts to find an answer to the reasons behind these differences.

The first question that needs to be addressed in this context is why there is such a huge gap in the labour force participation rates of men and women in India. We examine some of the explanations suggested in the literature for this phenomenon.

II.1.1 Demand centric explanations

One explanation for this difference has already been alluded to in the first part of the paper. This is in terms of the structural characteristics of the economy. The Indian

economy is still dominated by low productivity agriculture. Overall, there is an excess supply of labour. Combining this with the argument that women's paid labour is called upon only when men's labour is exhausted, one gets one explanation for such low rates for women's labour force participation in India.

However, this explanation in a way, begs the issue, for one still needs to find the reasons behind the gender based *phasing* of aggregate labour demand, as is observed now in many developing countries, and was the case in industrialized countries some decades back. Also, the aggregates often hide significant sectoral differences. One has to explain gender differences in *sectoral* labour use patterns, with some sectors such as export oriented consumer goods sectors, exhibiting overt preference for female labour over male. Similar dependence on female labour has been observed in specific sectors in different stages of their development in a wide ranging countries around the world. (Landes). This phenomenon has been widely researched in developing countries and a range of explanations of the relative attractiveness of female workers above their male counterparts, from their perceived docility to their 'nimble fingers', have been advanced (See Heyzer).

II.1.2 Supply centric explanations

Yet even with such sectoral level preferences, the induction of female labour into paid workforce has lagged considerably behind the males. The most compelling answer to this phenomenon is invoked in terms of a set of social factors, such as the socially ordained division of labour within the household. Because women, and men, are socialized to look upon reproductive work within the domestic sphere as the primary responsibility of women, it is to be expected that for the average woman, domestic responsibilities take precedence over her insertion into the labour market. The pressure is more pervasive in some than in others. In the West in recent years, there is evidence that household responsibilities are being increasingly shared by men. In countries like India, such changes in perception are yet to catch on. The socialization process here generally starts fairly early in life to ensure that the young girl is not mentally tuned to, or is encouraged to, enter the labour market productively in preference to her domestic duties. Even if women are required to be inducted into the market by virtue of increasing tightening of labour demand brought about by structural economic changes, or because of the pressing need for augmenting family incomes, by the time that call comes, the average woman would already have been at a disadvantage, being at the receiving end of unequal opportunities for acquiring the requisite education and skills to compete on equal terms with men in the labour market.

Unlike the earlier explanation which rested on the hypothesis of slack in labour demand, this is more of a supply-oriented explanation. People have clubbed this set of explanations under such portmanteau terms as "cultural factors". In India, for instance, in statistical exercises, researchers have used regional dummies or community-cum religion-based dummies to replicate the extent of the explanatory power of these variables.

While this set of sociological explanations provides a more compelling answer to the issue of gender differentials in participation rates, it still remains a partial one. In order to carry some substance, such explanations need to be supplemented with adequate sociological analysis of the data. Also, one needs to note that there are more than one identifiable explanation in this set, and they may need to be spelt out and separately treated.

II.1.3 Market discrimination centric explanations

It should also be noted that sociological explanations of this type may have very specific economic correlates which may need to be sorted out. For instance, knowing that women have to bear the full burden of household responsibilities, employers may prefer to hire a male over a female worker with equivalent human capital endowments, or pay her a lower wage, because in the perception of the employer, a woman employee may not be able to, or be less inclined to, give her best to the paid job. The sex of the worker thus operates as a “market signal” to pull down the offered wages, or to altogether block out ‘good’ job offers from women. Thus a supply-oriented factor may generate a demand-reducing influence. The whole literature of wage and job discrimination is based on arguments of this kind.

Also, knowing that these and other gender-based factors, such as fear of harassment at place of work, or restrictions on mobility to enable women to take up available job offers for instance, may make for a market milieu that is not ‘woman-friendly’, and something like a ‘discouraged worker effect’ may be operational, which may in its turn be accentuated by high unemployment rates among women, which by itself can be an effect of gender discrimination, and result in many women to withdraw from the labour force, thereby pulling down the LFPRs.

II.1.4 Explanations centred on supply- demand mismatch for skilled female workers.

Another reason that has been cited to explain low levels of demand for female labour and higher unemployment rates in the female labour markets for educated women, is centred around supply- demand mismatch for skilled female workers. This can happen if there is a genuine mismatch between market skills and skills that are offered by women workers, pushing up the unemployment rates and as a result of that , pulling down the WFPRs among women.

Apart from these, there is a whole class of problems with women’s labour force participation that are associated with biased measurement, faulty perceptions and the inherent difficulties of capturing even economic activities that are essentially ‘difficult-to-capture’. This is because of the kind of work that women are more involved in than men are, such as a range of expenditure saving activities from water and firewood fetching in rural areas to home based activities and activities that are normally clubbed under the ‘care economy’.. There has been a large literature on this class of issues, probably the most intensely researched area in relation to women’s work, mostly carried out by feminist researchers.

II.1.5 Measurement centric explanations

The more important of this set of explanations may be grouped under the following components:

- (i) Unpaid but 'economically productive' work that is left out of official data, often by default ;
- (ii) Inadequate measurement of expenditure-saving but not necessarily income-earning work that falls between purely domestic work and paid market work. This includes what goes under the Code 93 type 'work' ;d
- (iii) Faulty perception on the part of surveyors and /or women themselves in reporting some of the above as non-economic activity, thereby pulling down the reported FLFPRs ; and
- (iv) Purely domestic or 'reproductive' labour of women that may have significant implications for policy in the public domain. The whole range of current research on the 'care economy' for instance will fall under this head.

II.1.6 Inadequacy of large survey instruments such as the NSS for analyzing FLFP

Others in the same genre include the inadequacy of (nation-wide) survey instruments in capturing 'women's work' in situations where large sections of women are involved in informal sector or unpaid activities. This class of reasons has been advanced by many researchers from time to time. The basic argument is that economists tend to use survey instruments such as the NSS that are not very conducive to collect information on "women's work". Some have suggested alternatives such as Time Use Surveys. (Hirway, 2004).

Yet large survey instruments such as the NSS have valuable information that cannot be replicated in small surveys or in surveys that are geared to women specific activities alone. This part of the paper uses NSS data to try to understand how far this body of data can be stretched to analyse some of the questions that have been plaguing researchers on patterns of female labour force participation in India. The National Sample Survey Organization in India provides the most comprehensive household survey data on consumption expenditures and also runs quinquennial surveys on employment and unemployment. The NSSO has over the years incorporated a number of refinements in its sample design to incorporate suggestions to better capture women's labour use patterns in rural and urban India. Since 1978, it has been collecting detailed information on women's involvement in the 'fuzzy zone' activities that do not get captured as labour market activities (Code 93), nor can be termed purely domestic (Code 92) as per the UN System of National Accounts. NSS also has information on 'marginal' workers as per the time criterion. The inclusion of Marginal Status and Code 93 can significantly raise women's WFPRs as has been seen from the first part of the paper. However they are still far lower than men's WFPRs. As was suggested by the preliminary processing of the data in the first part of the paper, it is clear that women's labour force participation continues to be driven

by a different set of factors than men's, and often with different intensity. This section of the paper attempts to dig deeper into this set of issues.

Reported here are some of the results of our experience in using the NSS data set to try to understand the phenomenon of female labour force participation in India. Although inferences have been drawn from other rounds of NSS, for most of the econometric analysis, we have used the data from the 55th round NSS Quinquennial Survey of Employment and Unemployment. The results reported here are restricted to the working age group (15 -59 years) of the population. In the concluding section of the paper, we make some suggestions for the consideration of both the NSS authorities, as well as researchers wishing to use this data set, which, with marginal effort, could substantially improve the potential of the information contained in this data set to throw light on the labour market behaviour of Indian women.

II.2 Factors determining labour force participation behaviour of Indian women

A number of equations were run to understand the differential behaviour of men and women in relation to the labour market, utilizing unit level information from the 55th round data. This information pertains to the individual's age, educational level, marital status, other demographic variables such as household size, number of dependents in the household, child-woman ratios in the households etc.. A number of dummy variables to incorporate regional variations and variation across social groups were incorporated in some of the equations. One other variable that makes the use of NSS data so valuable, i.e., a variable indicating the income of the household the individual belongs to, has been a part of all the versions of the estimated equations.

One of the major lacuna of NSS data for understanding labour force participation behaviour of women or men for that matter, is the paucity of information on the earnings of workers, except for a small section of the labour force, i.e., salary and wage earners. This information has been used when analyzing the data on these groups separately. However the absence of any earnings variable, one of the most pertinent variables for analyzing participation behaviour, clearly poses a serious problem of exclusion, thereby bringing down the explanatory power of the estimated equations. The NSS provides no information on labour earnings, for instance in self employment. An attempt has been made to correct for this vacuum in the data base in some of the exercises carried out to estimate gender based wage discrimination in the labour market by ascribing to self employed individuals levels of earnings based on the average earnings of wage and salaried workers by matching them according to the worker's sex, age and educational qualifications. This was done primarily to correct for Selection Bias because otherwise all self employed workers would have been treated as workers without earnings and clubbed with people outside the labour force: an approximation which would have been worse. The result of this is reported in the section on discrimination later in the paper. For obvious reasons, such an approximation for earnings from self employment has not been used as an explanatory variable for analyzing labour force participation behaviour.

In order to understand what factors significantly influence the probability of labour market entry for women as compared to men, Probit and logit regressions were run separately for the two sexes and on the whole sample of men and women with slope and intercept dummies, in rural and urban areas of India. Marginal probabilities were estimated for Probit models and Odds Ratios for logit functions. A set of the basic estimated regressions is reproduced in the Appendix Tables All.1 and All.2. The dependent variable is the probability of participation in the labour force while a range of independent variables were used to find out which factors significantly affect the probability of entry. While results differ somewhat depending on the model specifications, the broad results are indicated in the following paragraphs.

Literacy

Educational levels were broken up into seven graded categories. Taking 'illiterates' as the reference group, the probability of labour force participation for the combined sample of men and women go up marginally for those who have had some schooling and those who have completed primary education, but then it goes down as educational levels go up. This trend is stronger in the rural areas for both the Probit and the Logit model specifications, although the general pattern is there also in the urban sample.

The result is striking, and needs further probing. One obvious reason for the falling trend beyond the primary level is due to the fact that more and more of the younger cohorts of the potential labour force (15 to 59 years) is getting absorbed into longer years of schooling, and therefore are absorbed in the out-of-the-labour-force category. An additional factor that could be strengthening this trend is something like a backward-sloping labour supply factor. Although it is difficult to test this hypotheses in the absence of data on earnings for the full sample, but to the extent educational levels are monotonically related to earnings, one could argue that if something like a backward sloping labour supply is working, then higher education may lead to a lowering of participation rates, other things remaining constant. The third factor that could explain this phenomenon is something like what is known in the literature as the discouraged worker effect. If jobs for the relatively more educated are also relatively more scarce, then it is possible, *ceteris paribus*, that not merely that unemployment rates among the more educated will be higher, which they are as the data presented in the first part of the paper clearly show, but also relatively more people will be discouraged from entering the labour force, knowing that getting a job to their liking, i.e., ones that can match their high reservation wage rates, will get to be more difficult. To the extent the last two factors are less prevalent in urban as compared to rural areas, i.e., to the extent jobs for the 'highly educated' are relatively more abundant in urban areas, the influence of the last two factors will be lower, and one should expect lower odds ratios and marginal propensities in urban as compared to rural areas, which is exactly what one gets in the results reported in the Appendix. Thus although it has not been possible to test the nuances of the hypotheses directly, and independently, because of non-availability of any earnings data for large segments of the labour force in the NSS sample, the arguments provided above suggest a set of factors that could together explain the pattern.

What comes out strikingly though is the result that there are significant differences in the slope and intercept coefficients for the education variable when one looks for women-specific factors within the combined sample. For capturing women specific effects, these equations were estimated with an intercept dummy and a range of slope dummies as well. In all the estimated equations for both rural and urban areas, the intercept dummy for women (d_{fem}) comes out to be strongly positive and unequivocally significant. Also, compared to the rest of the sample, the pattern of participation for women is reversed, after a point, as one goes up the educational level, with women with highest levels of education showing significantly higher levels of participation as compared to the reference group of illiterates.

Demographic variables

It has been argued that demographic variables are important determinants of women's labour force participation patterns. By and large the results obtained from the estimation confirm this supposition. All demographic variables, excepting age, come out with insignificant coefficients in all the estimated equations for the full sample.

Age

Age has been entered with a quadratic term (age-square) comes out with highly significant z-values for the whole sample. Estimated probabilities of labour force participation rates show a parabolic pattern, with the down turn coming at the fag end of the distribution or beyond. Estimated values for the women-specific slope dummies for age are also significant, and the signs of the estimated coefficients suggest that while the general pattern is very similar to that of men, for women the curvature of the estimated parametric function is likely to be lower.

Marital Status

However unlike age, the influence of the marital status variable is very different for men and women. For the purpose of estimation, the 'marital status' variable was disaggregated into four categories: unmarried, currently married, widowed, and divorced or separated. With the reference group as 'unmarried', the results suggests that except for this variable is significant only for the 'currently married' group where the effect is positive and significant, and other states of marital status' such as the state of being divorced or widowed, has no significance for labour force participation in the full sample.

However for women, while the 'currently married' status continues to be a significant factor, its impact on labour force participation of women is significantly negative. In other words, while for men, being currently married raises the probability of being in the labour force, for women, given other things, this significantly reduces the probability. This corroborates the hypothesis that marriage is in some sense a watershed phenomenon affecting the labour force entry decision of men and women. For men it is the signal for higher responsibility as the bread winner of the nuclear unit, while for women it emphatically signals the beginnings of new reproductive

responsibilities and new norms of behaviour in the marital home as compared to the 'not married' status. The situation is very different for widowed, divorced and separated women though. While for men, these categories of marital status do not have any special significance for labour force participation, widowed, divorced and separated women have a significantly higher probability of entering the labour force as compared to the unmarried category.

Household Size

A few other demographic variables such as household size, child woman ratio (measured as the number of children below five years per adult woman in the household and the dependency ratio (measured as the number of persons outside the labour force per worker in the household) were tried out in the equations. The household size variable has a negative influence on the labour force participation of men as well as women especially in the rural areas. In urban areas it has a positive impact on LFPR of men although for women it continues to be negative. Although results have not been presented here, child woman ratio is insignificant in the whole sample but for women the impact is negative, while a higher dependency ratio, given other things, raises the participation probability of both men and women.

Overall, as expected, demographic variables have a higher explanatory power for women than for men.

Regional variables

For the purpose of these equations, the data were divided into six regions; i.e, North, South, West East, Central and North East. The reference region in the reported equations is the Central Region, identified in the sample with the state of Madhya Pradesh. Although somewhat crude, this was done to roughly capture some of the cultural variations in labour use patterns across the regions, especially for women. Results show a fair amount of diversity in probability of participation across regions also for men. But the differences are much more pronounced for women, with clear indications that women in the North East region as also in the South, have a higher LFPR as compared to women elsewhere and that women in the Northern and Eastern regions have a lower probability of LFP than elsewhere in the country.

Per capita household expenditures

Household economic status, as approximated by the Monthly Per Capita Expenditure (MPCE) of the household, is used as a continuous variable in the equations with a quadratic term added in to capture second order curvatures if any. Although links of LFPR with household MPCE tend to show up prominently in the two dimensional graphs presented in the earlier section of the paper, the regression results do not throw up very significant results for this variable. This suggests that the variable MPCE would have subsumed the influence of other factors included in the multi variate regression analysis. However, the patterns do that emerge for men and women are broadly similar. The probability of labour force participation shows up as a falling function of MPCE for both the genders as one moves up the scale, with the

curves turning up towards the higher ends for both men and women. However, there is a clear difference in the nature of the curvature. While for men the upturn comes much earlier along the MPCE scale, for women this trend shows up only at the far end of the distribution.

Social Class

NSS data records whether the individual is a member of the 'Schedules Tribes (ST), the Schedules Caste (SC), any of the notified other backward castes (OBC) or falls in the residual category of 'Others' which is primarily the Higher Castes. Taking the Higher Castes as the reference group, it can be seen from the equations that the SCs, STs and the OBCs have a higher probability of being in the labour force both in rural and more so in the urban areas when one considers the full sample. But for women, as expected, the differences are very striking. SC/ST and even OBC women have very significantly higher probabilities of participating in the labour force than their higher caste counterparts, both in urban but more so in rural areas, thus underlining the fact that social grouping is a significant determinant of women's labour force participation, more so than it is for men.

All told, the estimated equations highlight the differences in the significance of factors that determine the labour force participation decisions of men and women. Cultural and demographic factors turn out to be better predictors of women's participation decisions than they are for men. But contrary to what may have been popular belief, once one incorporates the effect of all the explanatory variables on which NSS provides the information, household economic status on its own turns out to be less of a predictor for labour force participation of women than may have been presumed.

As commented earlier, the overall explanatory power of the equations reported here turn out to be pretty low, even for the combined sample. When the same equations are run separately for men and women without the female slope and intercept dummies, the female equations fare much worse than the male versions in terms of overall explanatory power of the models. The constant term comes out to be highly significant in all versions, as does the coefficient of the female intercept dummy in the combined version. This suggests that there are other explanatory factors which have been excluded in these equations and which if included, could have increased the explanatory power of the models. The single biggest exclusion is of course any variable representing earnings, which permeates all estimated equations: for males, females and for the combined sample with intercept and slope dummies. For the women specific equation, and the estimated equations with the combined sample reported here, there are clearly sociological factors that cannot be represented adequately by regional dummies alone. A more nuanced handling of the data is clearly called for than may be possible with the NSS data base alone.

II.3. Some additional exercises

A few additional exercises were carried out to test for some specific hypotheses on the labour force participation behaviour of married women. For doing these exercises sub samples of married couples from rural and urban households, which had

information on the labour status and other variables for both partners, were identified. This means all households where either one or the other of the member of a married couple was missing, or those that did not have any currently married person in the household, were left out of the exercise. The idea was to explore the impact of husband's characteristics on the participation behaviour of their wives. This was done to see if some of popular perceptions on women's entry into the field of paid work can be tested with the given data. Some manipulation of the data was needed to test some of these hypotheses. These are reported in the following paragraphs.

The first exercise was carried out in order to explore if there is any one-to-one correspondence between the labour status characteristics of husbands and wives. A number of tables were generated for a subset of the households which had a household head in the age group 15 – 59 years living together with his or her spouse, separately for rural and urban areas. This automatically eliminates households where only one member of the couple is present, which could be for a variety of reasons, such as death, divorce, separation or migration of the spouse.

Two main questions that were investigated were one, whether the labour status category of the husband is significant in deciding the wife's participation in the labour market, other things remaining the same, and two, whether, given other things, a larger distance in the educational levels of husbands and wives significantly impedes the wife's labour market entry. Much of what follows is based on simple cross tabulations of the data.

The tabulations of the data show that while 78.7 % of the wives in rural and 45.6 % of the wives in the urban areas in the age-group 15-59 were out of the labour force, the corresponding figures for the husbands were only 2.9% and 1.6 % respectively. This does not come as a surprise, given the very low labour force participation rates of women in NSS data. However, when one cross-classifies women's labour force status across the labour force status of their husbands, some interesting features emerge.

- ? For most of the labour status categories, there is a fairly high degree of congruence between the labour status categories of the wife and the husband. For instance for nearly half of the wives who are 'Out of the Labour Force', relatively speaking, the husbands also are similarly placed. Same holds for the 'Self-Employed' and 'Casual Labour' categories: a large percentage of wives who are self employed or casual labourers also have husbands sharing the same labour status.
- ? However, the situation is quite different when one looks at the 'Regular Wage and Salaried Workers'. 84.5 % women in urban areas who are 'Out of the Labour Force' --- by far the highest percentage among all categories --- have husbands who are regular wage or salaried workers. The corresponding figure in rural areas is 63.4 %.

- ? The other interesting feature about the 'Wage and salaried workers' is the high congruence of husbands and wives sharing this status when one restricts the sample to working couples. In both rural and urban areas, a far higher percentage of husbands who belong to this status also have working wives enjoying the same status than any other, and vice versa.

These statistical patterns unveiling the labour status situation of husbands and wives within the households suggest that over and above the other social and demographic constraints faced by women in the Indian labour market, perhaps one other factor that may determine women's decision to participate in the labour force is not just the inadequacy but also the insecurity of incomes that is associated with self-employment and casual work of the husband. The reverse side of this proposition is that if a husband has a regular job, *ceteris paribus*, the wife's labour force participation rate may go down.

Other findings that come out from the cross tabulations are as follows :

- ? For males, the incidence of self employment, especially in urban areas, does not have a one-to-one correspondence with literacy levels. The situation for rural males is somewhat different. While the urban male self employed workers are fairly evenly distributed across all literacy levels --- starting from 'totally illiterate' to 'graduates and above' categories, the incidence of self employment declines quite sharply in rural areas as one moves over to higher levels of literacy. This is presumably because the potential for high-end self employment opportunities is far more limited in rural as compared to urban areas, where a considerable segment of professionally qualified males may prefer to be in self employment rather than in regular 'salaried and wage employment' due to the possibility of relatively higher earnings associated with the status.
- ? In line with what comes out to be the pattern for rural males, the incidence of self employment goes down drastically with rise in literacy levels for rural as well as urban women, with the highest incidence of self employment by far observed for illiterate women. This suggests that unlike highly educated urban males, the opportunity for high-end self employment is an option that is either not open, or not catered to, by educated urban or rural women.
- ? The second thing that can be seen from these tables is that contrary to what may have been presumed, the incidence of 'wage and salaried' employment for males is also not monotonically related to levels of education. For both urban and rural males, this incidence actually peaks for those who are educated up to the secondary levels and goes down as one moves up the scales.
- ? For women, the pattern in the incidence of regular wage and salaried employment across the literacy levels is more of a bi modal nature. In both rural and urban areas, there are small peaks that are achieved for women that

have low levels of education and then peak more significantly for women who are graduates and above. These probably reflect the relatively high incidence of women employees in menial jobs such as those of cleaners etc. in the formal sector, who are nonetheless in 'regular salaried and wage' employment, and at the other end of there are educated women who are regular salary earners.

- ? Overall, as one moves up the income deciles, the incidence of wage and salaried employment goes up for both males and females, while the incidence of casual work of any kind goes down. For males, especially for urban males, there is an even balance between self employment and regular salaried employment at high levels of incomes, especially if one also combines it with moves up the literacy ladder for the household head. For women, regular salaried employment takes precedence over self employment in both rural and urban areas as one moves up the household income scales as well as literacy levels.

Given these broad characteristics of husband-wife pairs, three hypotheses were tested using the 55th round data. These are:

1. *Controlling for levels of household income along with other social and demographic variables, the more secure is husband's income, the lower is the probability of a women entering the labour force ;*
2. *Controlling for levels of household income and other social and demographic variables, if the husband is in self-employment , the probability on the wi fe's labour force participation will, be higher ; and*
3. *Other things remaining the same, the farther apart the wife is from her husband in terms of educational qualifications, the lower will be the probability that the wife will enter the labour force.*

The results are reported below.

Null Hypothesis # 1: Controlling for levels of income, the more secure is husband's income, the lower is the probability of a women entering the labour force.

In a similar kind of equation as is presented in the earlier section for analysing the probability of labour force participation behaviour, but this time restricting it to the sample of wives alone, (which means that all the cross effect terms with the female dummy are dropped,) we introduce a binary dummy variable, RWS, which stands for the 'Regular Salaried and Wage Status' of the husband. RWS takes the value = 1 when the husband is a regular wage and salary earner, and takes the value 0 otherwise. When regressed along with other explanatory variables, this variable is significant and predicts a lower probability of the wife entering the labour force, by 6 % in rural and 4% in urban areas. This is confirmed also from the simple two dimensional tabulations. 63.4 % of women with husbands in the RWS category in

rural areas and 84.5 % in urban areas were found to be out of the labour force as compared to 45.8 % and 78.7 % respectively of all couples

This suggests that given other things, there is a kind of a trade-off between income security and level of household incomes: a wife will have a lower probability of entering the labour force if the husband earns a regular income.

Null hypothesis # 2: *If the husband is in self –employment , the probability on the wife’s labour force participation will ceteris paribus, be higher.*

This is almost the reverse side of the earlier hypothesis: almost so because the two categories of RWS and SE do not quite add up to the total sample of couples considered in the exercise. Given that, can one say that if the husband is in self employment, i.e., supposedly has ‘irregular’ or ‘insecure’ incomes, then the wife will have a higher probability of entering the labour force? We ran a similar equation as above, with the exception that this time the additional dummy variable replacing RWS is SE, which takes the value 1 if the husband of the woman is in self employment and 0 if he is not.

Unlike in the earlier case of wage and salaried employment of the husband, this variable comes out with a small and insignificant marginal coefficient in both rural and urban areas, suggesting that the husband’s involvement in self employment does not have much effect on the probability of the wife’s entry into the labour force.

It is difficult to explain this result, especially in view of the earlier result, and especially if one controls for household income, which one has done. Yet a couple of explanations do suggest themselves. It could be because of the fact that unlike in the case of regular salary and wage employment of males, the incidence of male self employment, especially in urban areas, spans the entire spread of income distribution. The effect of irregularity and insecurity in household incomes at low levels of income could be quite different from its effect at high levels, and the overall effect on the average may get swamped by the inherent non-linearity. In rural areas on the other hand, the bulk of the self employed males are concentrated at the lower ends of the income scales and women with husbands in self employment in any case have the highest incidence of labour force entry as compared to any other category excepting employment as casual labour. In rural areas then, the irregularity of incomes as captured in terms of labour status may be so highly correlated with levels of income that the results of the estimated equations may have been seriously vitiated: something that was not the case for RWS. This calls for a more nuanced analysis of the effects of insecurity of earning on participation behaviour than has been possible here.

The third small exercise that was carried out on the sample of husband-wife pairs deals with the following question:

Null Hypothesis # 3: *Given other things, the farther apart the husband and the wife are in terms of educational levels, the lower will be the probability that the wife will enter the labour force.*

This was tested by constructing a crude measure of ‘couple disparity in education’ as a variable which seeks to measure the distance between the levels of education of the husband and the wife. As in the earlier exercises, this variable was introduced as an additional explanatory variable in the base equation. Results show that *ceteris paribus*, this variable reduces the probability of the wife’s involvement in the labour force in both urban and rural areas. In other words, the illiterate or poorly educated wife of a husband who is considerably more educated than her, will be less inclined to enter the labour force given other things. This could be because given the low levels of skill the wife has, the only kinds of jobs that she may hope for are low paid unskilled work, which may be considered suitable for the spouse of a highly educated husband. In other words, this could be looked upon as a kind of a Sanskritization effect.

II.4. Earnings Functions and Discrimination

We have noted above that the use to which the NSS data set of Employment and Unemployment Surveys can be put is considerably constrained by the fact that information on earnings is limited to a section of wage and salary earners only. Considering that the incidence of self employment is very high among both men and women in rural as well as urban areas in India, this does become a problem for analyzing labour supply behaviour as is attempted in this paper. In the following section we suggest a method for increasing the domain of the sample to include self employment by approximations to earnings variable in the NSS data set, and report the results of an exercise on gender based market discrimination that was carried out with the expanded data set.

To start with, Earnings Functions were estimated separately for men and women in both rural and urban areas for only those members of the labour force for whom earnings data were available. These included regular wage and salary earners and casual workers. The basic earnings function for both sexes were specified as logarithm of wages per day as a function of age, age squared, different levels of education of the worker and a constant term. The basic equation is as follows:

$$\ln(w) = a + \beta(1) (\text{age}) + \beta (\text{age}^2) + \beta(3) (\text{edu}) + \epsilon \dots\dots\dots(1)$$

Initially this equation was estimated separately only for the subsets of male and female workers in the labour market for whom NSS supplies some information on earnings. The results are summarized below:

Rural:

$$\begin{aligned} \text{Difference between Estimated male and female wages} &= 0.5729 \\ &= 0.2271(\text{Characteristic Effect}) + 0.3458 (\text{Discrimination Effect}) \\ &= 39.6 \% + 60.4 \% \end{aligned}$$

Urban:

Difference between estimated male and female wages = 0.366960
= 0.047692(Characteristic Effect) + 0.319268(Discrimination Effect)
= 12.99 % + 87.01 %

It can be seen that the estimates of gender-based 'discrimination' turn out to be very high in both rural and urban areas, --- over 60 % in rural and over 87 % in urban areas, although the standard variables for measuring productivity, i.e., age and education, have been included in the wage functions.

The high values of the discrimination effect could nevertheless be the result of inadequate or mis-specification of the equation. One explanation could be that we are witnessing the "excluded variables effect". If there are characteristic variables that could explain the 'non-discriminatory' characteristic effect but have been excluded from the earnings functions, we would have a higher residual effect than otherwise. If for instance demographic variables are a determinant of lower wage offers to women rather than men, and one includes these in the wage functions, then the residual effect would automatically go down. Same may be true of caste, ethnicity and religion related variables, which may operate as "market signals" and affect the offered wage rates. If these affect the wage rates of men and women differently, then there is a reason to believe that the residual wage differences that are used to calculate the 'discrimination effect' will change. However, whether or not such variables should form a part of the set of explanatory variables for estimating the wage functions, or whether they should form a part of the explanation of the residual differences in wages earned, is a moot question.

For a starter, we investigated if inclusion of regional dummies could alter the scene significantly. Six regions were demarcated for the purpose and the equations were re-estimated. Incorporating regional differences brought down the discrimination effect, but only marginally. The urban discrimination effect was brought down from 87.1% to 86%. The effect on the rural estimates was equally insignificant.

The other major reason for the large values of the estimates of discrimination could be because the coefficients in the estimated wage equations may suffer from Selection Bias. Since a huge percentage of women in working age groups are deemed to be "Out of the Labour Force", and the wage functions have been estimated only for the small percentage of workers who are not only labour market participants, but also those who are in wage earning activities, there is a clear case of selection bias here. The Heckman model for correcting the selection bias and re-estimate the wage functions by including the total working age population in the sample.

For the purpose of carrying out the Heckman Selection Test, we experimented with a 'Selection Equation' which included the additional variable of 'Marital Status (four categories, with 'never married' as the reference group) and re-estimated the wage equation (1) specified above. The estimate of the correlation coefficient between the errors in the original and selection equation turns out to be not very different from 0,

with the estimate for athrho being equal to -0.026 , suggesting independence between the two error terms, thereby also negating the applicability of the Heckman model in the present context.

This brought us to an examination of the next round of probing, which resulted in using certain approximations for bridging a significant gap in the data base. It has been noted above that NSS has no information on large segments of both men and women in the workforce who happen to be in the Self Employed categories. In the Heckman Selection Test exercise cited above, this had necessitated the clubbing of these people with those who have no 'recorded' earnings, i.e. with those who are 'Outside the Labour Force'. In reality, the self employed are clearly closer to the wage earners on whom the wage function has been estimated, and more distant from the non-workers with whom we have had to club them. This would have seriously vitiated the result of the Heckman Test.

In order to operationalize the idea of treating self employed workers as being closer to closer to the wage earners rather than the non-workers, one needs to find some way to ascribe appropriate 'earnings' to each self employed man and woman in the sample. To do this, we created a two dimensional matrix of age and education. All persons between 15 and 59 years were put in nine age groups of 5-year intervals. These were cross classified by the usual six levels of literacy. Each self employed man and woman was identified as belonging to a specific grid in this matrix. A similar kind of exercise was carried out also for men and women in the labour force on whom NSS provides some information on earnings, separately in rural and urban India. One assumed that each self-employed woman or man in a specific age/literacy cohort will have earnings that are equal to the average earnings of wage earning women and men belonging to corresponding age-literacy grid. Having done this, it was possible to separate out the truly 'Out-of-Labour-Force' women and men from the rest of the sample for running the Heckman model. The Heckman Model was then be run on all actual wage earning and 'simulated income-earning' (i.e., self employed) women and men, against all others (i.e., those who are out of the labour force) who do not have any earnings. As a result of this correction, the Heckman Section Test came out with positive results and the estimates for the discrimination effect fell in both rural and urban areas.

Result of the exercise after this correction was as follows:

Rural:

Estimated difference between male and female wage rates: 0.324

Characteristic effect = 62 %

Discrimination effect = 38 % (a fall from 60.4 % earlier)

Urban:

Estimated difference between male and female wage rates: 0.628

Characteristic effect = 22 %

Discrimination effect = 67.1 % (a fall from 87.1 % earlier).

It can be seen from above that the results of the decomposition analysis appears to have improved considerably through this exercise.

III. Concluding observations.

The Employment Unemployment data collected by the NSSO in its Quinquennial Surveys are the most comprehensive country-wise source of information on labour markets in India. These along with the Consumption Expenditure Surveys provide the basis for most of the macro level poverty and labour market analysis in the country. Given its inadequacies, there is actually no substitute for this data set in India.

Nevertheless there have been many criticisms of this body of information from researchers working on women's labour market behaviour. People have argued that the NSS survey instrument is inadequate for capturing the kind of work that the majority of women do, in the informal sector and as unpaid family labour, and other methods, such as time use surveys may be better in this respect.⁶

Without going into the merits of nation-wide time use surveys as substitutes of NSS for assessing women's work participation behaviour, one should guard against the propensity in such arguments of throwing the baby away with the bath water. There are other, less drastic methods that can be used, both by the NSS and the feminist research community, to improve the state of affairs. The objective of the paper has been to scan the information already provided by the NSS for the purpose of analyzing women's labour force participation behaviour in India, to identify some critical gaps in the data, (over and above those that have already been pointed out by other researchers, pertaining mostly to inadequate capturing women's 'work' for various reasons as outlined in Section II.1.5 above) and to suggest methods which could improve matters without calling for major changes.

On its part, the NSSO can put its mind to some obvious limitations in its sample design for collecting information on women's labour force behaviour. Information on Code 93 for instance. NSS has been collecting information on Code 93 activities since 1978. The questions on Code 93 are canvassed only to 'Out-of-the-labour-Force' Women, suggesting thereby that female labour force participants do not engage in Code 93 activities, which one knows, is a patently wrong assumption, given that a large percentage of 'working women' come from very poor households. The entire range of issues that could have been analysed regarding the burden of multiple responsibilities of women, or questions on whether or not there are some characteristic differences between women-in-the-labour-force and women who are outside, in terms of labour use patterns of women and men in these households, whether low participation of women is more a function of inadequacy of demand or whether supply side factors are more important, these and similar questions that could have been posed and analysed with the data, are automatically precluded by this bifurcation of the sample which for most women is unnatural. Thus what could have been potentially a rich source of information for analyzing some interesting

⁶ See for instance Hirway, 2004

issues about FLFP, is lost because of an inherently faulty design. Considering that Code 93 questions are canvassed to all women who are 'out of the labour force', which aggregates to close to two-thirds of the entire working age female population in the country, canvassing these questions to the remaining one third would not have been so difficult after all !.

The second problem with the NSS Employment Unemployment data is the paucity, and clear absence for most women and men, of information on earnings. Without this information, no sensible economic analysis of demand or supply behaviour can be done. Our experience with the Discrimination Analysis reported above suggests that with such information, however rudimentary, the range of issues that can be addressed with this data set could have been vastly improved.

While it is true that one cannot burden the NSS outfit for collecting all the relevant and potentially useful information on women's work, it is possible to try to go around the impasse through better; coordination complementary efforts.. One option is for the NSSO and the research community to join hands and design micro studies using the NSS sampling framework in order to do in-depth analysis of specific dimensions of women's work. In the late Seventies this was the method adopted for the Bardhan-Rudra studies on women's labour supply functions in pockets of rural West Bengal. They had used the NSS sampling framework to design in-depth household schedules for analyzing a number of issues that could not be done with NSS data alone. The use of the NSS sampling framework gave this body of research the kind of representativeness that could not have been achieved if they were done as stand-alone micro studies. Instead of reserving such efforts as exclusive one-off initiatives, NSS could systematize and provide crucial inputs to such methods as part of a larger scheme for gathering and analysis of niche-level statistical information.

Appendix Tables I

These tables provide the basis for the analysis presented in Part I of the paper

RURAL Males (15-59) 55 Round

Deciles of MPCE	WFPR (UPS)	WFPR+(UPS 93)	WFPR (UPSS)	WFPR+(UPSS 93)
0-10%	89.73	90.67	90.45	90.67
10-20%	89.65	90.19	90.01	90.19
20-30%	88.56	89.52	89.41	89.52
30-40%	87.38	88.15	88.07	88.15
40-50%	86.1	87.42	87.22	87.42
50-60%	86.33	87.49	87.44	87.49
60-70%	86.05	87.39	87.33	87.39
70-80%	83.9	85.15	85.06	85.15
80-90%	82.24	83.69	83.54	83.69
90-100%	77.98	80.16	80.06	80.16

Table AI.1.1(Rural Males)

RURAL Females (15-59) 55 Round

Deciles of MPCE	WFPR (UPS)	WFPR+(UPS 93)	WFPR (UPSS)	WFPR+(UPSS 93)
0-10%	49.97	73.04	59.29	75.87
10-20%	46.03	70.19	54.97	73.2
20-30%	41.4	66.27	50.22	69.56
30-40%	40.94	66.35	51.16	70.28
40-50%	38.81	63.88	48.79	67.47
50-60%	36.94	62.53	47.19	66.27
60-70%	35.27	59.88	46.87	64.08
70-80%	32.76	57.86	45.85	63.21
80-90%	30.22	55.28	42.78	59.94
90-100%	23.85	47.28	37.13	52.56

Table AI.1.2 Rural Females)

URBAN Males (15-59) 55 Round

Deciles of MPCE	WFPR (UPS)	WFPR+(UPS 93)	WFPR (UPSS)	WFPR+(UPSS 93)
0-10%	83.29	83.35	83.84	83.88
10-20%	79.99	80.03	80.54	80.57
20-30%	81.48	81.52	82.09	82.11
30-40%	77.8	77.91	78.49	78.6
40-50%	79.54	79.6	79.95	80.01
50-60%	77.32	77.39	78.16	78.21
60-70%	76.65	76.71	77.09	77.15
70-80%	75.89	75.9	76.59	76.59
80-90%	76.43	76.46	76.92	76.95
90-100%	74.16	74.18	74.59	74.61

Table AI.1.3 (Urban Males)

URBAN Females (15-59) 55 Round

Deciles of MPCE	WFPR (UPS)	WFPR+(UPS 93)	WFPR (UPSS)	WFPR+(UPSS 93)
0-10%	27.12	40.23	32.2	43.18
10-20%	21.4	34.52	25.87	37.23
20-30%	20.74	33.88	26.1	37.18
30-40%	18.97	30.65	22.3	32.73
40-50%	15.52	27.27	18.6	29.32
50-60%	15	25.8	18.81	28.85
60-70%	13.65	23.16	16.48	24.95
70-80%	13.09	22.72	15.48	24.27
80-90%	14.18	23.05	16.03	24.32
90-100%	19.45	25.94	20.67	26.88

Table AI.1.4 (Urban Females)

RURAL Males (15-59) 55 Round

Education	WFPR (UPS)	WFPR (UPSS)	WFPR+(UPSS 93)
Illiterate	95.72	95.97	96.15
Upto Primary	90.2	90.9	91.04
Upto Secondary	73.96	75.72	75.79
Above Secondary	72.47	75.79	75.84

Table AI.2.1 (Rural Males)

RURAL Females (15-59) 55 Round

Education	WFPR (UPS)	WFPR (UPSS)	WFPR+(UPSS 93)
Illiterate	44.46	56.46	74.94
Upto Primary	31.29	41.6	60.85
Upto Secondary	19.17	27.75	42.47
Above Secondary	17.71	24.16	35.15

Table A2.2(Rural Females)

URBAN Males (15-59) 55 Round

Education	WFPR (UPS)	WFPR (UPSS)	WFPR+(UPSS 93)
Illiterate	91.19	91.46	91.52
Upto Primary	87.55	87.9	87.92
Upto Secondary	71.64	72.27	72.32
Above Secondary	73.93	74.71	74.75

Table AI 2.3(Urban Males)

URBAN Females (15-59) 55 Round

Education	WFPR (UPS)	WFPR (UPSS)	WFPR+(UPSS 93)
Illiterate	26.15	31.38	43.32
Upto Primary	15.8	19.12	28.49
Upto Secondary	10.37	12.81	21.05
Above Secondary	18.9	20.58	28.91

Table AI2.4 (Urban Females)

UNEMPLOYMENT RATES Rural 55 Males (15-59)

Deciles of MPCE	UPS	UPSS	UPSS+93
0-10%	1.64	1.39	1.39
10-20%	1.86	1.72	1.72
20-30%	2.32	2.06	2.06
30-40%	1.67	1.48	1.47
40-50%	1.91	1.57	1.57
50-60%	2.21	1.87	1.87
60-70%	2.36	1.86	1.86
70-80%	2.60	2.16	2.16
80-90%	2.68	2.17	2.17
90-100%	3.48	2.56	2.55

Table A3.1.(Rural Males)

UNEMPLOYMENT RATES Rural 55 Females (15-59)

Deciles of MPCE	UPS	UPSS	UPSS+93
0-10%	0.54	0.33	0.26
10-20%	0.45	0.29	0.22
20-30%	0.75	0.51	0.37
30-40%	0.82	0.62	0.45
40-50%	1.23	0.89	0.65
50-60%	1.03	0.71	0.51
60-70%	1.65	1.09	0.80
70-80%	2.20	1.44	1.05
80-90%	4.03	2.72	1.96
90-100%	5.24	2.99	2.13

Table A3.2.(Rural Females)

UNEMPLOYMENT RATES Urban 55 Males (15-59)

Deciles of MPCE	UPS	UPSS	UPSS+93
0-10%	4.29	3.93	3.93
10-20%	5.98	5.83	5.83
20-30%	5.27	4.86	4.86
30-40%	6.40	6.00	5.99
40-50%	5.78	5.57	5.56
50-60%	5.66	5.25	5.25
60-70%	5.44	5.25	5.24
70-80%	4.98	4.62	4.62
80-90%	3.94	3.74	3.74
90-100%	3.22	3.13	3.13

Table A3.3.(Urban Males)

UNEMPLOYMENT RATES Urban 55 Females (15-59)

Deciles of MPCE	UPS	UPSS	UPSS+93
0-10%	2.38	1.89	1.42
10-20%	3.57	2.88	2.02
20-30%	5.21	3.97	2.82
30-40%	6.08	4.89	3.38
40-50%	8.32	6.81	4.43
50-60%	10.52	8.31	5.58
60-70%	11.92	9.56	6.53
70-80%	12.04	9.99	6.61
80-90%	11.46	9.71	6.62
90-100%	6.13	5.61	4.37

Table A3.4.(Urban Females)

UNEMPLOYMENT RATES Rural 55 Males (15-59)

Education	UPS	UPSS	UPSS+93
Illiterate	0.36	0.28	0.28
Upto Primary	1.18	0.97	0.97
Upto Secondary	3.88	3.23	3.23
Above Secondary	9.46	7.57	7.57

Table A 4.1(Rural Males)

UNEMPLOYMENT RATES Rural 55 Females (15-59)

Education	UPS	UPSS	UPSS+93
Illiterate	0.17	0.06	0.05
Upto Primary	0.93	0.60	0.41
Upto Secondary	8.33	5.58	3.72
Above Secondary	29.17	21.53	15.87

Table A4.2(Rural Females)

UNEMPLOYMENT RATES Urban 55 Males (15-59)

Education	UPS	UPSS	UPSS+93
Illiterate	1.48	1.40	1.40
Upto Primary	3.23	3.04	3.04
Upto Secondary	5.81	5.46	5.46
Above Secondary	7.45	7.09	7.09

Table A4.3.(Urban Males)

UNEMPLOYMENT RATES Urban 55 Females (15-59)

Education	UPS	UPSS	UPSS+93
Illiterate	0.44	0.35	0.25
Upto Primary	2.78	2.20	1.48
Upto Secondary	12.46	9.94	6.29
Above Secondary	17.23	15.41	11.48

Table A 4.4.(Urban Females)

Appendix Tables A.II.1 and AII.2

Explaining Labour Force Participation in Urban India, 55th round NSS

Table AII.1		Table AII.2		
All Variables	Probit		Logit	
	marginal coefficients	Z	Odds ratio	Z
age	0.15	77.18	2.13	77.18
age2	0.00	-77.19	1	-78.15
hhsz	0.00	5.03	1.02	5.77
depratio	0.01	0.91	1.06	1.1
curnt_~d	0.29	29.57	4.57	27.33
widow	-0.03	-1.01	0.84	-1.02
divorced	-0.08	-1.47	0.62	-1.7
til_pr~y	0.07	3.74	1.36	3.22
primary	0.06	3.59	1.14	1.72
middle	-0.09	-6.35	0.52	-9.65
second~y	-0.21	-15.80	0.27	-19.33
hsecon~y	-0.37	-26.62	0.12	-29.68
grad	-0.24	-16.51	0.19	-21.05
socgr_ST	-0.03	-2.13	0.88	-2.34
socgr_SC	0.03	2.95	1.12	2.9
socgr~BC	0.05	7.70	1.26	7.58
northi~a	0.05	4.58	1.27	4.6
westin~a	0.05	4.42	1.29	4.78
southi~a	0.04	3.18	1.24	4.13
eastin~a	0.03	2.31	1.14	2.3
northe~a	-0.08	-5.98	0.65	-6.76
d_fem	0.88	21.34	105.38	23.38
xni_df	-0.15	-10.17	0.48	-10.34
xei_df	-0.09	-5.50	0.66	-5.51
xsi_df	-0.03	-1.84	0.86	-2.22
xnei_df	0.08	5.34	1.36	4.47
xage_df	0.13	7.04	1.91	7.76
xage2_df	-0.09	-35.81	0.62	-38.08
xage2_df	0.00	36.42	1.01	38.96
xtilpr~f	-0.15	-6.77	0.52	-6.21
xpri_df	-0.19	-10.68	0.47	-8.79
xmid_df	-0.09	-5.65	0.87	-1.86
xsec_df	0.06	4.10	1.92	8.37
xhsec_df	0.26	15.66	5.23	19.61
xgrad_df	0.39	23.22	9.83	26.76
xcm_df	-0.55	-41.75	0.07	-39.5
xw_df	0.05	1.54	1.22	1.14
xd_df	0.23	3.86	2.88	3.52
xhs_df	-0.01	-7.94	0.96	-8.39
xdephh_df	0.01	0.46	1.01	0.23
xsocst~f	0.25	16.67	3.15	16.8
xsocsc~f	0.12	10.37	1.78	10.85
xsocob~f	0.04	4.67	1.22	5.09
_cons	-2.07	-66.24		

Appendix Tables A.II.3 and A.II.4

Explaining Labour Force Participation in Rural India, 55th round NSS

Table A.II.3		Table A.II.4		
All Variables	Probit		Logit	
	marginal coefficients	Z	Odds ratio	Z
age	0.12	76.95	2.04	78.06
age2	0.00	-76.46	0.99	-77.93
hhsz	0.00	-2.21	0.98	-4.19
depratio	-0.01	-3.02	1.00	0.00
curnt_~d	0.19	27.80	2.86	25.53
widow	-0.02	-0.99	0.71	-2.88
divorced	-0.08	-1.87	0.54	-2.42
til_pr~y	0.04	3.32	1.08	1.35
primary	-0.04	-5.05	0.63	-9.89
middle	-0.17	-23.83	0.30	-29.23
second~y	-0.26	-33.94	0.16	-39.32
hsecon~y	-0.36	-40.03	0.09	-45.35
grad	-0.22	-18.31	0.18	-24.41
socgr_ST	0.00	0.69	1.02	0.46
socgr_SC	0.02	2.73	1.08	2.40
socgr~BC	0.02	3.28	1.08	2.81
northi~a	-0.03	-3.07	0.86	-3.34
westin~a	0.03	2.89	1.20	3.65
southi~a	0.06	6.19	1.50	8.10
eastin~a	-0.01	-0.91	0.94	-1.32
northe~a	-0.11	-10.55	0.58	-10.62
d_fem	0.93	34.03	425.44	40.16
xni_df	-0.25	-22.64	0.29	-21.97
xei_df	-0.25	-22.88	0.30	-21.76
xsi_df	-0.02	-1.63	0.88	-2.18
xnei_df	-0.03	-2.19	0.80	-3.80
xage_df	-0.12	-10.20	0.57	-9.14
xage2_df	-0.08	-46.99	0.58	-52.92
xage2_df	0.00	46.33	1.01	52.36
xtilpr~f	-0.12	-10.15	0.60	-7.90
xpri_df	-0.06	-6.29	0.93	-1.33
xmid_df	-0.03	-3.27	1.21	3.85
xsec_df	0.80	7.85	2.33	14.65
xhsec_df	0.17	12.55	4.15	18.98
xgrad_df	0.24	14.28	6.20	19.63
xcm_df	-0.28	-30.90	0.23	-29.30
xw_df	0.04	1.93	1.56	3.45
xd_df	0.20	4.51	3.33	4.50
xhs_df	-0.01	-9.74	0.97	-7.83
xdep_df	0.03	6.25	1.10	3.28
xsocst~f	0.26	30.08	3.69	28.94
xsocsc~f	0.10	12.35	1.65	12.45
xsocob~f	0.05	8.38	1.32	8.66
_cons	-1.41	-62.23		

Variable Names

Hhsize	Household size	
Depratio	Dependency ratio	
curnt_~d	Currently married	Marital status dummy reference group: Unmarried
Widow	Widowed	
Divorced	Divorced or separated	
til_pr~y	Studied till primary lever	Literacy dummy reference group: Illiterate
Primary	Completed primary level	
Middle	Completed middle school level	
second~y	Completed secondary level	
hsecon~y	Completed higher secondary level	
Grad	Graduates and above	
socgr_ST	Scheduled Tribles	Social group dummy ref. group: High caste
socgr_SC	Scheduled Castes	
socgr~BC	Other Backward castes	
northi~a	North India	Regional dummy reference group: Central India
westin~a	West India	
southi~a	South India	
eastin~a	East India	
northe~a	North Eastern India	
d_fem	Sex dummy	reference group : Male
xni_df	North x fem	Intercept dummies
xei_df	East x fem	
xsi_df	South x fem	
xnei_df	North east X fem	
xage_df	age x fem	
xage2_df	age*2 x fem	
xtilpr~f	ed till primary level x fem	
xpri_df	completed primary x fem	
xmid_df	completed middle school x fem	
xsec_df	completed secondary x fem	
xhsec_df	completed higher secondary x fem	
xgrad_df	graduate and above x fem	
xcm_df	currently married x fem	
xw_df	widowed x fem	
xd_df	divorced x fem	
xhh_df	household head x fem	
xdephh_df	dependency by hh head x fem	
xsocst~f	scheduled tribe x fem	
xsocsc~f	scheduled caste x fem	
xsocob~f	other backward caste x fem	
_cons	constant	

References

- Bhalla, Sheila (2001): 'Assessing the Quality of Employment Growth Using National Sample Survey Data', paper presented at the NSSO Golden Jubilee Seminar, Gokhale Institute of Economics, April 6-7, Pune.
- CSO (1998): *Instruction Manual for the Pilot Time Use Survey*, New Delhi.
- Dandekar, V.M.. (1982): 'Integration of Women in Economic Development', *Economic and Political Weekly*, Oct 30th, 1982, pp1762-1786.
- Deshpande and Deshpande (1998): 'Impact of Liberalisation on Labour Market in India: What do Facts from NSSO's 50th Round Show?' *Economic and Political Weekly*, Vol XXXIII, No 22, May 30-June 5.
- Duvvury, Nata. (1989): 'Work participation of Women in India: A study with special reference to Female Agricultural Labourers: 1961-1981' in Jose, A.V (ed) *Limited Options-Women Workers in Rural India*, ILO and ARTEP, pp 63-107
- Ghosh, Bahnisikha and Sudhin K Mukhopadhyaya (1984): 'Displacement of the Female in the Indian Labour Force', *Economic and Political Weekly*, Nov 24th, 1984, pp1998-2002.
- Ghosh, Jayati (2001) "Urban Indian women in informal employment: Macro trends in the 1990s", in Amitabh Kundu and Alakh N. Sharma (eds.) *Informal Sector in India: Problems and policies*, Institute for Human Development: New Delhi.
- Goldschmidt-clermont, L and E Pagnossin- Aligisakis (1995): 'Measures of Unrecorded Economic Activities in Fourteen Countries', Human Development Report Office, Occasional Papers 20, United Nations Development Programme, New York.
- Gopalan, Sarala (1995): "*Women and Employment in India*", New Delhi: Har Anand Publication, pp.21-3.
- Harvey, A (1995): 'Market and Non-Market Productive Activity in Less Developed and Developing Countries: Lessons from Time Use', Background Paper for UN Human Development Report 1995.
- Hirway, Indira (2002): 'Employment and unemployment situation in the 1990's: How good are the NSS data?', *Economic and Political Weekly*, May 25th, 2002
- Ironmonger, Duncon (1998): 'Towards a More Comprehensive Knowledge of All Forms of Work: Statistics for the Development and Monitoring of Social and Economic Policies', *Engendering Labour Force Statistics*, New York.
- Ironmonger, Duncon (1999): 'Time Use Survey: An Overview', paper presented at the International Seminar on Time Use Studies at Ahmedabad, December 7-9.

- Jain, Devaki and Malini Chand (1982): 'Report on a Time Allocation Study – Its Methodological Implications', Technical Seminar on 'Women's Work and Employment', April 9-11, Institute of Social Studies Trust, New Delhi.
- Jhabvala, Renana, Shalini Sinha (2002): 'Liberalization and the Woman Worker', *Economic and Political Weekly*, May 25th, 2002, Review of Labour
- Jose, A.V (1989): (ed) 'Limited Options- Women Workers in India", ILO-ARTEP.
- Jose, A.V. (1989): "Female Labourforce Participation in India: A Case of Limited Options", in A.V.Jose (ed.), "*Limited Options--Women Workers in India*", ILO-ARTEP, New Delhi
- Krishnaraj Maithreyi and Deshmukh, Joy (1990): 'Women in Handicrafts: Database and Policy Analysis', Monogram, Research Centre for Women Studies, SNDT University.
- Krishnaraj, Maithreyi (1992): 'Women Craft Workers as Security for Family Subsistence', *Economic and Political Weekly*, Vol XXVII, No 17, April, p WS7-17.
- Lim, Lin Lean (1996): *More and Better Jobs for Women: An action guide*, ILO Geneva
- MacEwan Scott, A (1991): "Informal Sector or Female Sector? Gender Bias in Urban Labor Market Models" in D Elson (ed), *Male Bias in the Development Process*, Manchester: Manchester University Press.
- Papola.T.S, Sharma, A.N (1999): (ed) *Gender and Employment in India*
- Sen, Gita and Chiranjib Sen (1985): 'Women's Domestic Work and Economic Activity: Results from National Sample Survey', *Economic and Political Weekly*, April 27th, 1985. pp.WS49-WS55.
- Sundaram, K (2001b): 'Employment and Poverty in India in the Nineteen Nineties: Further Results From NSS 55th Round Employment-Unemployment Survey, 1999-2000', paper presented at the International Seminar on 'Understanding Socio-Economic Changes through National Surveys' Organised by the National Sample Survey Organisation, May 12-13, New Delhi.
- Sundaram, K (2001a): 'Employment –Unemployment Situation in the Nineties: Some Results from NSS 55th Round Survey', *Economic and Political Weekly*, March 17.
- Szalai, A (ed) (1972): *The Uses of Time: Daily Activities and Suburban Populations in Twelve Countries*, Mouton, The Hague.