*International Labour Review*, Vol. 126, No. 2, March-April 1987

# Biases in measuring the labour force

## Results of a methods test survey in Uttar Pradesh, India

Richard ANKER *, M. E. KHAN ** and R. B. GUPTA **

## I. Introduction

Since the economic contributions of women are often under-reported in official statistics, the crucial role they play in fostering economic development often goes unnoticed. It has thus become common for scientific and political conferences to pass recommendations on the need to remedy this situation through the collection of more accurate labour force statistics (e.g. UN, 1986; UN, 1984; UN, 1980; ILO, 1985).

A recent review of the scientific literature on the factors associated with the under-reporting of the female labour force by one of the authors (Anker, 1983a) showed that the available evidence tends to be anecdotal, impressionistic and subjectively derived. With this in mind, and in order to obtain statistically valid information on the subject, as well as to determine whether reasonably accurate data can be obtained from fairly simple questionnaires, two methods test surveys were recently conducted by the ILO in India and Egypt on the measurement of female labour force activity. The present article reports on the results of the Indian survey, which was carried out in collaboration with the Operations Research Group (ORG, Baroda, India).

Replicate (i.e. stastistically identical) samples of households were interviewed using randomised sampling procedures – with roughly equal numbers of female and male interviewers, "self-respondents" (i.e. persons responding for themselves, who were all female) and "proxy-respondents" (i.e. persons responding for another, who were mainly male) – and key-word questions and an activity schedule, to collect information on female labour force activity in north India.[1] The design of this survey made it possible to draw statistically based conclusions on the following questions (Anker, 1983a):

1. Which type of questionnaire provides more accurate data on female labour force activity? In particular, do key-word questions or simplified activity schedules provide more accurate data?

* International Labour Office.

**Operations Research Group, Baroda, India.

2. Does the sex of the interviewer affect the reporting of female labour force participation?

3. Are the responses provided by (mostly male) proxy-respondents different from those of (female) self-respondents?

4. Do response biases by questionnaire type, respondent type or interviewer type differ according to the definition of labour force activity used?

It is important to stress at the outset that our aim was not to prove any particular hypothesis or to demonstrate that a high percentage of women are in the labour force. We were concerned simply with exploring whether and how the results obtained – whatever they might be – were affected by the above factors.

## II. The sample

Three districts in Uttar Pradesh State (population approximately 111 million in 1981) – Agra, Mathura and Ghazipur – were included in the methods test. Taken together, these three districts cover a broad area, including some of the least developed and most developed parts of the state. In each district one community development block (with a population of approximately 100,000) was selected;[2] within the block nine villages (stratified into three size categories) were randomly selected, and within each sample village 60 households were randomly selected. Labour force information was collected on women between 15 and 59 years of age.

In all, 1,621 households were interviewed out of 1,682 attempts. The low casualty rate of 3.6 per cent included only nine refusals (0.5 per cent of all interview attempts). The 1,621 sample households were distributed by questionnaire type, respondent type and interviewer type as prescribed by the study design.

The households were very poor. Fewer than 3 per cent had electricity and only 12 per cent lived in a cement or brick house. As regards economic assets, the picture was more mixed; approximately three-quarters of them owned some land, at least one milk animal and/or one non-milk animal, but the size of the holdings was small. Ninety per cent of the women on whom labour force information was collected were married at the time of the survey.

When we compared the characteristics of the households included in the survey with those of households in Uttar Pradesh State as a whole, we found that our sample was a fairly representative one, although it somewhat underrepresented the poorer segments of rural society, such as scheduled caste, Muslim and landless households (14 compared with 21 per cent, 4 compared with 16 per cent and 22 compared with 30 per cent, respectively, for our sample and for the state as a whole).

## III. Labour force definitions used

As noted elsewhere (e.g. Myrdal, 1968; Benería, 1982; Anker, 1983a), international recommendations on labour force definitions tend to be ambiguous or arbitrary when it comes to subsistence, non-market activities, and there are wide variations between national practices as regards the activities included or excluded as labour force activities (Blades, 1975). In addition, planners use labour force data for several different purposes, e.g. to determine the number of persons working as employees, the number engaged in monetary transactions, the number engaged in the production of goods and services, as well as the relative contributions of different population subgroups (for example by sex, age, region, ethnicity, branch of economic production). A single labour force definition – even if it could be meaningfully applied – would not be appropriate for all of these needs.

Accordingly, four labour force definitions are used here; these definitions were proposed in an earlier *Review* article (Anker, 1983a). Each definition provides information on a different aspect of the labour market which is of interest to planners.

It is not particularly important for the purposes of this article that readers should agree with our interpretations of labour force concepts or with the four specific definitions given below: the main interest here is whether responses are related to the treatment factors built into the study design (i.e. questionnaire, interviewer and respondent types). An additional advantage of using four definitions is that it allows us to observe whether response biases are related to the comprehensiveness of the one being used. The expectation is that the broader the definition the less accurate the information will be.

Table 1 specifies which activities are included in each of the four definitions, so that ambiguity is greatly reduced. Also note that the four definitions are cumulative in that each broader one embraces activities included in the narrower definitions.

Our four definitions[3] – from narrowest to broadest – are as follows:

(i) *Paid labour force* (persons engaged in wage or salary employment for which they are paid in cash or kind): This measure (PDLF for short) corresponds to the employment status category of "employees". There is likely to be little or no ambiguity among respondents about whether these activities constitute labour force activities and hence their measurement is unlikely to be strongly related to our three main treatment factors.

(ii) *Market-oriented labour force* (persons in the paid labour force plus persons engaged in an activity on a family farm or in a family enterprise that sells some or all of its products or services): This measure (MKTLF for short) covers the labour force engaged in the "money" economy.

(iii) *ILO labour force* (persons engaged in activities whose products or services should be included in national income statistics according to the

Table 1. Activities included in activity schedule according to labour force definition

| Activity[1] | | Labour force definition | | | |
|---|---|---|---|---|---|
| | | PDLF (paid) | MKTLF (market) | ILOLF (ILO) | EXTLF (extended) |
| 1. | Farming for wage or salary | Yes → | | | |
| 2. | Farming for family | No | Yes *if* products sold | Yes → | |
| 3. | Animal husbandry | No | Yes *if* products sold | Yes → | |
| 4. | Processing food for preservation or storage | No | Yes *if* products sold | Yes → | |
| 5. | Weaving, sewing, handicrafts | Yes *if* wage or salary received | Yes *if* products sold or wage or salary received | Yes → | |
| 6. | Family business, petty trading | No | Yes → | | |
| 7. | Self-employed | No | Yes → | | |
| 8. | Non-agricultural wage or salary | Yes → | | | |
| 9. | Other cash earning | Yes *if* wage or salary received | Yes → | | |
| 10. | Free gathering of food or fruit | No | Yes *if* products sold | Yes → | |
| 11. | Gathering wood or other fuel | No | Yes *if* products sold → | | Yes |
| 12. | Making cow-dung cakes | No | Yes *if* products sold → | | Yes |

[1] Information was also collected on water fetching and house construction/improvement as the former is sometimes considered to be a labour force activity in countries where people must travel long distances to collect water and the latter is a labour force activity according to the internationally accepted definition. Neither of these two activities was, however, included in our four labour force definitions. Water fetching was excluded because virtually all sample households had wells very near their homes. House construction/improvement was excluded because responses indicated the very widespread practice of "mudding" whereby women periodically apply a mud and cow-dung solution to their walls and floors, which is more akin to house cleaning or repair than to house construction or improvement.

United Nations recommendations on systems of national account statistics, whether or not these activities are monetised): This measure (ILOLF for short) is consistent with international recommendations on labour force activities.[4]

(iv) *Extended labour force* (persons in the ILO labour force plus persons who perform an activity that contributes to meeting their family's basic needs for goods and services that are generally purchased in industrialised

Figure 1. Simplified activity/time questionnaire for individuals

| Activity | Done by person in past 12 months? | Time spent on activity in past Rabi season | | | | Done for family or self (F) or others (O) (multiple responses allowed) | Received wage or salary? | Sold products? N/S/H/MH/A[3] |
|---|---|---|---|---|---|---|---|---|
| | | In a day (when done) | | Days done in season | | | | |
| | | Hours | Duration S/LH/AH/MH/FD/DN[1] | No. of days | Frequency TO/MT/ST/R/DN[2] | | | |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| Farming for others | | | | | | O | Yes | No |
| Farming for family | | | | | | F | No | |
| Animal husbandry | | | | | | | | |
| Processing food for preservation or storage | | | | | | | | |
| Weaving, sewing, handicrafts | | | | | | | | |
| Family business or petty trading | | | | | | F | No | Yes |
| Self-employed (including traditional crafts) | | | | | | F | No | Yes |
| Non-agricultural wage or salary | | | | | | O | Yes | No |
| Other cash earning | | | | | | | | |
| Free gathering of food, fruit | | | | | | | No | |
| Gathering wood, fuel | | | | | | F | No | No |
| Making cow-dung cakes | | | | | | | No | |
| Water fetching | | | | | | F | No | No |
| House construction or improvement for family | | | | | | F | No | No |
| Any other important activities[4] | | | | | | | | |

[1] S = Small amount; LH = Less than half working day; AH = About half day; MH = More than half day; FD = Full day; DN = Did not do. [2] TO = Throughout; MT = Most of the time; ST = Some of the time; R = Rarely, occasionally; DN = Did not do. [3] N = None; S = Some; H = Half; MH = More than half: A = All. [4] Explain to respondent, if necessary, that these activities are only those which *either* were done most days in the past 12 months for at least some of the time (about one-half hour each day) *or* were done for at least one half-day on days when done and for a total of at least 30 days in the past 12 months.

Note for investigator: Include travel time taken for activity.

countries): This measure (EXTLF for short) is an attempt to provide a definition that is comparable across cultures and development levels and that goes beyond current United Nations and ILO recommendations on national account and labour force statistics.

## IV. Time spent on activities

All the questionnaires collected information on the amount of time each activity was performed during the past Rabi season. Respondents were asked two questions: (1) the "usual" hours/minutes each activity was done on days when it was performed; and (2) the number of days each activity was done during the reference period. Taken together, these data provide a rough estimate of the total number of hours spent on each activity during the reference period.[5]

To estimate the amount of time women spent according to each of our four labour force measures, the hours spent on relevant activities were added up. The women in the sample were then divided into four categories for each labour force measure: (1) not in the labour force – did not do any relevant activity; (2) not in the labour force – did relevant activities for less than the minimum time; (3) in the labour force part time – i.e. did relevant activities for more than the minimum time and less than half time; (4) in the labour force full time – i.e. more than half time. Those in the latter two categories therefore made up the labour force.[6]

It is possible, and indeed common, for a woman to be included in the labour force even when she works an insufficient number of hours in each activity she performs. Since many women perform several labour force activities and not just one or two, it is important to combine the time spent on all relevant activities in order to obtain a realistic picture of women's participation in the labour force.

## V. Questionnaires used

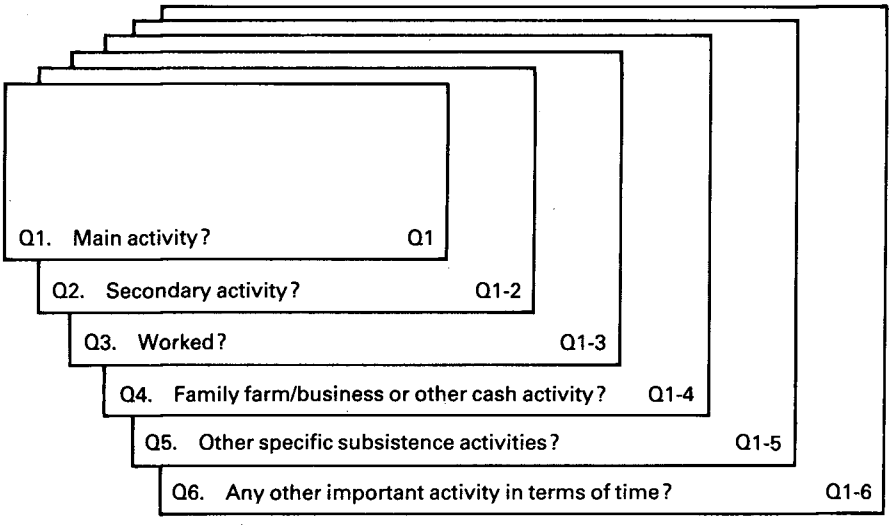
Two basic types of labour force questionnaire were used in the survey: (1) a simplified activity/time use schedule; and (2) a key-word and key-phrase questionnaire.[7]

Each is described below.

### A. Simplified activity/time use schedule

This schedule included a list of 13 possible labour force activities which were identified before the survey began (figure 2).[8] Respondents were asked whether these activities had been performed during the reference period. For each activity performed, additional information was then collected on time, sales and wages in order to determine whether women were in the labour force according to each of our four definitions as well as whether they were

Figure 2. Schematic representation of "nested" key-word questionnaire used in methods test




Note: For each activity reported, additional information was collected on time, sales, and wage/salary in order to establish whether women were in each of our four labour force measures. Sample size was 1,080 for Q1, Q2 and Q3; and 539 for Q4, Q5 and Q6.

working for less than the minimum number of hours, part time or full time. This schedule is straightforward and unambiguous as regards participation in labour force activities, and does not require any interpretation on the part of respondents. Because of this our a priori assumption was that the female labour force would be more fully reported when the activity schedule was used than when the key-word questions were used.

## B. Key-word questions

Labour force surveys typically consist of "key-word" questions, i.e. questions based on a key word or phrase embedded in a longer question. Typical key words or phrases are "work", "job", "main activity", "secondary activity", "pay or profit".

Our survey used a series of key-word questions, with each successive question being more specific and detailed than the previous one. In essence, each additional question may be considered to have resulted in the completion of another key-word questionnaire. (The "nested" design of the key-word questionnaire is shown in figure 2.)

We were particularly interested in observing how many additional women would be reported as labour force participants with each additional

key-word question and at what point the increase would become statistically insignificant for each of our four labour force definitions.

The first three key-word questions are of a general nature and are often used for collecting labour force information in population censuses and national labour force surveys; indeed these questions were used in various combinations during the 1971 and 1981 Indian censuses.[9]

Q1. What was your (her) main activity in the past Rabi season?

Q2. What was your (her) next most important activity in the past Rabi season?

Q3. Apart from those activities have you (has she) worked in the past Rabi season for earnings?

There followed two fairly explicit key-word questions where specific activities were mentioned and another general question asking about "any other important activity".

Q4. Did you (she) do something else in the past Rabi season for which family income was earned, such as helping out on a family farm or in a family business or some other activity?

Q5. Many persons (also) help their families by caring for family livestock, processing food for storage, cooking for family members, sewing clothes for family members, gathering fuel for family use. Did you (she) do any such activity in the past Rabi season?

Q6. Apart from those activities can you mention any other important activity in terms of time which you (she) performed in the past Rabi season?

## VI. Results by labour force definition

In this section information is presented on activity rates based on 1,082 responses to the activity schedule on the amount of time each of 13 activities was performed during the past Rabi season. These data (table 2) show how active rural Indian women are and how many different time-consuming activities they engage in. Note that approximately 70 per cent of the sample women are reported to have engaged in animal husbandry, processing food for storage, making cow-dung cakes and water fetching; in addition, approximately one-third of them are reported to have engaged in farming for the family, weaving/sewing, and free gathering of wood and fuel.

However, the amount of time women spend on each activity tends to be fairly small as it is unusual for any one particular activity to involve more than part-time hours except for PDLF and MKTLF activities, such as farming, business, and non-agricultural wage or salary activities. Indeed, a very sizeable percentage of the women are reported to have done each activity for less than the minimum time required to qualify them for inclusion in the labour force based on that activity alone.

Because of this fragmented activity pattern, information on individual activities is insufficient to depict, measure or understand the labour force

Table 2. Activity rates for 13 important activities based on responses to the activity schedule (N = 1,082)

| Activity/ labour force measure | Done for less than minimum time[1] | Part time[2] | Full time[3] | Performed activity (1+2+3) | Performed for more than minimum time (2+3) | % part time (2/5) | % full time (3/4) |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| **Individual activity** | | | | | | | |
| Farming for others | 0.6 | 5.5 | 4.1 | 10.2 | 9.6 | 57.3 | 40.2 |
| Farming for family | 5.0 | 20.3 | 11.8 | 37.1 | 32.1 | 63.2 | 31.8 |
| Animal husbandry | 3.7 | 53.8 | 13.3 | 70.8 | 67.1 | 80.2 | 18.8 |
| Processing food for storage | 32.5 | 36.0 | 0.8 | 69.3 | 36.8 | 97.8 | 1.2 |
| Weaving/sewing | 20.0 | 10.6 | 1.4 | 32.0 | 12.0 | 88.3 | 4.4 |
| Family business | 0.3 | 0.9 | 0.6 | 1.8 | 1.5 | 60.0 | 33.3 |
| Self-employment | 0.2 | 1.9 | 1.7 | 3.8 | 3.6 | 52.8 | 44.7 |
| Non-agricultural wage or salary | 0.0 | 0.6 | 0.8 | 1.4 | 1.4 | 42.9 | 57.1 |
| Other cash earning | 0.3 | 1.0 | 0.1 | 1.4 | 1.1 | 90.1 | 7.1 |
| Free gathering of food and fruit | 1.9 | 3.2 | 0.3 | 5.4 | 3.5 | 91.4 | 5.6 |
| Free gathering of wood and fuel | 7.1 | 16.1 | 0.7 | 23.9 | 16.8 | 95.8 | 2.9 |
| Making cow-dung cakes | 12.2 | 62.4 | 0.1 | 74.7 | 62.5 | 99.8 | 0.1 |
| Water fetching | 12.7 | 58.6 | 0.6 | 71.8 | 59.2 | 99.0 | 0.8 |
| **Labour force measure** | | | | | | | |
| PDLF | 0.6 | 7.2 | 5.5 | 13.3 | 12.7 | 56.7 | 41.4 |
| MKTLF | 2.2 | 14.6 | 17.2 | 34.0 | 31.8 | 45.9 | 50.6 |
| ILOLF | 6.9 | 37.9 | 50.4 | 95.2 | 88.3 | 42.9 | 52.9 |
| EXTLF | 5.9 | 28.5 | 62.4 | 96.8 | 90.9 | 31.4 | 64.5 |

[1] Less than 47 hours for season or approximately one-half hour each day or one week full time in the season. [2] More than minimum and less than half of full-time hours. [3] More than half time.
Source: ILO/ORG methods test survey.

activity of rural Indian women. Rather, it is necessary to aggregate time spent on all activities in order to obtain accurate estimates of the size of the female labour force; this is done in the bottom half of table 2.

Female labour force activity rates are high. They are estimated to be approximately 13, 32, 88 and 91 per cent respectively for the PDLF, MKTLF, ILOLF and EXTLF. Moreover, most of the women in the sample are not marginal participants. The cumulative effect of totalling the time spent on individual activities is particularly marked for our two broader labour force definitions, ILOLF and EXTLF.

## VII. Comparison of results by questionnaire type

A graphical comparison of the results obtained from the key-word questions with those obtained from the activity schedule for each of our four labour force definitions is given in figure 3.

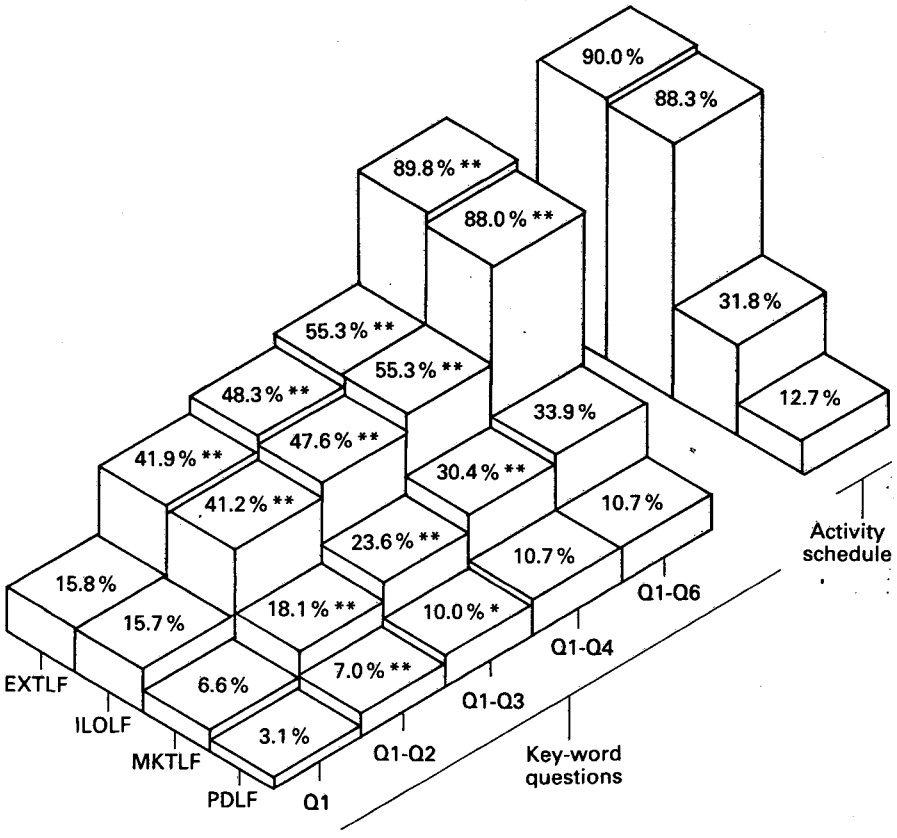
When the results obtained from the first key-word question on "main activity" (Q1) are compared with those obtained from the activity schedule, we find enormous differences for each labour force measure, with significantly lower rates for the key-word question (3.1 against 12.7 per cent for the PDLF, 6.6 against 31.8 per cent for the MKTLF, 15.7 against 88.3 per cent for the ILOLF and 15.8 against 90.9 per cent for the EXTLF). Key-word question Q1 is obviously an inappropriate one for eliciting labour force data because so many women consider themselves or are considered to have "housewife" or "housekeeper" as their "main activity".

Adding the key-word question on "secondary activity" (Q2) greatly increases reported activity rates but they still remain significantly lower than those reported on the activity schedule for each of our four labour force definitions and for 12 of our 13 individual activities. (Only the reporting of non-agricultural wage or salary activity is fully measured by key-word questions Q1 and Q2.) Thus many female labour force participants remain invisible even after key-word questions on "main" and "secondary" activities are asked.[10]

The introduction of a third general key-word question ("did you work for earnings?") (Q3) further reduces but does not eliminate the significant differences between key-word question results and activity schedule results. It is, however, worth noting that the measurement of some obvious labour force activities (specifically non-agricultural wage or salary activities, other cash-earning activities, family business, self-employed trading) now becomes adequate and that the PDLF is reasonably well measured too.[11]

When key-word questions Q4 and Q5 (which mention specific labour force activities) are asked, differences by questionnaire type become insignificant. When respondents are asked Q4 about activities done for the family to generate income such as activities on a family farm or in a family business, the differences by questionnaire type become insignificant for the PDLF and the MKTLF. When important non-market labour force activities

Figure 3. Estimates of labour force activity rate by questionnaire type for four labour force definitions




Notes: Rates based on relevant activities that are performed for more than minimum hours. The reported rates for Q1 to Q6 were adjusted on the assumption that if only one relevant labour force activity was reported, and it was reported in response to Q5 or Q6 (where no time data were collected), then it was done for more than the minimum number of hours in the same proportion as reported on the activity schedule. Asterisks denote a rate significantly different at the .01 level (**) or at the .05 level (*) from that for the previous key-word question combination for the same labour force definition. The results for Q5 are not reported as they were very similar to those for Q6. Sample sizes were 1,080 for key-word questions Q1, Q2 and Q3; 1,082 for the activity schedule; and 539 for Q4, Q5 and Q6. Differences in participation rates obtained from key-word questions and the activity schedule become statistically insignificant at the .05 level for the PDLF and MKTLF when Q4 is asked and for the ILOLF and EXTLF when Q5 is asked.

Source: ILO/ORG methods test survey.

are mentioned in Q5, these differences become insignificant for the ILOLF and the EXTLF as well.[12]

Several important conclusions can be drawn from the above results. First, contrary to our a priori assumption, one questionnaire type is not inherently superior to the other since similar estimates of female labour force activity were obtained using both types. Second, the broader the labour force

definition, the more key-word questions need to be asked. Third, general key-word questions that do not mention specific activities are inappropriate for eliciting complete information on female labour force participation; hence even key-word questions must mention specific activities.

## VIII. Results by respondent type

As mentioned earlier, it is commonly assumed that male respondents and proxy-respondents (who are generally male in most Third World countries) under-report the labour force activity of female household members, since men are thought to believe that women are and should be housewives, while proxy-respondents may not possess detailed knowledge of the activities engaged in by other household members.

The results of our survey by respondent type are shown in table 3 (columns 2 and 3) for each of our four labour force definitions as obtained from responses to the activity schedule and from those given to each of the six combinations of key-word questions.

The results did not corroborate our a priori assumption that (mainly male) proxy-respondents would under-report female labour force activity.[13] The differences between the responses of proxy-respondents and those of self-respondents are generally insignificant. Of the 28 comparisons in table 3, only four are significant at the .05 level and none is significant at the .01 level – although it is worth noting that there is a tendency for self-respondents to report more fully ILOLF and EXTLF activities in response to our three general key-word questions Q1, Q2 and Q3. Interestingly, when results are tabulated by sex of respondent, *none* of the 28 comparisons is significant at the .05 level.[14]

## IX. Results by interviewer type

We had expected that the sex of the interviewer would have an effect on the reporting of female labour force activity, with male interviewers biasing rates downward. This issue is of importance for survey organisations, since interviewers in developing countries such as India are usually male.

The results in table 3 show that the differences between responses obtained by male and female interviewers are significant at the .05 level in 16 of the 28 comparisons. It should be noted, however, that male investigators recorded higher participation rates than female investigators when the activity schedule was used, for all four labour force definitions, and for the ILOLF and EXTLF when key-word questions Q5 and Q6 were used. On the other hand, male investigators recorded lower rates when key-word questions Q1, Q2, Q3 and Q4 were used, for all four labour force definitions, and when Q5 and Q6 were used for the PDLF and MKTLF.

These results are not as inconsistent as they appear to be. Rather, they indicate that male investigators were significantly more likely than female

Table 3. Comparison of results obtained from key-word questions and the activity schedule by type of respondent and interviewer for each of four aggregate labour force measures

| Labour force measure/ question type | Respondent type | | Interviewer type | |
|---|---|---|---|---|
| | Proxy | Self | Male | Female |
| **PDLF** | | | | |
| Q1 | 3.0 | 3.2 | 2.0 | 4.1 * |
| Q1 to Q2 | 6.8 | 7.6 | 6.2 | 7.9 |
| Q1 to Q3 | 9.7 | 10.7 | 8.8 | 11.2 |
| Q1 to Q4 | 11.1 | 10.1 | 8.3 | 13.2 |
| Q1 to Q5 | 11.1 | 10.1 | 8.3 | 13.2 |
| Q1 to Q6 | 11.1 | 10.1 | 8.3 | 13.2 |
| Activity schedule | 11.9 | 14.2 | 13.7 | 11.7 |
| **MKTLF** | | | | |
| Q1 | 5.7 | 8.4 | 5.0 | 8.1 * |
| Q1 to Q2 | 17.0 | 20.2 | 17.6 | 18.5 |
| Q1 to Q3 | 23.0 | 25.0 | 23.4 | 23.9 |
| Q1 to Q4 | 29.9 | 31.3 | 27.9 | 32.8 |
| Q1 to Q5 | 30.8 | 33.5 | 29.1 | 34.3 |
| Q1 to Q6 | 33.1 | 36.1 | 30.6 | 37.6 |
| Activity schedule | 32.7 | 30.2 | 35.5 | 28.2 * |
| **ILOLF** | | | | |
| Q1 | 14.4 | 18.0 | 12.5 | 18.6 ** |
| Q1 to Q2 | 38.7 | 45.9 ** | 37.3 | 45.0 * |
| Q1 to Q3 | 45.3 | 52.0 ** | 43.7 | 51.5 * |
| Q1 to Q4 | 54.2 | 57.4 | 51.0 | 59.5 * |
| Q1 to Q5 | 89.5 | 90.4 | 94.4 | 85.4 ** |
| Q1 to Q6 | 93.8 | 91.5 | 95.4 | 90.5 * |
| Activity schedule | 88.0 | 88.8 | 90.8 | 85.8 * |
| **EXTLF** | | | | |
| Q1 | 14.6 | 18.0 | 12.5 | 18.8 ** |
| Q1 to Q2 | 39.6 | 46.4 ** | 37.5 | 46.3 ** |
| Q1 to Q3 | 46.1 | 52.5 ** | 43.8 | 52.7 ** |
| Q1 to Q4 | 54.2 | 57.4 | 51.0 | 59.5 * |
| Q1 to Q5 | 90.8 | 91.5 | 95.9 | 86.5 ** |
| Q1 to Q6 | 93.8 | 91.5 | 95.4 | 90.5 * |
| Activity schedule | 90.5 | 91.5 | 92.2 | 89.6 |

Notes: Asterisks denote differences between the female activity rates (for more than minimum hours) obtained from proxy-respondents and self-respondents respectively and from male and female interviewers respectively that are statistically significant at the .01 level (**) and at the .05 level (*). The assumption was made that each labour force activity reported in response to key-word question Q5 or Q6 was done for more than the minimum time criterion (as no information on time was collected under Q5 or Q6). This assumption has no effect on activity rates for the PDLF and MKTLF and inflates rates by approximately 4 per cent for the ILOLF and EXTLF for Q1 to Q5 and Q1 to Q6. This does not affect the significance of comparisons in this table. Sample sizes were 1,082 for the activity schedule; 1,080 for Q1, Q2 and Q3; and 539 for Q4, Q5 and Q6.

Source: ILO/ORG methods test survey.

investigators to elicit higher reporting of subsistence and domestic-related labour force activities when *specific* questions were asked regardless of whether the activity schedule or a key-word question such as Q5 was being used. But when general and less specific key-word questions were used (such as key-word questions Q1, Q2 and Q3), female investigators tended to obtain more complete responses, particularly for susbsistence, family-related labour force activities.

Generally speaking, male investigators tended to elicit higher participation rates than female investigators when specific questions/schedules were used, while the reverse was true when general key-word questions were used. It is important to note, however, that although these differences were often statistically significant at the .05 level, they were not very large in magnitude. In addition, given the small number of male and female investigators involved in the methods test (just six female and seven male investigators), care must be exercised in generalising from these results about the effect the sex of the interviewer has on the reporting of female labour force participation.

## X. Summary and conclusions

This article has been concerned with four non-behavioural factors (questionnaire design, respondents, interviewers, labour force definition) to which the relative invisibility of the female labour force in censuses and labour force surveys is sometimes attributed. It follows up an earlier article in these pages which reviewed evidence from the research literature and suggested the need for specially designed surveys in order to provide scientifically derived statistical evidence on the factors often causing female labour activity to be under-reported.

In the methods test described here, sample households were randomised in such a way that approximately half of the interviewers were male and half were female; half of the respondents answered for themselves (all females) and the other half (mostly males) answered for a female household member; half of the questionnaires included a simplified activity/time use schedule and half included a series of key-word questions. In addition, since labour force definitions are, of necessity, ambiguous and arbitrary with regard to subsistence-type activities, four labour force definitions were used in the analysis so that we would be able to observe how sensitive results were to the definition employed.

The results show that the failure of official statistics to reflect all of women's work is no myth. Approximately 90 per cent of adult women were found to engage in labour force activities and approximately one-third were found to engage in activities that resulted in monetary transactions. The time they spent on labour force activities tended to be fragmented (especially for our two broader labour force definitions which include a definition that embodies international recommendations) as they usually engaged in several different activities, each for a relatively short time. These results strongly

suggest that if the full extent of female labour activity is to be measured, information must be collected on several activities and not on one or even two main activities.

On the other hand, the sex of the proxy-respondents (mostly male) answering for female household members and of the investigators doing the interviewing was *not* found to be a major source of bias; i.e. male respondents and interviewers were not the chief villains in the underestimation of women's labour force participation.

Questionnaire design, however, was found to have a radical effect on the reporting of female labour force activity. General key-word questions asking about "main activity", "secondary activity" and "work for earnings" – typical census and labour force survey questions – were found to perform particularly poorly, resulting in significantly lower female participation rates for all four of our labour force definitions, even the PDLF (wage and salary employees) and the MKTLF (persons in the money economy). While each additional general key-word question (i.e. "secondary activity" and then "work for earnings") caused significant increases in the reported female labour force participation rate, this rate always remained significantly below that obtained from the activity schedule (although the rate for the PDLF became similar after these three general key-word questions were asked).

When additional key-word questions mentioning specific activities were asked, results converged towards those given in response to the activity schedule. For the PDLF and the MKTLF, only one further specific key-word question (asking about activities to help generate family income, e.g. helping out on a family farm or business) was required; for our two broader labour force definitions (ILOLF and EXTLF), two additional specific key-word questions were necessary. In short, an activity schedule was not found to be a better format than key-word questionnaires, as we had expected, although its simple presentation makes it appropriate for use in censuses and large surveys. At the same time, however, it was clear that the broader the labour force definition, the more key-word questions needed to be asked in order to obtain a full reporting of female labour force activity.

The results indicate that specially designed methods tests can provide valuable information at relatively low cost. Their strong point is that their results are scientifically derived and statistically valid and so cannot be dismissed as subjective anecdotal data generated by persons with an axe to grind. The use of specially designed methods tests should be encouraged.

The under-reporting of female labour force activity can be eliminated. If that is to be done, however, census and survey organisations must clearly specify how the labour force is defined and what activities are to be included. Also, questionnaires (whether based on an activity schedule or key-word questions such as those used in the present study) must be unambiguous and must mention specific labour force activities.

## Notes

[1] The procedure used to randomise the sample with regard to questionnaire type, respondent type and interviewer type is described in detail elsewhere (Anker, Khan and Gupta, 1987; and Anker, 1983b). Basically, it involved using random numbers tables to prescribe on the cover page of the questionnaire which of the three types of treatment a sample household was to receive. This ensured a more or less balanced sample and allowed the results of each type of treatment to be compared in the knowledge that they could not be greatly influenced by the other types. The sample was slightly unbalanced, however, with regard to the interaction between respondent type and interviewer type, since cultural factors in north India often prevent male interviewers from interviewing female respondents. Hence male interviewers here were allowed to interview any responsible adult in the sample households (as is the practice in most surveys and censuses); in the event, 19 per cent of their respondents were self-respondents. (It should be noted, however, that the results reported in this article are not affected by this slightly unbalanced aspect of the study design since multivariate analyses of methods test data discussed in Anker, Khan and Gupta, 1987, indicate that there are no significant interactions between the effects of respondent type and interviewer type.)

[2] The districts and blocks were the same as those included in an earlier joint ILO/ORG study on women's roles and demographic change.

[3] The present study is *not* concerned with unemployment. Therefore, strictly speaking the results of the methods test do not provide estimates of the female labour force since they exclude unemployed women. That does not pose a major problem for this study, however, since measured unemployment rates in rural India are always very low.

The reference period used in our survey is the past Rabi (winter) season which lasts approximately 100 days, from mid-November to late February. This is a period of considerable agricultural activity (in particular, for the wheat crop) but not the most important cultivation season, which is the monsoon season.

[4] See Mehran, forthcoming, for a thorough and illuminating discussion of this subject.

[5] Respondents were given a choice of answering in terms of actual number of hours/minutes and days or in terms of predetermined word categories (see figure 1). Results (see Anker, Khan and Gupta, 1987, for details) for over 2,000 person-activities indicated that responses for word categories were internally consistent and similar to a priori assumptions made in Anker, 1983a.

[6] According to the recommendations of the 1982 Thirteenth International Conference of Labour Statisticians, activities performed exclusively for own or household use need "to comprise an important contribution to the total consumption of the household" (ILO, 1983) in order to be considered a labour force activity. Since it is not possible in our opinion to devise a practical, easy-to-use measure of "important contribution", we opted for a minimum time criterion. Furthermore, since we do not think that certain types of activities should be singled out for special treatment (especially in the context of this study where we are using several labour force definitions), all of our definitions use the same minimum time criterion. This minimum time requirement works out at approximately half an hour every day or one full-time work week in the season.

[7] A third questionnaire was also used. It combined the key-word questionnaire and the simplified activity/time use schedule in a mixed type of questionnaire consisting of the three general key-word questions Q1, Q2, Q3 followed by the activity schedule. This meant that while there were only 539 observations for key-word questions Q4, Q5, Q6, there were approximately 1,080 observations for key-word questions Q1, Q2, Q3 and for the activity schedule. It is worth noting that activity schedule results obtained from the two basic questionnaires are not significantly different, showing that it is possible to combine questionnaire types (see Anker, Khan and Gupta, 1987, for a detailed discussion).

[8] Before finalising an activity schedule, it is of course necessary to conduct preliminary inquiries in order to identify which labour force activities are important in the study area.

[9] The 1961 Indian census used a fairly specific key-word question relating to "persons *working* as cultivator, agricultural labourer, *working* at household industries or *working* under any other category" (Sinha, 1982; our emphasis). This question is similar to our Q4.

[10] On the basis of responses to key-word question Q1, 81.7 per cent of sample women are reported to have engaged in household activities as their "main activity". The proportion reported to have done this increases to 92.8 per cent when responses to key-word question Q2 are also taken into account.

[11] Although the activity rate for the PDLF is higher for the activity schedule than for key-word questions Q1 to Q3, this difference is only 2.7 percentage points, is barely significant at the .05 level ($t = 1.98$), and becomes insignificant at the .05 level in a multivariate analysis where respondent type and interviewer type are also specified and thus controlled for statistically (see Anker, Khan and Gupta, 1987).

[12] A further indication of the influence which questionnaire design has on responses is the fact that we are able more or less to replicate the results of the 1961, 1971 and 1981 Indian censuses, which recorded an adult female labour force participation rate of 31, 16 and 24 per cent respectively, when we use similar key-word questions (Anker, Khan and Gupta, 1987).

[13] Since interviews in Indian villages are often conducted in the presence of other persons, we considered that respondent type might not affect responses because other persons influenced responses or provided answers themselves. With that in mind, we collected and analysed information in the methods test on the presence of other persons during the interview. The results (reported in Anker, Khan and Gupta, 1987) show that another person was present in 97 per cent of interviews and, with the exception of mothers-in-law, who caused reported activity rates to be slightly depressed, and husbands, who caused rates to be slightly inflated, there were no consistent effects.

[14] Proxy-respondents consistently tend to report fewer work hours than self-respondents, although differences are usually insignificant at the .05 level. Also, a closer examination of these data (discussed in Anker, Khan and Gupta, 1987) shows that proxy-respondents tend to report significantly more often than self-respondents that women are "housewives" and significantly less often that they are engaged in food-processing activities.

## References


Anker, R. 1983a. "Female labour force participation in developing countries: A critique of current definitions and data collection methods", in *International Labour Review*, Nov.-Dec.

——. 1983b. *Effect on reported levels of female labour force participation in developing countries of questionnaire design, sex of interviewer and sex/proxy status of respondent: Description of a methodological field survey*. Mimeographed World Employment Programme research working paper; restricted. Geneva, ILO.

——; Khan, M. E.; Gupta, R. B. 1987. *Improving the measurement of women's participation in the labour force: Results of a methods test survey in India*. Mimeographed World Employment Programme research working paper; restricted. Geneva, ILO.

Benería, L. 1982. "Accounting for women's work", in L. Benaría (ed.): *Women and development: The sexual division of labour in rural societies*. New York, Praeger for the ILO.

Blades, D. 1975. *Non-monetary (susbsistence) activities in the national accounts of developing countries*. Paris, OECD.

ILO, 1983. *Report of the Conference*. Thirteenth International Conference of Labour Statistians, 1982. Geneva. Pp. I/1-9.

——. 1985. *Official Bulletin* (Geneva), Series A, No. 2, pp. 85-95.

Mehran, F. Forthcoming. *Surveys of the economically active populations*. Geneva, ILO.

Myrdal, G. 1968. *Asian drama: An inquiry into the poverty of nations*. Three vols. New York, Pantheon.

Sinha, J. N. 1982. "1981 census economic data: A note", in *Economic and Political Weekly* (Bombay), 6 Feb.

United Nations. 1980. *Sex-based stereotypes, sex biases and national data systems*. ST/ESA/STAT/99. New York.

——. 1984. *Report of the International Conference on Population*. E/CONF.76/19. New York.

——. 1986. *Report of the International Conference to Review and Appraise the Achievements of the United Nations Decade for Women: Equality, Development and Peace*. A/CONF.116/28/Rev. 1. New York.