

Rural Unemployment — A Survey of Concepts and Estimates for India

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AND ESTIMATES FOR INDIA

This paper presents a conceptual framework for measuring rural unemployment and underemployment in developing countries. A disaggregated model of the labor market is outlined. Also, five distinct and significant rural unemployment rates are calculated for India and their implications examined. Estimates of surplus labor for India are reviewed.

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Table of Contents

	<u>Page No.</u>
SUMMARY	i - v
1. INTRODUCTION	1
2. QUANTITATIVE CONCEPTS FOR THE MEASUREMENT OF UNEMPLOYMENT RATES	3
3. CRITERIA FOR DEFINING THE STATE OF UNEMPLOYMENT	12
4. UNEMPLOYMENT IN 27TH AND 25TH ROUNDS OF N.S.S. AND EARLIER ESTIMATES	22
5. THE CORRELATES OF UNEMPLOYMENT	38
6. SURPLUS LABOR	55
7. TOWARD A MODEL OF THE LABOR MARKET	63
REFERENCES	66

LIST OF TABLES

Summary Table 1 - Five Rural Unemployment Rates and Magnitudes Selected Years, India	ii
Table 1: Illustrative Measurement of the Flow Unemployment Rate	5
2: Assumed Cut-off Limits for Counting Unemployed/ Underemployed Persons	7
3: Illustrative Measurement of the Stock Unemployment Underemployment Rates	8
4: Summary of All Illustrative Flow and Stock Rates Computed in Tables 1 and 3	11
5: Unemployment Rates by Daily, Weekly and Annual Status Rural India	23
6: Unemployment Rates of Small Farmers and Landless Workers, 25th Round (1970-71	27

LIST OF TABLES (cont.)

Page No.

Table 7:	Weekly Status Rural Unemployment and Underemployment Rates, NSS Rounds 14th to 19th	28
8:	Usual Status Unemployment Rates, Rural India, Census 1961 and 1971	29
9:	Number of Usual Status Unemployed Persons, Rural India . .	31
10:	Number of Unemployed Persons Estimated From NSS Data, Rural India	33
11:	End-of-the Week Unemployment, 27th Round 1972-73	34
12:	Numbers of Unemployed, Severely Underemployed, and Moderately Underemployed Persons, Rural India	35
13:	Unemployment in Person-Days per Week 27th Round (1972-73).	37
14:	Proportion of Persons Willing to Move Outside the Village for Full-time Employment, 25th Round (1970-71) .	49
15:	Proportion of Persons in the Age-Group 15-44 in Willing Migrants	50
16:	Proportion of Illiterates in Willing Migrants ,	50
17:	Expected Annual Wage Interval with the Highest Frequency of Willing Migrants	51
18:	Expected Income Range and Proportion of Migrants	52
19:	Annual Wage Expected and Proportions of Potential Migrants in Small Farms and Farm Labor Households NSS 25th Round (1970-71)	54
20:	Surplus Labor Estimates, India	56

RURAL UNEMPLOYMENT - A SURVEY OF CONCEPTS
AND ESTIMATES FOR INDIA

SUMMARY

1. A large mass of data on rural unemployment has been collected in India by the Census authorities in 1961 and 1971 and the National Sample Survey (NSS) organization in 8 Rounds during 1958-59/1972-73. Much of this data still remains unanalyzed. Expert committees who have analyzed some of it have abstained from presenting usable estimates of rural unemployment and discussing trends because of controversies about, and frequent changes in, the concepts used by the Census/NSS agencies. But it is shown in this paper that, with a careful examination of various concepts, and a few critical distinctions, five distinct and significant rural unemployment rates and magnitudes can be identified in the data. All the available estimates of these five rates and magnitudes are brought together in the paper. The estimates of each type of unemployment for different years are broadly comparable. They reveal striking trends in the decade of the sixties and early seventies.

2. The crucial distinctions required for the interpretation of Indian data are those between (a) time-rates and person-rates, (b) current status and usual status rates and (c) rates excluding and including underemployment. Other distinctions discussed in the paper are those between micro and macro rates, and rates based on the voluntary and the normatively determined supply of labor.

- (a) The first distinction relates to the fact that the unemployment rate may be measured either in units of labor time per period, i.e., unemployed person-days per week as a proportion of total voluntary labor supply in the same units, or in numbers of unemployed persons at a given point of time as a proportion of the number of persons in the labor force. They may be called time rates and person rates, respectively.
- (b) The second distinction refers to the fact that some unemployment rates have been measured on the basis of employment status over a short reference period, usually a week preceding the Census/Survey, others have been measured on the basis of employment status over a long reference period, usually a year preceding the Census/Survey. They are called current status rates and usual status rates, respectively.
- (c) Third, some estimates of unemployment include open unemployment only, while others include open unemployment as well as underemployment. Underemployment may either (i) include persons available for more work, or (ii) be a normative estimate computed with a pre-determined time-criterion (42 hours/week) only.

3. Given these distinctions we have the following five roughly comparable rates in the Indian data:

- (1) Current Status Time Rate (CST). NSS data. 2 years 1970-71, 1972-73.
- (2) Current Status Person Rate - Unemployment Only (CSPU). NSS data. 7 years between 1958-59/1972-73.
- (3) Current Status Person Rate - Unemployment plus Available Under-employment (CSPU + UUA). NSS data. 5 years between 1958-59/1964-65.
- (4) Current Status Person Rate - Unemployment plus Normative Under-employment (CSPU + UUN). NSS data. 5 years between 1958-59/1964-65.
- (5) Usual Status Person Rate (USP). Census data 2 years 1961 and 1971; and NSS data one year 1972-73.

4. The ranges of these rates, all recomputed as percentages of the relevant estimates of the labor force are summarized in Table 1.

SUMMARY TABLE 1

FIVE RURAL UNEMPLOYMENT RATES AND MAGNITUDES, SELECTED YEARS, INDIA

Rate	Rates (Percent of Labor Force)					
	1958-59	1960-61	1964-65	1966-67	1970-71	1972-73
1. CST	-	-	-	-	6.4 - 7.6 ^{/a}	6.8
2. CSPU	5.6	-	-	2.7	-	3.4
3. CSPU + UUA	16.1	-	9.2	-	-	-
4. CSPU + UUN	47.0	-	31.8	-	-	-
5. USP	-	0.4	-	-	1.1	1.0

Magnitude	Magnitudes (Millions)					
	1958-59	1960-61	1964-65	1966-67	1970-71	1972-73
1. CST	-	-	-	-	5.6	17.4
2. CSPU	8.1	-	-	4.5	-	10.0
3. CSPU + UUA	23.4	-	14.0	-	-	-
4. CSPU + UUN	68.4	-	48.1	-	-	-
5. USP	-	0.6	-	-	2.1	2.0

^{/a} A sample of the bottom decile of farmer households, and a sample of landless farm households only.

5. Striking trends are indicated by these magnitudes. The CST indicates that in an average week in 1972-73, 17.4 million personweeks of labor-time was idle and available for work (in a rural labor force of about 239 million persons). About one-third of this unemployment was concentrated in landless households and the smallest ten percent of farmer households.

6. The current status open unemployment was going down from 8 to 4.5 million persons during 1958-59/1966-67 and has risen back to 10 million in 1972-73.

7. The usual status 'chronic' unemployment has also increased from about half a million in 1961 to about 2 million in 1971.

8. Thus the roughly comparable rates available both for the 60s and early 70s show that unemployment was declining in the 60s but increased rapidly in the early 70s presumably due to a series of bad harvest and low rates of growth.

9. The figures of underemployment, computable only for the 60s, are truly staggering--averaging 19 million on the basis of reported availability for more work and 58 million on the basis of a cut-off point of 42 hours of work per week.

10. The data on distributions of the unemployed by various characteristics--age, sex, education, region, expected wages, current income, tenurial status, work and location preferences, willingness to migrate and job-search behavior--are also summarized in the paper. Some facts deserve special notice.

- (a) About 10 percent of regular farm and non-farm workers and 56 percent of casual workers are willing to migrate for full-time wage employment.
- (b) An overwhelming majority of these willing migrants are illiterate prime-age workers.
- (c) They expect an annual wage in the range Rs. 800-1200. The average expected wage, weighted by the proportion of willing migrants in each wage interval is about 1.6 times the wage actually earned.
- (d) The relationship between the expected wage and the proportion of willing migrants in each expected wage group suggests three backward bending supply curves at three different wage levels, presumably depending on educational and other characteristics.
- (e) The relationship of unemployment levels and income is expectedly negative. And, of course, the incidence of unemployment is higher in landless than in small farm households.

- (f) Rural unemployment is more evenly spread across age-groups than urban unemployment. And there are much fewer first-job-seekers among the rural unemployed than among the urban unemployed.
- (g) The incidence of current status unemployment and under-employment is higher and the incidence of usual status or chronic unemployment is lower among females than among males.
- (h) The unemployment rate hits its seasonal peak in the summer quarter (April-June) and its rough in the monsoon quarter (July-September).

11. Surplus labor estimates for India are also reviewed in the paper, along with the limitations of the methods used to generate the estimates. For the whole agricultural sector Mehra's estimate (27% of the work force in 1961) is the only one available. If at least one worker per holding is allowed the rate drops to 6.4 percent which is comparable with the minimum (CSPU + UUA) rate for the 60s (6.5 percent).

12. The paper also outlines a 5-sector model of labor allocation and wage determination which theoretically distinguishes five types of unemployment according to the dominant causes:

- (a) income-leisure preference;
- (b) scarcity of non-labor factors, land and capital;
- (c) technological and product-mix choices;
- (d) institutional wage rigidity; and
- (e) job-search behavior.

13. A quantitative decomposition of measured unemployment according to these categories may not be possible in the immediate future because of data limitations but the model suggests that they must be separated. At low income levels the need for income keeps the labor supply at a high level and as income rises leisure preference begins to reduce the effective supply. Thus minimum income-needs and leisure preferences affect unemployment through their influence on the labor supply. The capacity to finance job search also influences the part of labor supply which remains voluntarily unemployed. On the demand side, shortage of land and capital relative to the labor supply, and choices of inappropriate techniques and products due to institutional factors or price distortions are well-known causes which create segments of unemployment in the affected sectors.^{1/}

14. Policy makers in mixed economies have little leverage on labor supply behavior. But land distribution and tenurial arrangements, the rate and allocation of investment, and the nature of institutional and price

^{1/} A decomposition of employment growth in India and Zambia into the growth effect, the technology effect and the demand-mix effect has been attempted in two forthcoming papers.

regimes can all be influenced by public policy so as to increase greater labor absorption at reasonable levels of earnings.

15. One section of the paper reviews and synthesizes the recent literature on concepts for measuring sets of the unemployed by the time, income, willingness, and misemployment criteria, and the unions and intersections of these sets. The relationship of these sets with actually measured stock rates and flow rates is also clarified.

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1. INTRODUCTION

1. In this paper I present a conceptual framework for the measurement of rural unemployment and underemployment in a developing country. The framework is used to review and interpret all the available estimates of rural unemployment/underemployment developed in India on the basis of the Censuses of 1961 and 1971 and eight Rounds of the National Sample Survey^{1/} between 1958-59 and 1972-73.

2. The discussion of the conceptual problem of measuring unemployment has been advanced by numerous recent contributions (Hauser 1973, Krishna 1973, Sen 1973, Dantwala and Visaria 1974, ILO 1974, Sinha 1974, Ahuja 1975, Sabot 1975, Sen 1975 and Thormann 1975). The National Sample Survey Organization of India has also issued some of the tables resulting from its latest 25th Round (1970-71) and 27th Round (1972-73) surveys. In these Rounds, a new set of concepts based on the advice of the Dantwala Committee (1970) was adopted. The availability of these tables provides a good opportunity to evaluate the new estimates, compare them with earlier estimates, and see how far they approximate the theoretical concepts suggested in the literature.

3. The task of conceptualising unemployment for the operational purpose of measurement and policy-making has two aspects. First, the quantitative concepts involved in the measurement of unemployment rates have to be clarified. Second, the merits of different sets of qualitative characteristics used to identify various kinds of unemployment must be critically examined. For it is these characteristics which the numbers collected in the surveys are supposed to reflect.

4. The clarification of quantitative relationships is attempted first in the next section, because much of the confusion in the unemployment literature is simply due to lack of clarity about these relationships. In particular, we discuss the units in which labor might be measured; the distinction and the relation between stock-rates and flow-rates; and the aggregation of micro-rates into macro-rates and short-period rates into long-period rates.

5. Criteria for defining different kinds of unemployment are discussed in section 3 in the light of recent contributions.

6. The unemployment rates and the correlates of unemployment revealed by recent and earlier survey data for India are interpreted in sections 4 and 5 and exercises to measure surplus labor (Mehra 1966, Rudra 1973, Ahuja 1975) are reviewed in section 6. The relationship of surplus labor estimates and other estimates of unemployment is also clarified.

^{1/} Denoted by N.S.S. in the text.

7. Throughout the paper, since the aim is to clarify the concepts involved in the collection and interpretation of survey data, labor supply and labor demand are treated as scalars observed at a point of time or over the reference period of a survey. But an analytical explanation of cross-section or time-series variations in unemployment and wages clearly requires the specification of a model of the labor market in which labor supply and labor absorption appear not as scalars but as functions of earnings and other variables, and are simultaneously determined. Such a model has been developed elsewhere.^{1/} But in the last section, the main features of the model are outlined. The model establishes the conditions under which different types of labor market disequilibrium (unemployment) and low-wage equilibrium can exist. It identifies the main variables which can produce each type of unemployment, and suggests policies required to increase labor absorption.

^{1/}"A Five-Sector Model of Labor Allocation and Wage Determination in a Developing Economy."

2. QUANTITATIVE CONCEPTS FOR THE MEASUREMENT OF UNEMPLOYMENT RATES

8. In trying to measure the 'unemployment' of a working person (at the micro level) or of a working population (at the macro level) we are fundamentally in search of the difference between labor supply (L^S) and labor demand (L^d). If these magnitudes are known the unemployment rate (u) can be simply defined as the difference divided by the labor supply:

$$u = \frac{U}{L^S} = \frac{L^S - L^d}{L^S} \quad (1)$$

9. The dimensions in which L^S and L^d should be measured require careful consideration. Time is obviously the primary dimension for measuring the flows of labor. The units of time can be either natural hours, days or weeks, or some 'efficiency units' computed as equivalent to the natural time units of different types of labor. An efficiency unit can be defined as the amount of time required to yield either a constant physical output or a constant income to the worker or the economy. In the following argument when we discuss the measurement of labor in time-units, we shall be concerned only with natural time-units. For the productivity of natural labor-time varies widely as between persons, professions, enterprises and industries, and over different time periods, depending not only on the quality of the workers' subjective effort, but also the quantity and quality of the cooperating factors of production, and other circumstances; and therefore any effort to measure all labor flows in efficiency units must be regarded as a hopeless enterprise for the time being. The data required are simply not available and the continuous variations in the productivity of natural labor-time would render any standardization ratios obsolete before they are chosen.

10. But even though time units of labor cannot be standardized, it is essential that we try to measure the flows of undifferentiated labor-time as well as labor-time classified by skills and other characteristics.

11. When flows of labor are measured as flows of labor time it should be remembered that they are not only measured in time-units but they are also flows per unit of time. Thus we may have person-hours offered/demanded per day, or person-days per week, or person-days or person-weeks per year or even per life-time.

12. Alternatively, we may measure labor not as a flow of labor-time per period of time, but a stock of persons at particular points of time.^{1/}

^{1/} The third possibility of measuring unemployed labor in rupees suggested by Dandekar and Rath (1971) will be discussed below.

13. Two unemployment rates can then be defined: a flow-of-time rate FTUR and a stock-of-persons rate SPUR. Using superscripts t (time) and p (persons) to distinguish flow and stock quantities, we have

$$\text{FTUR} = u^t = \frac{L^{st} - L^{dt}}{L^{st}} = \frac{U^t}{L^{st}} \quad , \quad (2)$$

and

$$\text{SPUR} = u^p = \frac{L^{sp} - L^{dp}}{L^{sp}} = \frac{U^p}{L^{sp}} \quad . \quad (3)$$

u^t and u^p are flow and stock ratios and U^t and U^p denote the total amount of unemployed time and the total number of unemployed persons, respectively.

14. A great deal of unnecessary controversy which accompanies the interpretation and comparisons of different unemployment rates can be avoided if the flow rates and stock rates are clearly distinguished.

15. The flow rates of unemployment of individuals can be easily aggregated into a macro flow rate. If u_i is the unemployment rate of person i , and u the macro unemployment rate of a population of n persons, we can compute

$$u = \frac{\sum_{i=1}^n (L_i^{st} - L_i^{dt})}{\sum_{i=1}^n L_i^{st}} \quad (4)$$

$$= \sum_{i=1}^n \sigma_i u_i^t$$

where $\sigma_i = L_i^{st} / L^{st}$. The macro unemployment rate is the weighted sum of micro unemployment rates, the weights being the individual shares in the total labour time supplied.

16. Consider, for example, a society of 6 persons whose labour supply and working time per week are given in the left panel of Table 1.

Table 1: ILLUSTRATIVE MEASUREMENT OF THE FLOW UNEMPLOYMENT RATE

Persons	Days per week			Ratio		Days per week		Ratio
	L st	L ^{dt}	U ^t	u ^t	L _i st /L st	L st	U ^t	u ^t
A	6	5	1	0.17	0.20	7	2	0.29
B	4	2	2	0.50	0.13	2	0	0.00
C	5	5	0	0.00	0.17	6	1	0.17
D	5	0	5	1.00	0.17	6	6	1.00
E	6	1	5	0.86	0.20	7	6	0.86
F	4	4	0	0.00	0.13	7	3	0.43
Total	30	17	13	0.43	1.00	35	18	0.51

The macro unemployment rate (43 percent) is the weighted average of individual unemployment rates weighted by the proportions of labor time supplied by each person.^{1/}

17. Two characteristics of this formulation should be noted. First, the computation of the micro and macro unemployment rates is completely consistent. Since the macro u is an aggregation of micro u 's it fully reflects variations in the labour time offered as well as the work obtained by individuals.

18. Second, 'full employment,' 'full unemployment' and 'underemployment' are measured along the same continuous axis so that

u_i or $u = 0$ denotes full employment,

$u_i = 1$ denotes full or open unemployment,

and $0 < (u_i \text{ or } u) < 1$ denotes underemployment.

All degrees of underemployment can be measured by u_i or u assuming all possible values between 0 and 1. Underemployment can be seen as incomplete employment (unemployment), and full employment/unemployment as the limits of decreasing/increasing underemployment.

$$\frac{1}{.43} = \frac{(.17)(.20) + (.50)(.13) + (.00)(.17) + (1.0)(.17) + (.86)(.20) + (.00)(.13)}{.17 + (.86)(.20) + (.00)(.13)}$$

19. The relationship between the stock-rate and the flow rate is extremely important. The stock-status of a person at a point of time (when the Census/survey takes place) is determined by his/her flow-status over some period of time just preceding the Census/Survey--the so-called reference period. The survey agencies must arbitrarily fix cut-off levels (norms) of labour time supplied and the flow rate of unemployment (L^{st*} and u^{t*}) so that a person whose supply L^{st} exceeds L^{st*} in the reference period would be counted as a member of the labor force L^{sp} and a worker whose u^t exceeds u^{t*} in the reference period would be counted as underemployed/unemployed. The most non-arbitrary procedure would be to include everybody whose labor supply is positive ($L^{st} > 0$) in the labor force, and everybody whose underemployment rate is positive ($u^t > 0$) as unemployed or underemployed. Persons whose $u^t = 1$ and $u^t = 0$ would obviously be counted as fully (openly) unemployed and fully employed.

20. If several levels of u^{t*} are chosen as cut-off points to distinguish different degrees of underemployment each person can be placed in one class of the underemployed. When every person's stock-status is determined, the stock-of-persons underemployment/unemployment rate(s) can be computed.

21. The upper panel of Table 3 illustrates the measurement of stock-rates with the data of Table 1, on the assumption that the survey agency fixes the cut-off limits shown in Table 2. The cut-off limits can be specified either in terms of the ratio of labor demand to labor supply or ranges of the flow rate of unemployment. Both specifications are illustrated in Table 2.

22. Since all members of the labor force are being placed in one of the five categories depending on the fraction of their supply of labor-time for which they obtained work or their time rate of unemployment in the reference period, there will be five stock rates. Let U^{pj} be the number of persons in category j . Then

$$u^{pj} = \frac{U^{pj}}{L^{sp}} \quad (j=1 \dots 5) \quad (5)$$

1/'Labor force' is a convenient term to denote the stock of working and idle persons. 'Labor supply' on the other hand can be used to represent the flow of labor time supplied per unit of time.

Table 2: ASSUMED CUT-OFF LIMITS FOR COUNTING
UNEMPLOYED/UNDEREMPLOYED PERSONS

For inclusion of a person in the labor force.

Positive labor supply in the reference week.
 $(L^{st} > 0)$

For a person being counted as fully employed.

Labor demand equals labor supply in the reference week.
 $(L^d = L^s)$ or $(u^t = 0)$

For a person being counted as marginally underemployed.

Labor demand exceeds 66 percent of labor supply in the reference week.
 $(.66L^s < L^d < L^s)$ or $(0 < u^t < .33)$

For a person being counted as moderately underemployed.

Labor demand lies between 33 and 66 percent of labor supply in the reference week.
 $(.33L^s \leq L^d \leq .66L^s)$ or $(.33 \leq u^t \leq .66)$

For a person being counted as severely underemployed.

Labor demand is less than 33 percent of labor supply in the reference week.
 $(0 < L^d < .33L^s)$ or $(.66 < u^t < 1)$.

For a person being counted as fully unemployed.

Labor demand = 0 in the reference week.
 $(L^d = 0)$ or $(u^t = 1)$.

Table 3: ILLUSTRATIVE MEASUREMENT OF THE STOCK UNEMPLOYMENT/UNDEREMPLOYMENT RATES

Categories	Members of the Labor Force	Fully Employed Persons	Marginally Underemployed Persons	Moderately Underemployed Persons	Severely Underemployed Persons	Fully Unemployed Persons	All Unemployed or Underemployed Persons
Criteria	$L^{st} > 0$	$u^t = 0$	$0 < u^t < .33$	$.33 \leq u^t \leq .66$	$.66 < u^t < 1$	$u^t = 1$	$u^t > 0$
Persons	6	2	1	1	1	1	4

$u^P_1 =$ Stock rate of Full Employment = .33

$u^P_4 =$ Stock Rate of Severe Underemployment = .17

$u^P_2 =$ Stock Rate of Marginal Underemployment = .17

$u^P_5 =$ Stock Rate of Full Unemployment = .17

$u^P_3 =$ Stock Rate of Moderate Underemployment = .17

$$\sum_{j=2}^4 u^{Pj} = .50$$

$$\sum_{j=2}^5 u^{Pj} = .66$$

Criteria	$\bar{L}^{st} > 0$	$\bar{u}^t = 0$	$0 < \bar{u}^t < .33$	$.33 \leq \bar{u}^t \leq .66$	$.66 < \bar{u}^t < 1$	$\bar{u}^t = 1$	$\bar{u}^t > 0$
Persons	6	1	2	1	1	1	5

$\bar{u}^P_1 =$ Stock Rate of Full Employment = .17

$\bar{u}^P_4 =$ Stock Rate of Severe Underemployment = .17

$\bar{u}^P_2 =$ Stock Rate of Marginal Underemployment = .33

$\bar{u}^P_5 =$ Stock Rate of Full Unemployment = .17

$\bar{u}^P_3 =$ Stock Rate of Moderate Underemployment = .17

$$\sum_{j=2}^4 \bar{u}^{Pj} = .66$$

$$\sum_{j=2}^5 \bar{u}^{Pj} = .87$$

1
∞
1

u^{p1} is the proportion of fully employed persons in the labor force. u^{p5} is the proportion of fully (openly) unemployed persons, and u^{p2} , u^{p3} and u^{p4} are proportions of underemployed persons with increasing intensity of underemployment. The five rates are shown in Table 3 for our example.

The sum $\sum_{i=1}^5 u^{pj}$ is, of course, unity. The sum $\sum_{i=2}^4 u^{pj}$ is the proportion of underemployed but not fully unemployed persons with varying degrees of underemployment (50 percent in our example), and the sum $\sum_{i=2}^5 u^{pj}$ is the proportion of all underemployed and fully unemployed persons in the labor force (66 percent in Table 3)

23. It can be seen that L^{st} and L^{dt} measured as time flows can assume any values, but L^{sp} and U^{pj} measured as numbers of persons can only be non-negative integers. For an individual person who is identified as a member of the labor force ($L_i^{sp} = 1$) and placed in one of the underemployment categories the stock rate SPUR can only assume two values : 0 or 1. But the macro rate can be any non-negative ratio ($0 \leq u^p \leq 1$).

24. The number of categories of the underemployed as well as the cut-off levels L^{st*} and u^{t*} are, of course, arbitrary. This arbitrariness is a serious matter. The survey agencies can easily produce a low stock rate of unemployment by making the inclusion of a person in the labor force easy and inclusion in the ranks of the underemployed or unemployed difficult by definition. In section 4, we shall see that the participation and unemployment rates estimated on the basis of Census and survey data in India have been highly sensitive to changes in reference periods and definitions.

25. It will be noticed that the cut-off limits u^{t*} assumed in Table 2 are all related to the voluntary labor supply in the reference period. Thus the magnitude of both the flow rates u^t and stock rates u^{pj} are based on the voluntary labor supply.

26. But a government may well regard the voluntary labor supply of particular sections of the population as deficient or excessive from the social point of view. More working time may be expected from some workers than they are willing to offer under existing socio-economic arrangements. Voluntary female labor supply, in particular, may be considered deficient and the voluntary labor supply of children or artisans as excessive. Therefore normative standards may be fixed for computing the time of different sections of the population which ought to be available for productive work. If the aggregate normative labor supply determined with these standards is much larger than the voluntary supply, both the flow and the stock rates of unemployment estimated with the same cut-off criteria will increase, unless the demand for labor increases *pari passu*. These rates will represent unutilized labor as a proportion of the socially desirable or normative labor supply.

27. The last three columns of Table 1 show the flow rate calculated with a normative labor supply which is higher than the voluntary supply in the case of five persons and lower than the voluntary supply in the case of one person. Since the overall labor supply increases, the macro unemployment rate also increases from 43 to 51 percent with an unchanged demand for labor.

28. Correspondingly, with unchanged cut-off criteria, the stock rates based on the normative flow rates also go up. (See the bottom panel of Table 3). Instead of four persons, five out of six persons in the labor force are now unemployed or underemployed.^{1/}

29. The calculation of voluntary rates requires a statement by every person of the time for which he/she desired work and obtained work over a reference (recall) period and this period has, therefore, to be small--a week, or a fortnight or a month at most. If the recall period is small, say a week 'the representativeness' of the short-period (weekly) flow rate of unemployment for a longer period, say a year, becomes questionable when the weekly rate has a high variance. In self-employment and irregular informal employment sectors this is certainly the case because both labor supply and labor demand are highly unstable. And therefore a reliable average weekly unemployment rate can only be obtained for different parts of the year if the same persons are questioned in many weeks of the year--each week being representative of at least a few adjoining weeks.

30. Seasonal variations in the weekly rate can be known in this way. But aggregation of the weekly rate over a longer period, say a year, will still be necessary. The weekly rate for the year will be the weighted sum of macro weekly rates, the weights being the total labor time supplied in each week as a proportion of the labor time supplied in all weeks of the year. Thus:

$$u_a^t = \frac{\sum_{w=1}^{52} r_w u_w^t}{52} \quad (6)$$

where u_a^t is the annual average weekly flow rate of unemployment, u_w^t is the rate for each week, and r_w the ratio of the labor supply in week w to the labor supply in the whole year.

31. The aggregation of weekly individual rates over persons gives the weekly macro rate; and the aggregation of the weekly macro rates over weeks gives the annual macro rate. The variance of the annual macro rate will therefore be made up of the inter-personal variance in each week and the intertemporal variance across weeks.

32. The argument so far has demonstrated the importance of four distinctions for the definition and understanding of different rates of unemployment. These are the distinctions between: (i) flow and stock rates, (ii) micro and macro rates, (iii) rates based on voluntary and normative labor supply, and (iv) short-period and long-period average flow

rates. Thus for any short period (week) in which there are n persons in the labor force we shall have $2n + 2$ flow rates and $2n + 2$ end-of-the week stock rates (see Table 4). All the flow rates can be aggregated over any number of weeks to get longer-period average flow rates. The stock rates, being rates at given points of time, need no aggregation over time but they can be computed at different points of time, using the flow data for preceding reference periods.

Table 4: SUMMARY OF ALL ILLUSTRATIVE FLOW AND STOCK RATES COMPUTED IN TABLES 1 AND 3

Labor Supply	Unemployment Rates	Persons						Macro
		A	B	C	D	E	F	
<u>Days</u>	<u>Flow Rate</u>	(Ratios)						
30	Voluntary	.17	.50	.00	1.00	.86	.00	.43
35	Normative	.29	.00	.17	1.00	.86	.43	.51
<u>Persons</u>	<u>Stock Rate</u> ^{a/}							
6	Voluntary	.17	.17	.00	.17	.17	.00	.66
6	Normative	.17	.00	.17	.17	.17	.17	.87

^{a/} The binary identification of every person as being in (1) or not (0) in the stock of the unemployed/underemployed (u^t or $\bar{u}^t > 0$) is divided by the labor force (6) to get the individual stock rates which add up to the macro stock rate.

3. CRITERIA FOR DEFINING THE STATE OF UNEMPLOYMENT

33. Four basic alternative criteria for the definition of the status of unemployment were listed in an earlier paper (Krishna, 1973) viz. (1) working time less than some normal standard (the time criterion); (2) income or consumption less than some normal standard (the income criterion); (3) willingness to do more work (the willingness criterion); and (4) productivity less than some normal standard (the productivity criterion).

34. We can now see how these criteria determine the computation of the various rates distinguished above.

35. For the measurement of the voluntary flow rate, an arbitrary time-norm is not required; the norm with reference to which the unemployment of a person is measured is defined by the person himself/herself in terms of labor time offered. 'Willingness' enters the voluntary flow rate in the definition of labor supply as labor time willingly offered and income is inherent in the definition of labor time as time devoted to income-yielding work. Thus voluntary labor supply, as defined, is indecomposably three-dimensional: it is measured in time units; it is willingly supplied labor time and it is time offered for income-yielding work. Labor demand is similarly two dimensional: it is measured in units of labor time which yield income.

36. For the measurement of the normative flow rate, labor time demanded is objectively given but the labor supply is determined by a normative standard.

37. Thus the time and willingness criteria together give us the voluntary flow rate; and the time criterion alone gives us the normative flow rate. Income and productivity criteria enter these rates only insofar as labor time is defined as time which yields some positive income/productivity regardless of its magnitude.

38. In the determination of stock rates, the criteria are used in a different way. As illustrated in Tables 2 and 3, the computation of stock rates from flow data requires two-time norms, a minimum L^{st*} to admit a person to the labor force and ranges of u^{t*} to admit a person to one of the sets of the unemployed/underemployed. If these norms are not fixed arbitrarily and every person whose labor supply is positive in the reference period is included in the labor force, and every person whose voluntary flow rate u^t is positive is counted as unemployed/underemployed, regardless of the intensity of underemployment, we can have a set of the unemployed defined by willingness alone. This set ($L^{st} > 0, u^t > 0$) included four persons in Table 3.

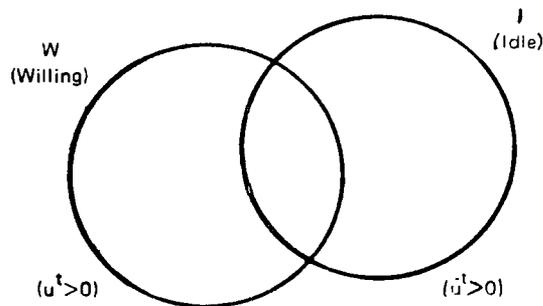
39. The idle set, by contrast, can be defined as the set of all persons who are unemployed/underemployed with reference to the normative labor supply ($\bar{L}^{st} > 0, \bar{u}^t > 0$). This set included five persons in Table 3.

40. Subsets of the willing and 'idle' sets with different intensities of underemployment can of course be defined with arbitrary ranges of u^{t*} and \bar{u}^{t*} .

41. In short, the voluntary flow data are sufficient to define the 'willing' set. But arbitrary labor supply norms are necessary to define the 'idle' set.

42. The two sets are shown in Figure 1. If aggregate \bar{L}^{st} is greater than L^{st} , the idle set will be larger than the willing set. But the two sets need not overlap entirely. There will be some persons who are not willing to work more but are counted as underutilized on the basis of the normative labour supply criterion; and

FIGURE 1
'WILLING' & 'IDLE' SETS



there will be some persons who may be willing to work more even though they are fully employed according to the time criterion. In Table 1, for instance, persons C and F do not belong to the willing set because they are fully employed on the basis of their voluntary labor supply; but they are counted as idle because they are underemployed according to the normative labor supply standard. Person B would not be counted as 'idle' because his normative supply is two days and he gets work for two days, but he would belong to the 'willing' set because his voluntary supply is four days. The 'willing' set ($u^t > 0$) includes persons A, B, D and E; the 'idle' set ($\bar{u}^t > 0$) includes persons A, C, D, E and F. Both sets include A, D and E; but they are not identical sets.

43. We must now consider a third distinct set, the set of the 'poor' which only partly overlaps the sets of the idle and the willing. The Dandekar-Rath (1971) attempt to measure unemployment in rupees and thus to make the three sets coincide is interesting; but we do need separate estimates of the number of persons suffering from a deficiency of consumption and the number of persons suffering from a deficiency of income-yielding work.

The two estimates answer two different, though equally important, questions and they belong to different dimensions altogether. All poor persons suffering from a deficiency of consumption may not be unemployed either in the 'willing' sense or the 'idle' sense: there are the 'working poor.' And all unemployed persons, willing or idle, may not be poor.

44. These propositions are consistent with recent survey data. In the most recent NSS (27th Round, 1972-73) reports, the proportion of rural households with a monthly per capita expenditure less than Rs. 34 in current prices was 43.5 percent. On the other hand, the person-day unemployment rate^{1/} was 6.8 percent.^{2/}

45. These poverty and unemployment ratios are not directly comparable, for the poverty ratio is the ratio of poor households to all households; and the unemployment ratio is the ratio of unemployed person-days to total person-days in the labor supply. But the former can be interpreted to represent roughly the minimum proportion of poor persons to all persons. And the latter can be multiplied by the participation rate to get the approximate ratio of unemployed person-days to all person-days.

46. Thus the poor persons/total persons ratio would still be 43.5 percent; but the unemployed person-days/total person-days ratio would decline to about 3.43 percent with a participation rate of 50.38 percent.

47. Given such a wide difference between the poverty and unemployment ratios it would be irrational to assume that they are identical. In fact, the levels of the two ratios indicate an important inference. On the assumption that all the unemployed are poor, the proportion of those who are poor but not unemployed (i.e., poor but unable or unwilling to offer more labor time) is more than thirteen times the proportion of those whose poverty is associated with unemployment. (Figure 2(a)). Even on the assumption that a majority but not all of the unemployed are poor, a large majority of the poor would not be unemployed. (Figure 2(b)). This inference would be even stronger if we use not the high person-day unemployment rate but the lower person-week or person-year unemployment rate.^{3/} The policy conclusion implicit here is that the improvement of the income or productivity of work is a more massive and imperative task than an expansion of the opportunities for work.

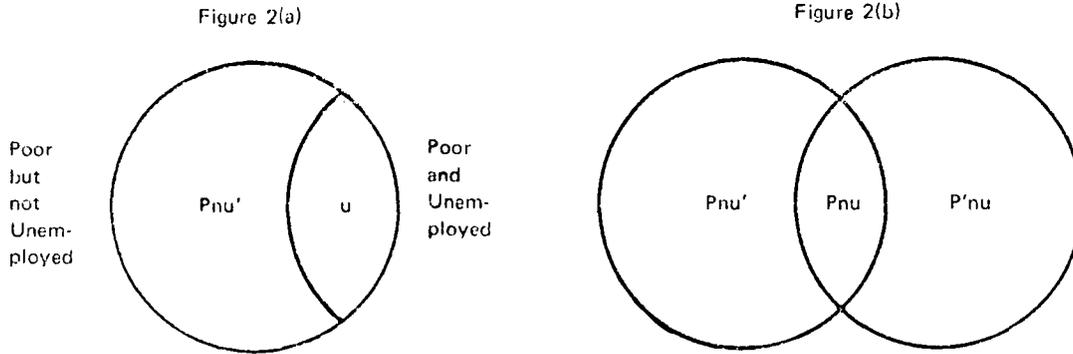
48. We can conclude that on logical as well as empirical grounds the sets of the willing, the idle and the poor should be kept apart. But it may be of some interest to see how an arithmetic relation between measured poverty and measured unemployment can be established. Or

^{1/} For the distinction between the person-day, person-week and person-year unemployment rates see section 4 below.

^{2/} N.S.S. (1975) Report No. 255A.

^{3/} See Section 4 below.

FIGURE 2
THE POOR AND THE UNEMPLOYED



If

- w = the earnings per worker per day,
- y = per capita annual family income,
- \bar{y} = cut-off per capita family income for the definition of poverty,
- d = days of employment per worker per year,
- \bar{d} = days of employment per worker per year for a 'fully employed' worker,
- n = number of workers in the family,
- f = number of family members,

then poverty

$$p = \bar{y} - y \quad (7)$$

and unemployment

$$u = \bar{d} - d. \quad (8)$$

Since per capita income

$$y = \frac{w d n}{f} = \frac{w n (\bar{d} - u)}{f} \quad (9)$$

$$p = \bar{y} - h w \bar{d} + h w u \quad (10)$$

where h is the family worker/family size ratio n/f. This relation can translate, for any household, measured poverty into measured unemployment

and vice versa.^{1/} It can also be used to study the cross-section relation between poverty and unemployment across households, and form the basis for the formulation of the relationship between macro measurements of the two phenomena. Poverty is of course positively related to unemployment but the cut-off points used for their definition, the productivity of work (w) and the dependency ratio qualify the relationship.

49. In the above discussion the use of the income criterion simply involves the choice of some income level with reference to which the poor can be identified, but Sen's discussion (1975) of the income 'aspect' of employment is not concerned with this choice. As he says, it is concerned

'with that part of one's income which is received on condition that one works.' (Sen 1975, p. 8)

'The income approach should, strictly speaking, count as employed only those who would not receive their share of the family income if they stopped working.' (Sen 1975, p. 121).

Sen acknowledges that the empirical use of this condition is difficult.^{2/} We are not likely to get from a household separately the number of persons who are sharing the family income because they are working and persons sharing it without work. However, Sen's emphasis on work conditionality is very germane to the definition of working-time required for the application of the time criterion.^{3/} Survey authorities must distinguish between working time which yields income and the time for which persons are not available for gainful, i.e., income-yielding activity. And indeed the persons interviewed themselves divide their time during the reference week between 'work' and 'non-work.' Therefore, though the decomposition of the number of family members or of family income on the basis of work conditionality may not be possible, the decomposition of family time into working (income-yielding) time and non-working time is indispensable. It may be that current notions of the working people as well as the survey agencies about what activities in the total activity-mix of a rural household should be regarded as income-yielding are wrong. The status of many activities sometimes classified as 'domestic,' e.g., the care of livestock, grain

^{1/} We are assuming that there is no non-labor income. If workers with different skills and earnings are distinguished

$$y = \frac{1}{f_i} \sum w_i n_i (\bar{d} - u_i)$$

for i categories of workers.

^{2/} Op. cit., p. 121.

^{3/} Sen does not discuss the time criterion directly.

processing, milk processing, marketing and the handling and transport of farm inputs clearly needs to be revised, 1/

50. In any case, Sen's approach to the income aspect of employment is best regarded as a refinement of the definition of working-time.

51. The 'recognition' aspect of employment has also been emphasized by Sen. Even if one is 'employed' in the sense of earning an income, one may well recognize oneself as 'unemployed,' and presumably survey agencies should also do so, if the 'employment' does not come up to one's expectations in terms of 'self-esteem' or 'social esteem' or the full use of one's training, fulfillment, independence, location, etc. (Sen 1975, pp. 5-6, 120-21). In other words, the absence of work satisfaction should qualify a person to be unemployed. Only some of those who are 'unemployed' in this sense may 'seek' work; others may not do so because they regard the probability of obtaining the kind of work they want to be very low.

52. In considering the use of the recognition criterion for actually measuring unemployment we can perhaps agree that the suffering of a person who has no work at all or insufficient work is of a different kind from the suffering of a person who has a fair amount of work but is dissatisfied with it.2/ Then we can distinguish between unemployment and 'misemployment' and introduce another distinct set of the misemployed.

53. Including this set we have four basic sets of the 'idle,' the 'willing,' the 'poor' and the 'misemployed' persons. It is interesting to see that the various categories of the unemployed proposed by different authors and agencies are all definable as combinations of these basic sets and subsets.

54. In 1966 the Conference of Labour Statisticians held at the International Labour Office proposed that, besides open unemployment, three types of underemployment be distinguished: (1) visible underemployment, (2) invisible underemployment or disguised underemployment, and (3) potential underemployment. These categories are widely used.

55. In Figure 3 we can see that visible underemployment, which includes persons working part-time but willing to work more, can be counted as the intersection of the idle and willing sets (I∩W), i. e., the sum of sectors 7,8,9 and 16.

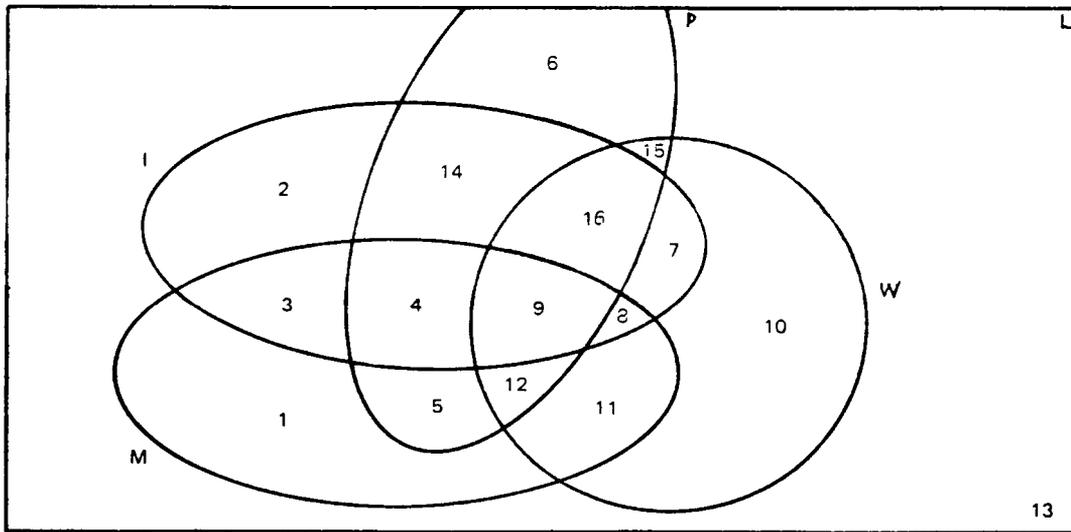
1/ P. K. Bardhan strongly emphasized the importance of this reclassification in a discussion with the author.

2/ The psychologist may disagree for it may be hard to distinguish between the subjective distress of the unemployed poor and the dissatisfied non-poor.

56. Invisible underemployment includes persons who are not under-employed in a time sense but have very low earnings or unsuitable occupations. These would be counted as the set $I \cap \eta(PUM)$. This is the sum of sectors 1, 5, 6, 11, 12 and 15 in Figure 3.

57. 'Potential underemployment' is defined as employment in an establishment with abnormally low productivity. But the identification of low-productivity workers or establishments except insofar as low individual incomes are regarded as proxies for low productivity raises difficult issues which are discussed separately in Section 6.

FIGURE 3
SETS & SUBSETS OF THE IDLE, THE WILLING,
THE POOR & THE MISEMLOYED



I = Idle
W = Willing
P = Poor
M = Misemployed
L = Labour Force

58. In a more recent paper (ILO 1974) the International Labor Office has proposed a revised scheme for the classification of the labor force on the basis of the recommendations of a team of consultants including J. Harewood, P. Hauser, K.N. Raj, H. Smith and E. Thorbecke. Under this scheme the subsets of the labor force include: subset No. 2 "the adequately employed"; subset No. 3 "those who are inadequately employed according to an objective test" which may be either (3a) "the number of hours worked" or (3b) "incomes yielded by employment"; and subset No. 4 "those who... are seeking work or more work."

59. In our terminology subset No. 4 is clearly "the willing set." Subset No. 3(a) is "the idle set" and 3(b) "the poor set." In the diagram given in the ILO paper (1974) it is clearly implied that the subsets (3a), (3b) and (4) of "the idle," "the poor" and "the willing" will intersect only partly, as they do in our Figure 3.

60. Phillip Hauser (1973) has proposed his own classification of the inadequately utilized labor force in developing countries. Considerable work has already been done to classify workers according to his categories on the basis of data from Singapore for 1966, Philippines and Western Malaysia for 1968 and Hongkong for 1971.

61. The scheme is that persons in the labor force, usually all persons of age 10 years or more, are classified into 2 groups: (1) those "utilized adequately" and (2) those 'utilized inadequately.' Workers classified as 'utilized inadequately' are further classified into 4 categories: (a) utilized inadequately in the sense of being openly unemployed, (b) utilized inadequately by hours of work available, (c) utilized inadequately in the sense that they earn insufficient income and (d) utilized inadequately in the sense that their work does not fully utilize their training.

62. The underutilized who are openly unemployed are counted first. Among the remaining workers, the underemployed in a time sense are counted next. Among those who are neither openly unemployed nor idle, those who are underutilized by the income criterion are counted next; among the rest, the misemployed are then counted, and the residual labor force is classified as 'adequately utilized.'

63. Under this scheme of classification the five resulting sets are mutually exclusive. We can read them in Figure 3 as follows:

<u>No.</u>	<u>Category</u>	<u>Sectors</u>
2(a)	Openly unemployed, i.e., willing	$7+8+9+10+11+12+15+16 = W$
2(b)	Underemployed by time	$2+3+4+14 = I \cap W'$
2(c)	Underemployed by income	$5+6 = P \cap (IUW)'$
2(d)	Misemployed	$1 = M \cap (IUPUW)'$
1	Adequately employed	$13 = (IUMUPUW)'$

We have identified the 'openly unemployed' with the entire willing set, though Hauser would define them only as a subset of the 'willing' who are wholly unemployed.

64. The cut-off points for counting the underutilized by hours of work were 35 hours per week for Singapore and 40 hours per week for other countries. The cut-off points for counting the underemployed by income were: \$150 per month for Singapore, 1600 pesos for the Philippines, \$100 for Malaysia and the first decile of the income distribution for Hongkong.

65. The Hauser classification showed 5 to 10 percent of the labor force as openly unemployed, 22 to 36 percent as poor, 3 to 7 percent as idle and 1 to 20 percent as misemployed. The poverty ratio is everywhere much higher than the ratio of the unemployed or the misemployed. We shall see below in section 4 that some of these ranges are comparable to the corresponding ranges revealed by recent survey data for India.

66. The Latin American Organization PREALC has been using still another scheme of classification. The openly unemployed are, again, counted first. As before, we can identify them with the 'willing' set. Out of those who are underemployed in a time sense, persons working 50 percent or less of the normal working time during the year are classified as 'occasional' workers. These would be a subset of the idle set, the cut-off point being 50 percent of normal working time. Those classified as 'underutilized' in the time sense are further classified into income categories. The income classes are defined in terms of the percentage of the peak weekly income during the year. These would be the subsets of the set $I \cap P$, P being broken up into subsets P_1, P_2 , etc.

67. In still another scheme proposed by Sinha (1974) two sets are simply sets of the poor and the idle. But he also defined a mixed-up set of workers 'whose marginal productivity is virtually zero or whose skill remains wholly unutilized.' The latter of these would be the set of the misemployed. But the identification and the enumeration of persons, 'whose marginal productivity is virtually zero' cannot be accomplished by a survey agency. It is not easy to measure marginal productivity and to classify workers according to its magnitude without making the heroic assumption that income approximates marginal productivity. (See Section 6).

68. This brief review of some of the schemes proposed for the classification of the unemployed reassures us that the suggested categories are all combinations of the 4 basic sets defined by the time, income, willingness and misemployment criteria and their subsets as depicted in Figure 3.

69. More categories can, of course, be defined by combining the basic sets and subsets in other ways; but for policy purposes, only some of these categories are significant. The two most important groups from the policy point of view seem to be (1) those who are 'willing' to work more and therefore need to be provided work opportunities and (2) those who are

fully occupied with reference to labor-time voluntarily supplied but remain 'poor' and therefore need additional inputs and/or improved technology or trade unionism to be able to earn more per unit of labor time. The 'idle' set defined with reference to a normative labor supply is not operationally very important in a situation where even the elimination of the underemployment of the 'willing' is a massive problem. Nor can the problem of misemployment be given as high a priority as the problem of absolute underemployment and low-income employment.

4. UNEMPLOYMENT IN 27th AND 25th ROUNDS OF N S S
AND EARLIER ESTIMATES

70. The framework set out in Section 3 enables us to appraise the various rural unemployment rates calculated from data collected in N.S.S. Rounds and the Censuses of 1961 and 1971. We begin with the most recent 27th Round data and then examine earlier estimates. Only a few preliminary tables 1/ of this Round (1972-73) have been released so far. Other tables are yet to appear; and the design of the tables released is frustrating in some respects. Only an analysis of original schedules can answer the many interesting questions which can be raised. But some significant results can be derived from the available material.

71. The most interesting feature of the 27th Round tables (Nos. 1, 2 and 5) is that we can estimate from them three different unemployment rates 2/: the weekly person-day rate (PDUR), the end-of-the-week stock rate (WSR) and the end-of-the-year stock rate (YSR). These rates are computed and shown in Table 5.

72. The person-day unemployment rate corresponds clearly to the flow rate. It is the ratio of unemployed days per week (seeking or available for work) to the total labor supply per week (working plus seeking plus available days). The days are counted as "full-intensity" days plus one-half of "half-intensity" days of the reference week spent in any activity/nonactivity.

73. The range of this rate across States is 0.8 percent (in H.P.) to 25.1 percent (in Goa), the all-India mean being 6.83 percent.

74. By contrast, the WSR is a stock-of-persons rate. A person's stock-status for the week, called the "current status", is determined as follows. Every person who worked for gain for at least one hour on at least one day during the week was given the 'working' status (Schedule 10, Block 4, Column 13). Others were classified as 'seeking' or 'available' or 'not available' for work.

75. The N S S report explains that

1/ I am grateful to S.C. Chaudhuri for clarifying a number of issues pertaining to these tables in personal communications. The following comments draw heavily on these communications.

2/ All unemployment rates in this Section are computed as ratios of the relevant labor force or labor supply. Where the original data do not provide them in this form they have been recomputed with the labor force or labor supply as the base.

Table 5: UNEMPLOYMENT RATES BY DAILY, WEEKLY AND ANNUAL STATUS RURAL INDIA (1972-73)

States*/Territories	Person-day Rate	Rank	End-of-the Week Stock Rate	Rank	End-of-the Year Stock Ratio	Rank
	(Percent)		(Percent)		(Percent)	
Andhra Pradesh	9.61	6	3.9	5	0.45	18
Assam	0.86	19	10.0	3	1.30	6
Bihar	10.17	5	3.6	6	1.91	5
Delhi	3.54	14	1.5	15	0.46	17
Goa	25.12	1	18.4	1	3.12	3
Gujrat	6.08	11	2.2	13	0.68	10
Haryana	2.52	18	1.5	16	1.09	8
Himachal Pradesh	0.78	20	0.8	19	0.49	16
Kerala	24.26	2	12.8	2	5.62	1
Karnatak	9.04	9	3.4	9	0.65	12
Madhya Pradesh	2.98	16	1.2	18	0.08	19
Maharashtra	8.64	10	2.8	12	0.51	15
Meghalaya	2.58	17	0.0	20	0.03	20
Orissa	9.32	8	3.4	10	1.10	7
Pondicherry	19.19	3	2.2	14	4.31	2
Punjab	3.67	13	1.3	17	0.68	11
Rajasthan	4.41	12	3.5	8	0.62	13
Tamil Nadu	10.63	4	3.6	7	0.99	9
Uttar Pradesh	3.11	15	4.1	4	0.54	14
West Bengal	9.55	7	3.2	11	2.27	4
All India	6.83	-	3.4	-	1.01	-

* Not including Jammu & Kashmir, Manipur, Tripura and Nagaland.

Source of Basic Data: N S S Report No. 255/1 to 255/4. (Sub-rounds 1 & 2 combined).

Tables No. 1, 2, 5, on weekly, daily and usual status.

"for assigning the appropriate Current Status Code to a particular person who was having concurrently two different statuses during the reference week, the status which occupied relatively more labor-time than the other will be his Current Status..."1/

Thus while in the person-day calculations a change of status is possible from half-day to half-day, the person-week calculations require a "freezing" of a person's status over the week in one and only one of the current activity/non-activity categories. It is also laid down that

"between 'working status' and 'seeking and/or available status' working status gets priority." 2/

Given these stipulations we should evidently get a lower person-week unemployment rate. Anybody who worked even for an hour in the week or was available for work would be in the labor force. Only those persons would be counted as unemployed ('seeking work' or 'available' for work) who did not work for a single hour in the week and were in the 'seeking' or 'available' position for a major part of the week. Thus the numerator of the WSR would be lower and the denominator higher than a constant fraction of the numerator and denominator of the PDUR respectively.

76. Accordingly we get the result that the all-India mean WSR is only 3.4 percent while the mean PDUR is 6.8 percent.

77. A similar reasoning explains why the mean 'usual status' unemployment rate (YSR) is even lower (1.01 percent). This rate is also a stock-of-persons unemployment rate. At the time of the survey, a person is given a single status based on his 'usual' status during the preceding year. Only a comparatively small number of persons are counted as 'usually' unemployed (seeking/available); and all except those 'usually' out of the labor force are counted as members of the force. Therefore the YSR is less than one-third of the WSR and about one-seventh of the PDUR.

78. It should be noted that whereas the calculation of the flow of person-days in the reference week as sums of half-day units gives us a meaningful time flow rate, the use of the term person-weeks (and the term person-years which might have been used) is misleading. For, in fact, time is no longer measured in person-week and person-year calculations; only persons are being given one and only one of four labels ('working', 'seeking', 'available' or 'not in the labor force') and counted. In the labelling process, the person's recollection of his/her status during the major part of the preceding week or year is used. The recollection for

1/ N S S Report No. 255.1, Paragraph 1.10 (c).

2/ N S S letter dated 17 September 1975.

the year must be vague if the status was unstable. The recollection for the week would be better. But depending on the recollection, a single status is assigned to every person for the whole week or the whole year even if the status was changing during the period. Therefore, person-weeks and person-years are not units of time, though they seem to be, but simply persons classified into four categories. One can guess that the reason for using the term person-week (or person-year) must be the notion inculcated by the Dantwala Committee (1970) that a count of persons should not be called persons unless the persons remain the same for a long period. Unfortunately the English language does not supply two words for describing a count of unchanging persons and a count of changing persons; both sets have to be described simply as numbers of persons. The description of numbers of persons, classified into categories, as persons-weeks or person-years gives the wrong impression that time is being measured.

79. It is also curious that time flows in half-days recorded for the reference week in Block 5 of Schedule 10 were not used for determining the weekly status with specified cut-off limits. The weekly status was determined by yes/no categorization codes applied to information in Block 4 1/ without making any use of the daily time flow data in Block 5. Thus the logical link that could exist between the flow data and the stock rate for the end of the week was not established.

80. Nevertheless, the fact remains that, without being aware of the distinction, the NSS has made it possible for the first time to compute and compare one reliable flow-rate and two crude stock rates from the same sample data. The results show that the smaller the time-unit in which flows are measured (half-days in the 27th Round) and across which status-changes can be recorded, and the smaller the recall period, the more reliable are the estimated flow rates. They also confirm the fact that the stock rates are strongly influenced by the length of the reference period and arbitrary classification criteria. The 27th Round criteria tended to lower the stock-rates, and kept the end-of-the-week stock-rate unrelated to the weekly flow rate.

81. The calculated flow rate (PDUR) appears to be very reasonable, but the weekend stock rate can only be regarded as a rough measure of the proportion of workers remaining unemployed for a whole week, and the usual status rate as a rough estimate of the 'chronic' unemployment rate. Chronic unemployment is clearly not a significant problem in comparison with the enormous problem of the discontinuous underemployment of a section of the labor force whose composition changes from day to day. This finding has the important policy implication that the unemployed have to be offered either regular wholetime employment or utterly irregular work which they can take up as and when they need it to fill the gaps in the time profile of their presently available work opportunities. Any requirement which

1/ The usual status was determined on the basis of information in Block 7.

commits a worker to work on a project temporarily but continuously for a minimum period will not be acceptable to him/her if the expected gain from this commitment is less than the expected loss due to the disruption of other work.

82. The 25th Round (1970-71) covered only the lowest decile of cultivator households, estimated to be 3.7 million, and non-cultivating wage-earner households mainly dependent on agricultural labor, estimated to be 8.9 million. An overwhelming majority (88 percent) of the bottom decile of cultivator households had holdings less than 2.5 acres.

83. The annual average person-day unemployment rates of these households are computed and summarized in Table 6. These PDUR are comparable to the PDUR calculated from the 27th Round data because the concepts used are almost the same. In both Rounds, for every day of the reference week a person was classified as 'economically active' or 'economically inactive' or 'seeking or available for work'. The person was assigned either a single full-intensity status or two half-intensity statuses on any day.

84. This is why the overall PDUR for small farmers (6.4 percent) and for landless workers (7.55 percent) in the 25th Round are very close to the PDUR for all rural households in the 27th Round (6.83 percent). (Tables 5 and 6).

85. Just as the PDUR of the 27th and 25th Rounds are comparable, the end-of-the-week stock rates of the 27th Round are also broadly comparable with rates computed from data for the earlier (14th to 21st) Rounds. The latter are clearly stock rates for in these Rounds in the 60's, it will be recalled, a person was assigned a single status for the reference period (which was kept constant at one week). The availability of work for even a small amount of time on at least one day in the week defined a person as 'employed'. If no work at all was done by a person during the week but he/she was seeking or available for work on at least one day he/she was classified as unemployed.

86. The terminology defining the 'employed' and the 'unemployed' varied slightly in the reports relating to different Rounds. Thus the criterion for the 'employed' was sometimes work for at least an hour and sometimes work for a 'nominal' amount of time on at least one day; and the period for the 'seeking' and 'availability' tests was sometimes left unspecified and sometimes specified as one day. (See N.S.S. reports Nos. 100, 156, 114, 190 and 173). But the core of the definitions remained the same. The current status criteria in the 27th Round are also the same. Therefore, it is not surprising that the weekend rate in the 27th Round (3.4 percent) is in the range of rates computed from 16th, 19th and 21st Round data (2.7 to 3.9 percent) (Table 7). Panel 1 in Table 5 shows that the rate declined from 5.6 to 2.7 percent in successive Rounds between 1958-59 and 1966-67. 1961-62 was the only year in which it increased; but this was due to the fact that the period of survey in that year was 10 months, excluding July and August, instead of 12.

Table 6: UNEMPLOYMENT RATES OF SMALL FARMERS AND LANDLESS WORKERS, 25th ROUND (1970-71)

Class	July-Sept.	Oct.-Dec.	Jan.-Mar.	Apr.-June	July-June
<u>Small Farmers</u>			(Percent)		(Percent)
Males	5.26	4.61	5.71	5.92	5.38
Females	6.49	8.04	9.37	9.99	8.47
Persons	5.69	5.82	6.92	7.17	6.40
<u>Landless Workers</u>					
Males	5.69	4.50	6.79	7.54	6.13
Females	7.98	9.53	9.40	13.78	10.17
Persons	6.53	6.34	7.69	9.64	7.55

Source: N.S.S. Reports Nos. 230/1, 242, 245, 246.

87. The remaining all-India rural unemployment rates in postwar statistics are the 1961 and 1971 Census rates (0.35 percent and 0.91 percent). (Table 8). The latter is roughly comparable to the 27th Round usual status rate (1.01 percent). The reason again is that the Census rate and the 27th Round YSR are both year-end stock rates. A person is given a single one-year status (the so-called 'usual status'). The rate therefore refers to those 'usually' unemployed in the preceding year among those who were 'usually' in the labor force.

88. The 1961 and 1971 Census rates are not strictly comparable because they are derived from different kinds of questions and classifications. But since they are both 'usual status' rates they have a comparable order of magnitude.

89. It is, of course, a pity that nothing can be said with any assurance about trends in any of the rural unemployment rates inspite of the collection of data on these rates in two Censuses and eight N.S.S. Rounds.

90. The distinguished statisticians and demographers who have been 'improving' employment concepts used in successive surveys in India have seen to it that no economist should be able to compare, with strictly logical justification, the numbers generated after every 'improvement' with previously collected numbers. Nor can anyone carry out any time-series analysis of rural employment/unemployment. But a clear distinction between

Table 7: WEEKLY STATUS RURAL UNEMPLOYMENT AND UNDEREMPLOYMENT RATES,
NSS ROUNDS 14th to 19th

NSS Rounds	Survey Years	Unemployed Persons/Labour Force			Unemployed and Severely Underemployed Persons/ Labor Force ^{1/}			Unemployed, Severely Underemployed ^{1/} and Moderately Underemployed Persons ^{2/} / Labor Force		
		Males	Females	Persons	Males	Females	Persons	Males	Females	Persons
		(Percent)			(Percent)			(Percent)		
14th	1958-59	3.64	9.83	5.59	8.84	17.89	11.67	13.28	22.30	16.10
15th	1959-60	3.15	8.35	4.63	8.45	16.70	10.73	12.56	20.33	14.68
16th	1960-61	2.59	6.49	3.87	6.31	12.64	8.38	9.69	16.06	11.77
17th	1961-62	3.74	8.53	5.12	7.54	13.89	9.40	11.13	17.16	12.97
19th ^{3/}	1964-65	2.61	6.13	3.76	-	-	6.52	-	-	9.24
21st ^{3/}	1966-67	1.82	4.35	2.66	-	-	-	-	-	-

^{1/} Severely underemployed persons are defined to be persons with less than 28 hours of work in the reference week and available for more work.

^{2/} Moderately underemployed persons are defined to be persons with between 28 and 42 hours of work in the reference week and available for more work.

^{3/} Integrated Schedule 16.

The unemployment/labor force ratio has been calculated by dividing the unemployment/population ratio by the labor force/population ratio.

The severe (moderate) underemployment/labor force ratio has been calculated as (severe (moderate) under-employment/employment) x (employment/population) x (labor force/population).

Rural employment data were not collected in the 18th, 20th, 22nd, 23rd and 24th Rounds.

SOURCE: "Note on Labor Force Surveys in NSS", (Mimeo.), Tables 1, 2 and 11.

the flow rate and the stock rates enables us to see that some rates computed from data collected by different agencies in different years are broadly comparable. These comparable rates are listed below:

Comparable Rates

1961 and 1971 Census rates with the 27th Round Usual Status Rate.

1958-59
1959-60
1960-61
1961-62
1964-65
1966-67

NSS Rates with one another and with the 27th Round End-of-the-Week Rate.

25th Round NSS Person Day Rate with the 27th Round Person Day Rate.

Table 8: USUAL STATUS UNEMPLOYMENT RATES, RURAL INDIA, CENSUS 1961 AND 1971

Source	Year	Males	Females (Percent)	Persons
Census <u>a/</u>	1961	0.48	0.10	0.35
Census <u>b/</u>	1971	1.13	0.49	0.91
Census <u>c/</u>	1971	1.33	0.57	1.07

a/ Fact Book on Manpower, Part I, 1968, pp. 102, 289.

b/ "Other non-workers" in Census of India 1971 interpreted by the Census authorities as unemployed. Rates have been calculated with reference to an estimated labor force. The labor force is the population of 1971 multiplied by the participation rates of the Census of 1961. The participation rates have been kept constant because there was no significant trend in the NSS participation rates in the 60's. The 1971 Census participation rates are incredibly low even after the 'Resurvey'.

c/ After 'Resurvey'.

91. Without being able to say how much of the difference between broadly comparable rates is due to the definitional difference and how much to a real trend one can only hazard the following statements:

- (i) The person-day flow rate is in the range 6-8 percent in the early seventies.
- (ii) The end-of-the-week (current status) stock rate is in the range 3-4 percent. It was probably declining in the early sixties from about 5.6 to 2.7 percent and has been rising again to about 3.4 percent in the early seventies.
- (iii) The usual status stock-rate is in the range of 0.5-1.0 percent and has slightly increased in the sixties.

92. Data collected in some Rounds of the NSS about hours of working time in the reference week can be used to compute the stock rate of persons unemployed plus persons severely/moderately underemployed and available for more work. These more inclusive and higher rate series are given in the last two panels of Table 7. The unemployment plus severe underemployment rate ranging between 6.5 and 11.7 percent tends to approximate the person-day rate because it is allowed to reflect the changing intensity of employment during the week, although it still remains a stock rate. The rate including the moderately underemployed available for more work is even higher (9-16 percent). (Table 7). Both these more inclusive rates were also declining in the sixties.

93. The discussion so far has been concentrated on unemployment/labor force ratios. But it is also necessary to establish some orders of magnitude of the absolute total number of unemployed/underemployed persons/person-days in rural India. The difficulties of this task arise from the fact that direct estimates of the labor force, to which the unemployment rates may be applied, are available only from the Censuses of 1961 and 1971 which used radically different definitions of workers. Intercensal labor force estimates can be generated only by applying Census or NSS participation rates to population estimates for intercensal years. But again the participation rates of the Census and the NSS Rounds are based on different concepts. However, for estimating the "usual status" "weekly status" and "person-day" unemployment we have estimated and used labor force figures computed with the participation rates appropriate for each case.

94. The available estimates of the "usual status" or 'chronic' unemployed persons are brought together in Table 9. Their number turns out to be 0.57 million in the Census of 1961, 1.82 million in 1971 ("other non-workers" in the 1971 Census) and 1.97 million in 1972-73 (27th Round of the NSS).

95. This last figure is arrived at by applying the usual status unemployment rates of the 27th Round to the projected rural population of every State in 1973.

Table 9: NUMBER OF USUAL STATUS UNEMPLOYED
PERSONS, RURAL INDIA

Source of Basic Data	Year	Males	Females (000)	Persons
Census <u>a/</u>	1961	513	57	570
Census <u>b/</u>	1971	1491	328	1819
Census <u>c/</u>	1971	1752	384	2136
Census <u>d/</u>	1971	4578	2768	7346
NSS 27th <u>e/</u> Round	1972-73	-	-	1967

a/ Fact Book on Manpower, Part I, 1968, p. 289.

b/ "Other non-workers". Census of India 1971, Paper 3 of 1972, p. 87.

c/ "Other non-workers" seeking or available for full-time or part-time work according to Census Resurvey 1971. Miscellaneous Studies Paper 1 of 1974, p. 56.

d/ Persons seeking or available for full-time or part-time work among "all non-workers" in Census Resurvey 1971. Source: *ibid.*

e/ NSS Report 255A, p.31.

96. The middle figure of "other non-workers" from the 1971 Census is considered to be the number of workers seeking or available for more work. In a "Resurvey" this figure has been revised upwards to 2.14 m. The "Resurvey" also provides another interesting figure of those seeking or available for full-time or part-time work not only among "other non-workers" but among all "non-workers". This number is 7.35 m.

97. But using even the lowest 1971 Census figures it is clear that the number of "usual status" unemployed persons seems to have increased more than three times during the decade of the sixties and now stands at about 2 million.

98. The second set of roughly comparable numbers is that of wholly unemployed persons on the basis of the weekly status, calculated with 6 NSS Rounds. (Table 10). This figure ranges between 4.5 to 8 million persons during the period 1958-59 to 1966-67. It fell steadily from the peak of 8 m. in 1958-59 to the lower level of 4.5 m. in 1966-67 (except for the year 1961-62).

99. If we compare the end-of-the-week unemployment in 1972-73 computed from 27th Round data (Table 11) it adds up to 10.04 m. persons for 19 States/Territories. Since, as noted above, weekly status concepts of 27th and 14th-21st Rounds are almost the same, we must conclude that the declining trend of the weekly status unemployment in the sixties down to 4.5 m. has been reversed in the early seventies; and we must now reckon with the average number of unemployed persons on a weekly status basis, excluding the underemployed, to be at least 10 m. persons.

100. The number of persons who are both unemployed and underemployed (and willing to work more) ranges between 14 and 23 million persons on the basis of NSS data for the early sixties. (Table 12).

101. If the availability criterion is neglected and only the time criterion is applied, the set of the idle grows to the enormous figure of 48 to 68 million persons (See Table 12).

102. The Working Group on Agriculture (1972) of the Bhagwati Committee (1973) converted the number of the underemployed available for more work into equivalent fully unemployed person-years by assuming that those who obtained work for 28 hours or less in a week were two-thirds unemployed and those who obtained 28 to 42 hours of work were one-sixth unemployed. Adding these person-years to fully unemployed person-years the Group estimated 9.12 m. person-years of unemployment for 1969. But the conversion procedure seems to be unjustified because the degree of underemployment varies very widely as between individuals and the application of a single co-efficient for converting underemployment into equivalent unemployment is not appropriate. But, as we would expect, the arithmetic of such conversion produces a number (about 9 million for

Table 10: NUMBER OF UNEMPLOYED PERSONS ESTIMATED
FROM NSS DATA, RURAL INDIA

Round	Year	Males	Females (000)	Persons
14	1958-59	3,647	4,447	8,096
15	1959-60	3,325	3,410	6,735
16	1960-61	2,640	3,180	5,820
17	1961-62	3,650	3,403	7,053
19	1964-65	2,688	2,992	5,680
21	1966-67	2,033	2,445	4,488

Rural male and female population is estimated for each year by interpolation between actual 1951, 1961 and 1971 Census figures. The NSS participation rates and unemployment rates for rural males and females for each year are then applied to the population to get the numbers of the unemployed.

Table 11: END-OF-THE WEEK UNEMPLOYMENT
27th ROUND 1972-73

States	Persons
A.P.	827
Assam	550
Bihar	808
Delhi	3
Goa	60
Gujrat	228
Haryana	62
H.P.	14
Karnataka	435
Kerala	1,010
M.P.	264
Maharashtra	592
Orissa	345
Pondicherry	2
Punjab	67
Rajasthan	505
Tamil Nadu	645
U.P.	3,171
West Bengal	457
Total	10,045

Table 12: NUMBERS OF UNEMPLOYED, SEVERELY UNDEREMPLOYED, AND MODERATELY UNDEREMPLOYED PERSONS, RURAL INDIA

Round	Year	U + UU ₁ + UU ₂			U + U U ₁			U + UU ₁ + UU ₂		
		Males	Females	Persons	Males	Females	Persons	Males	Females	Persons
14th	1958-59	13.30	10.09	23.39	21.28	19.62	40.90	37.96	30.40	68.36
15th	1959-60	13.26	8.30	21.56	22.19	17.75	39.94	39.45	27.82	67.27
16th	1960-61	9.89	7.86	17.75	14.74	16.73	31.47	32.00	29.32	61.32
17th	1961-62	10.87	6.85	17.72	14.85	12.94	27.79	31.37	23.06	54.43
19th	1964-65	-	-	13.98	11.86	12.78	24.64	25.00	23.08	48.08

U = Unemployed.

UU₁ = Severely underemployed. (See footnote in Table 7).

UU₂ = Moderately underemployed. (See footnote in Table 8).

UUW₁ = Severely underemployed available for more work.

UUW₂ = Moderately underemployed available for more work.

1969) which would be between the number of the wholly unemployed (about 5.7 m.) and the total number of the unemployed and underemployed (14 m.) available for more work in 1964-65, even after an adjustment is made for the growth of the labor force between 1965 and 1969.

103. In summary, then, we have, first, the number of the "usual status" unemployed persons--about 2 million in 1971--which is more than three times the roughly comparable figure for 1961.

104. We have, second, the number of "weekly status" wholly unemployed persons falling from about 8 to 4.5 million in the sixties and rising back to 10 million by 1972-73.

105. We have also the number of "weekly status" unemployed and underemployed persons available for more work declining from 23 to 14 m. in the early sixties but no strictly comparable number for the recent years.

106. And we have the set of the idle (with 28- and 42- hour cut-off points), regardless of availability, ranging between 68 and 48 million in the early sixties.

107. Finally, we have computed the unemployed person-days per week with the 27th Round data for 19 States/Territories as:

$$UPDPW = \hat{P} \times PW_p \times 7 \times PD_p \times PDUR \quad (11)$$

where

UPDPW = unemployed person-days per week,
 \hat{P} = estimated rural population,
 PW_p = person-week participation rate,
 PD_p = person-day participation rate,

and

PDUR = person-day unemployment rate.

Keeping in view the 27th Round concepts, the logic of this procedure can be set out as follows. ($\hat{P} \times PW_p$) gives the participant labor force on a weekly status basis. Their maximum labor supply in days per week is seven times ($\hat{P} \times PW_p$). But this is deflated by PD_p because a small proportion of person-days of the participants are reported to be "not in the labor force" (about 4.24 percent on the average). To the resulting effective labor supply in days per week the person-day unemployment rate is applied. (Table 13).

108. The number of unemployed person-days per week turns out to be 121.45 million which is equivalent to 17.35 million fully unemployed person-weeks of time per week. This includes fully unemployed as well as underemployed time available for more work in an average week. Though in the 27th Round underemployment in the week has been measured on the basis of the changing half-day status, and in the earlier Rounds it was measured with 28- and 42- hour cut-off points, the resulting estimates in both cases represent estimates of unemployment plus underemployment during an average week. If, therefore, we do compare them, with due reservations,

Table 13: UNEMPLOYMENT IN PERSON-DAYS
PER WEEK 27th ROUND (1972-73)

State	Estimated Unemployed Person-Days Per Week (Millions)
Andhra Pradesh	13.440
Assam	0.318
Bihar	15.600
Delhi	0.055
Goa	0.570
Gujrat	4.011
Haryana	0.624
Himachal Pradesh	0.084
Karnataka	7.620
Kerala	12.350
Madhya Pradesh	4.544
Maharashtra	12.361
Orissa	6.417
Pondicherry	0.123
Punjab	1.285
Rajasthan	4.303
Tamil Nadu	12.644
Uttar Pradesh	15.910
West Bengal	9.149
Total	121.450

we find, again, that the figure 17.35 m. for 1972-73 indicates a reversal of the declining trend of weekly unemployment and underemployment (from 23 m. to 14 m.) in the sixties.

109. Thus the levels of all unemployment estimates point to a serious worsening of the rural employment situation in the early seventies in comparison with the sixties. One reason must be that agricultural as well as non-agricultural output stagnated or declined in many recent years.

110. The figure of 17.35 m. also signifies the person-weeks of work which a rural works program of unemployment relief should aim at providing in an average week in the country as a whole.

5. THE CORRELATES OF UNEMPLOYMENT

111. A knowledge of the distributions of the unemployed by other characteristics is as important as the estimation of their total number so that measures to assist them may be appropriately differentiated.

112. In particular we need to know their distributions by sex and age, education, job search behavior, initial status, season, preferences for particular locations and types of employment, present incomes and income expectations.

113. The labor "market" must be conceived as a set of "sub-markets"-- each submarket dealing only in labor-time or working persons with given characteristics.

114. Some information on the characteristics of the unemployed has been collected in various NSS Rounds. But it has not been consistently tabulated in the form of distributions of the unemployed. The tabulation scheme varies from characteristic to characteristic. Therefore we condense below some of the significant propositions yielded by the layout of the available tables.

115. Sex Distribution: The 25th Round data for small farmer households and landless worker households shows that the all-India female PDUR is higher than the male PDUR in the case of both types of households. (See Table 6).

116. The 27th Round data for all rural households also reveals the same position in all but the north-western States such as Punjab, Haryana, H.P. and Rajasthan and a few other States viz. Assam, Gujrat and Meghalaya. The "weekly status" unemployment rate and total unemployment for women have also been found to be higher than for men in all NSS Rounds. (See Tables 7 and 10). But the "usual status" unemployment rate and total unemployment for women are lower in most States. (See Tables 8 and 10).

117. These differences are mainly due to the fact that the participation rates of women are fractions of the male participation rates. But work availability also differs. In any case, it is a salutary fact to be reckoned with by policy-makers that more than half of the unemployed persons on a weekly status basis are women. Additional work opportunities to be created for them must suit their skills and preferences, or extensive training and retraining programs must be designed for them. Since their participation/withdrawal pattern fluctuates more over the year than that of males their 'chronic' unemployment level is lower. Their need is clearly for irregular, part-time work rather than whole-time employment.

118. Age Distribution: Regarding the age distribution of the unemployed it is a striking fact revealed by various NSS Rounds in the sixties that

except for a small degree of concentration (30-35 percent) in the age-group 15-26 years the incidence of rural male as well as female unemployment is evenly spread across all age-groups. In urban areas the concentration in the prime age group is much greater (50-60 percent). (See Dantwala Committee 1970, pp. 93-98.)

119. Education: As for education, the incidence of rural unemployment is highest among the matriculates, second-highest among the illiterates and the lowest among below-matric literates. (Dantwala Committee 1970, p. 106).

120. The 27th Round data reveals the additional fact that chronic unemployment (or open unemployment) as measured by the usual status unemployment rates is the dominant characteristic of persons with higher educational levels, whereas persons who are illiterate or have the lowest educational attainment (mere literacy or primary school) are only intermittently unemployed. Their YSR is the lowest in all States. This finding corroborates the assumption made in the dual labor market literature that the educated remain voluntarily unemployed for long periods in search of regular high wage unemployment, whereas the uneducated accept whatever irregular employment is available. It also carries the important implication that the educated constitute the vast majority of the small segment of the labor force which is chronically unemployed, and the uneducated dominate the vast numbers whose underemployment is reflected in a higher PDUR and WSR.

121. Job Search: We also know that the proportion of first-time work-seekers is much lower among the rural than among the urban unemployed, obviously because in the rural areas young persons enter the labor force as helpers at a very early age.

122. Also, as we would expect, the proportion of the unemployed not seeking but available for work is very high in the rural and low in the urban areas. In the urban areas active search is essential; but in the rural areas search is either easier or is given up in view of limited opportunities, though the unemployed remain available for work whenever an opportunity arises. (Dantwala Committee pp. 100-101).

123. Initial Status: The recent 25th Round data also confirm the well-known fact that the landless worker PDUR (7.55 percent) is higher than the small farmer PDUR (6.4 percent). (Table 6).

124. Season: With a few exceptions, the unemployment rates are the lowest in the monsoon quarter, rise in the winter quarter and reach their peaks in the summer quarter. (Table 6). This pattern is obviously related to the work cycles generated by the crop-mix of every region.

125. Unemployment and Poverty: The 27th Round data has made it possible to correlate recent (1972-73) per capita consumption and the person-day unemployment rates because information on both was collected from the same households. Illustrative Figures 4 to 7 show this relationship for 23 States and territories.

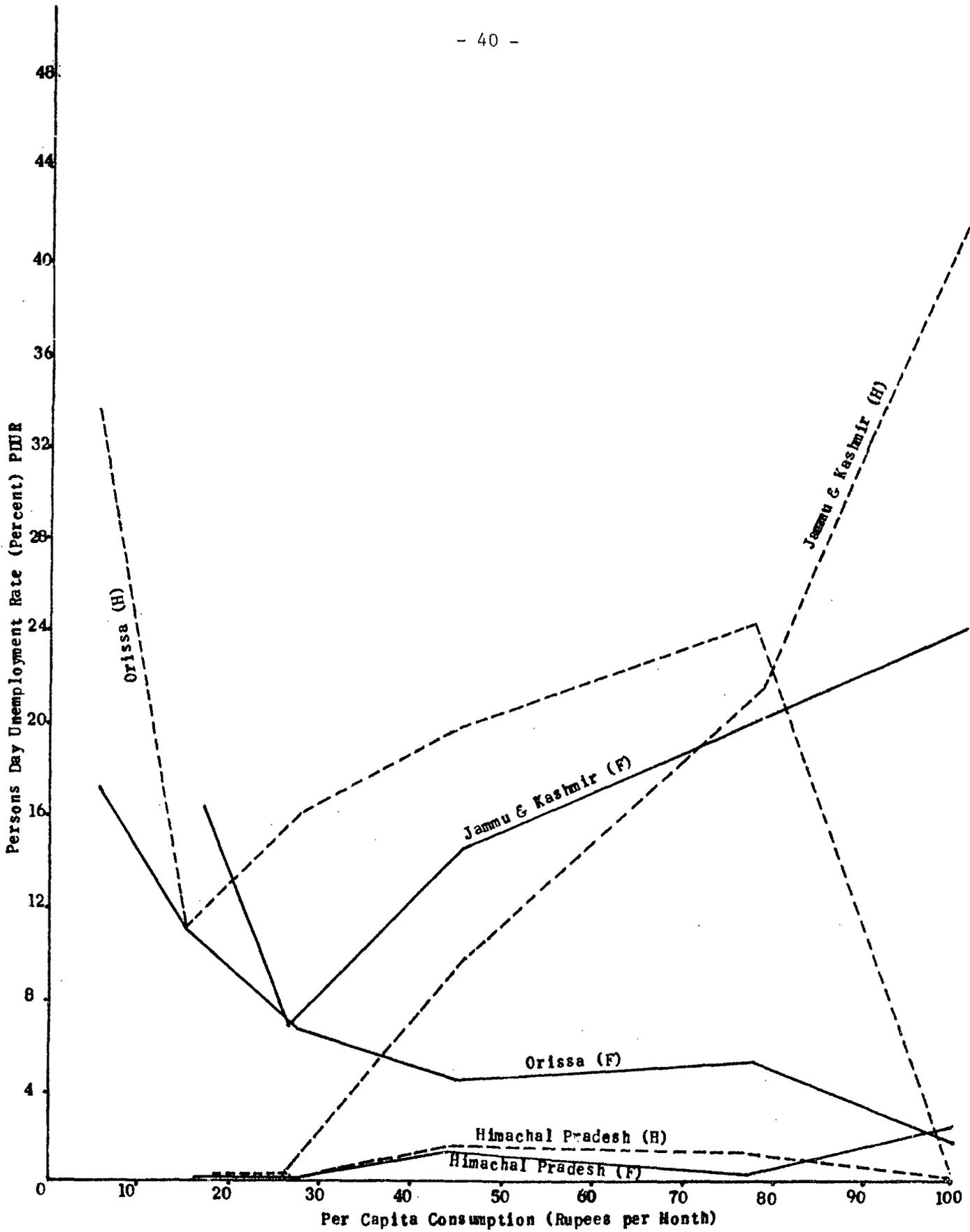


Figure 4A: FULL INTENSITY (F) AND HALF INTENSITY (H) PDUR AND PER CAPITA CONSUMPTION (C) 1972-73

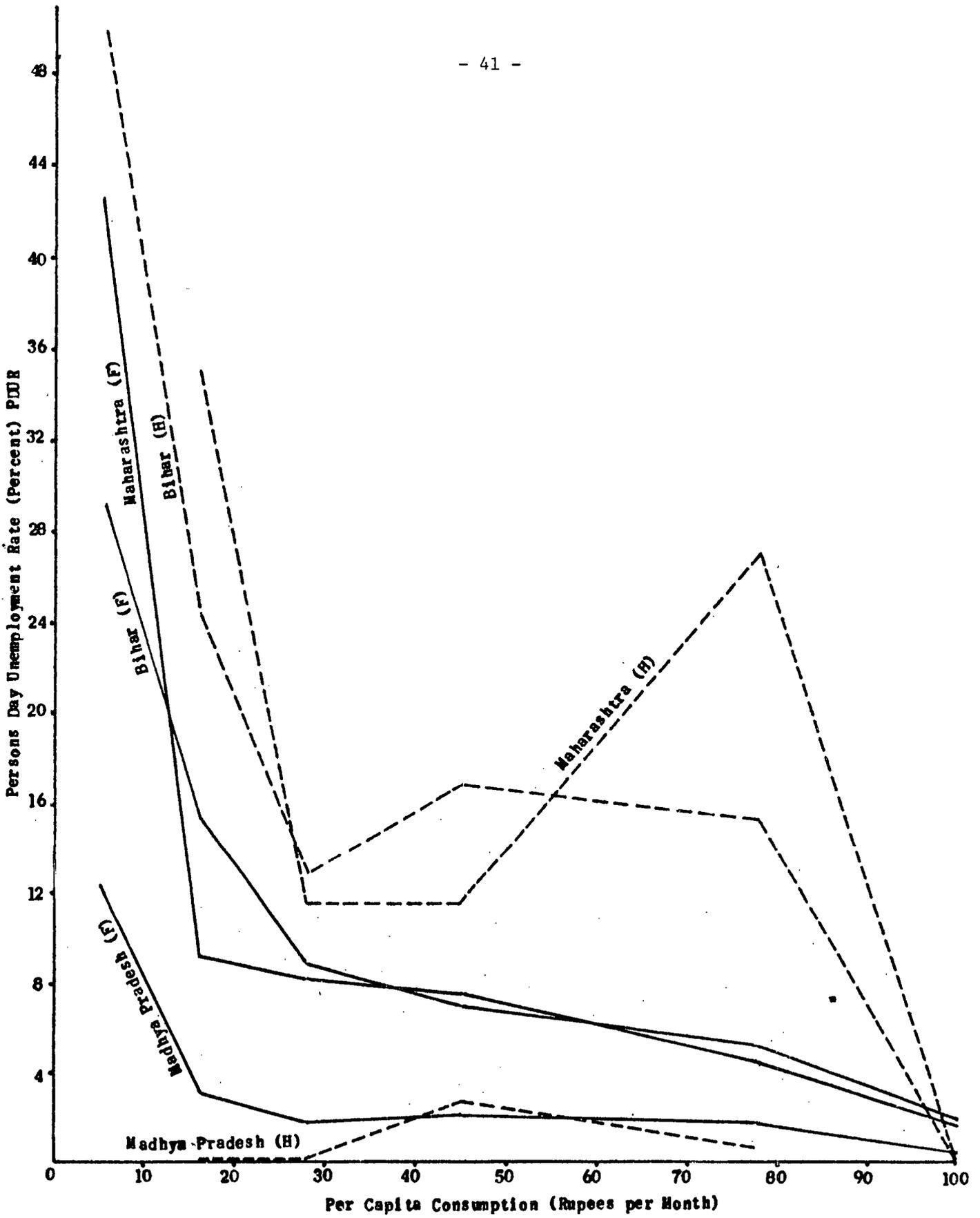


Figure 4B: FULL INTENSITY (F) AND HALF INTENSITY (H) PDUR AND PER CAPITA CONSUMPTION (C) 1972-73

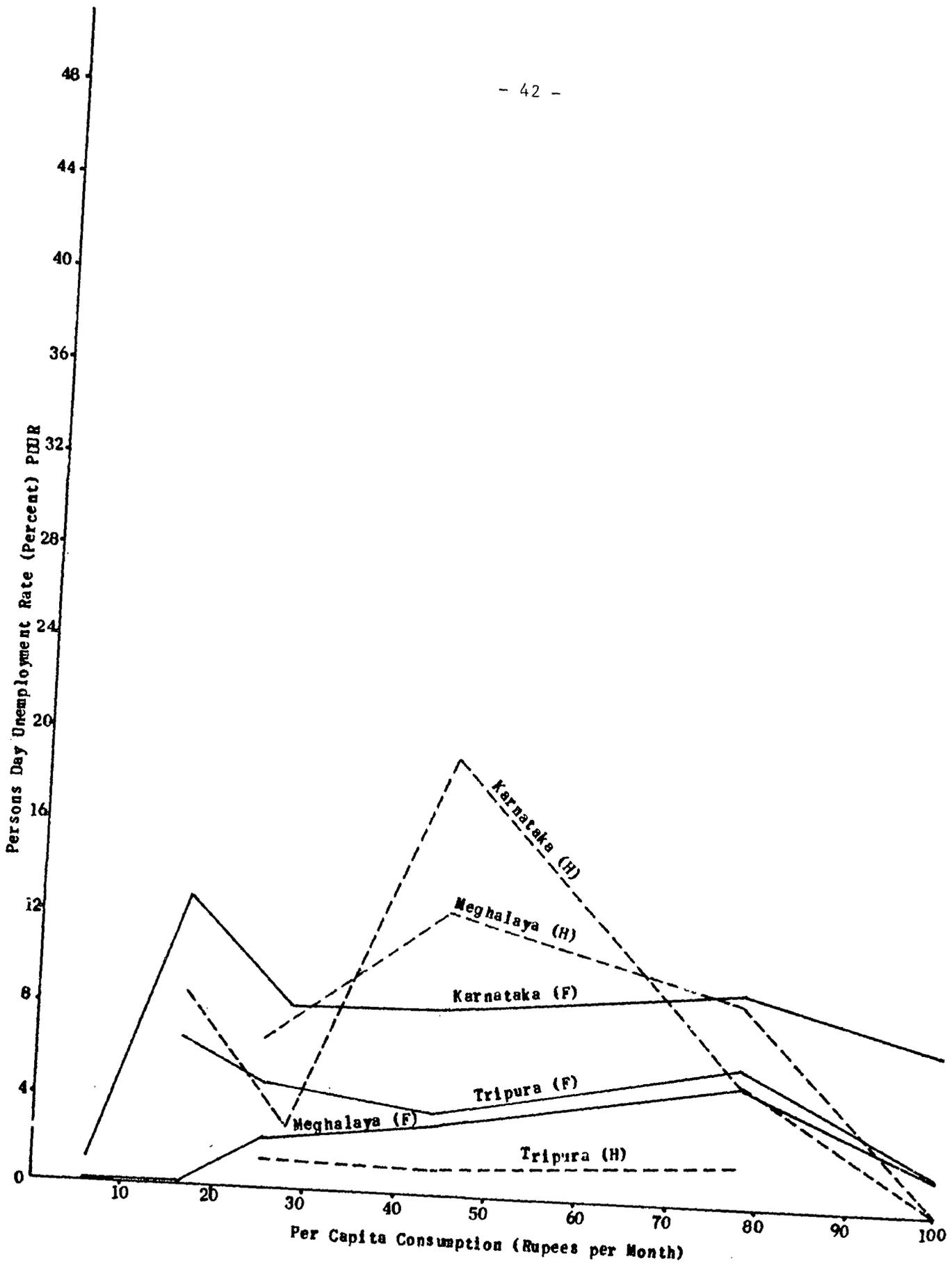


Figure 5A: FULL INTENSITY (F) AND HALF INTENSITY (H) PDUR AND PER CAPITA CONSUMPTION (C) 1972-73

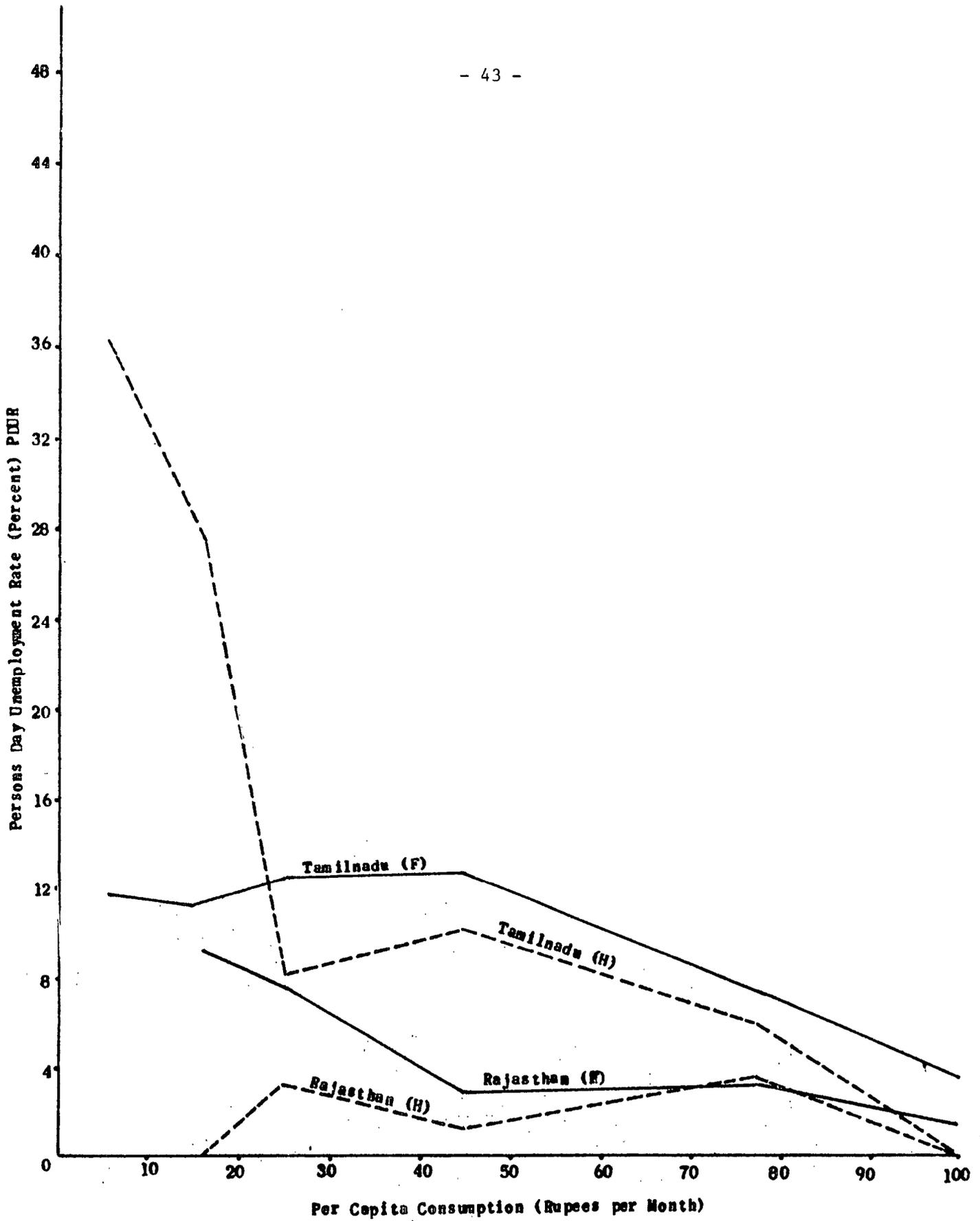


Figure 5B: FULL INTENSITY (F) AND HALF INTENSITY (H) PDUR AND PER CAPITA CONSUMPTION (C) 1972-73

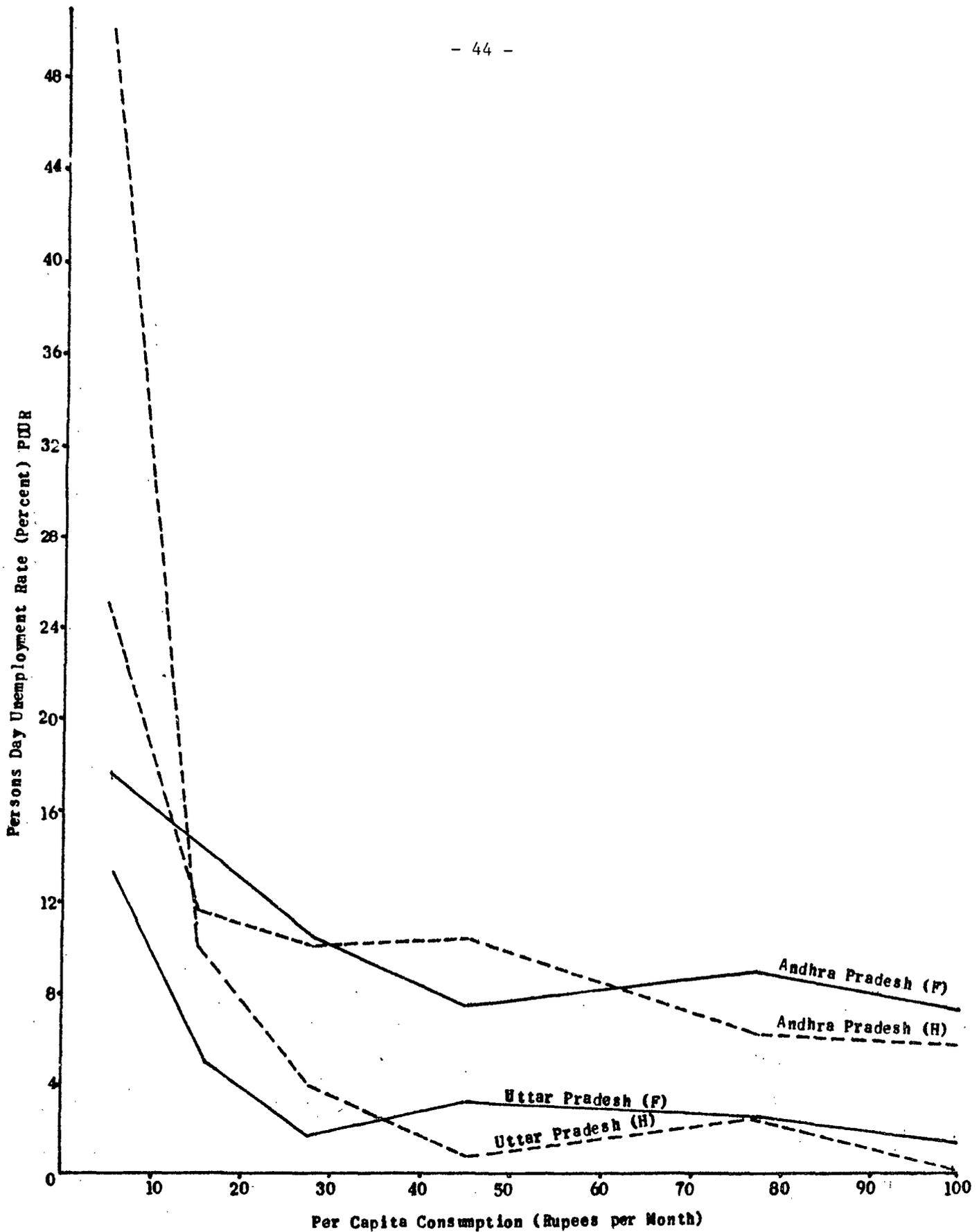


Figure 6A: FULL INTENSITY (F) AND HALF INTENSITY (H) PDUR AND PER CAPITA CONSUMPTION (C) 1972-73

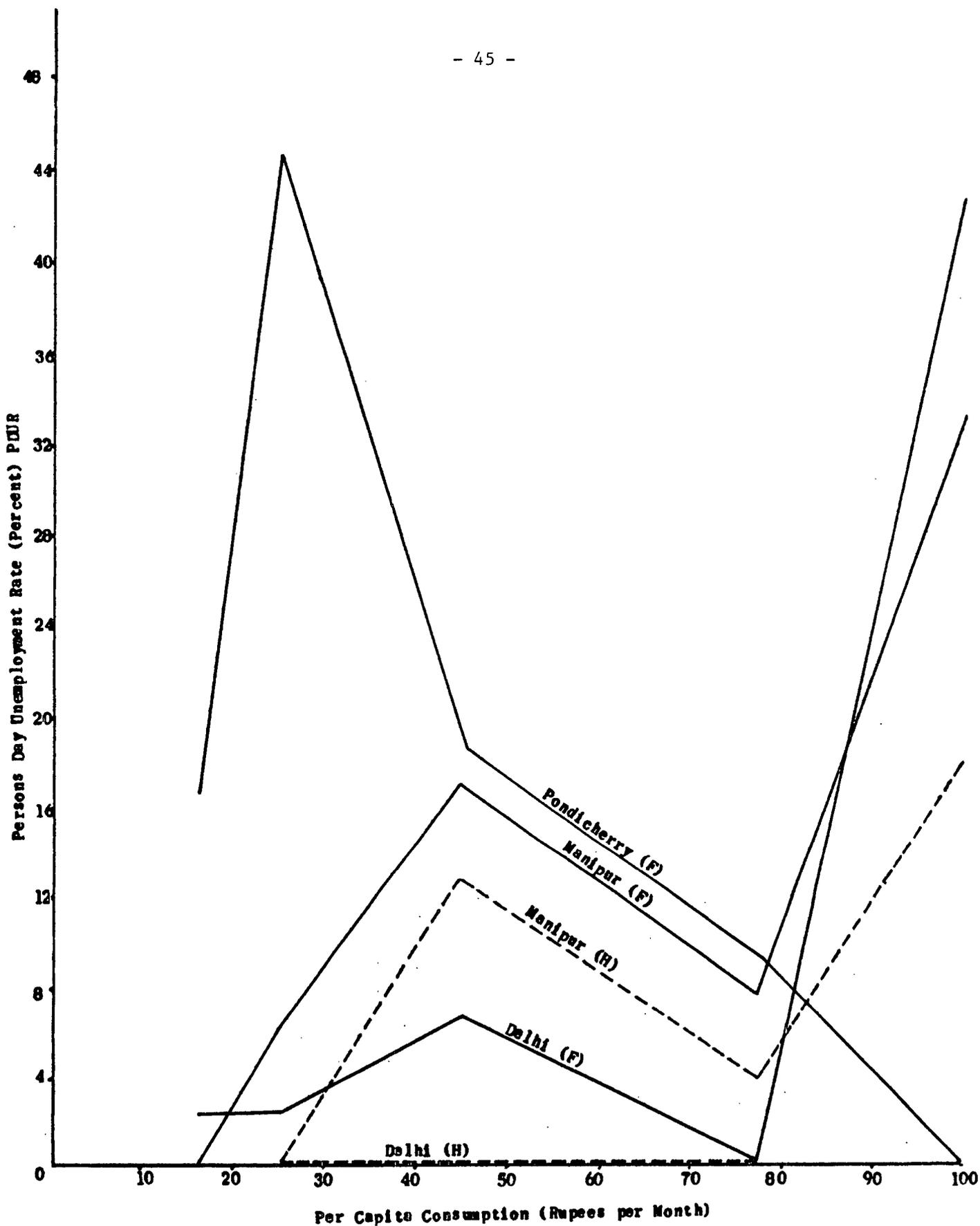


Figure 6B: FULL INTENSITY (F) AND HALF INTENSITY (H) PDUR AND PER CAPITA CONSUMPTION (C) 1972-73

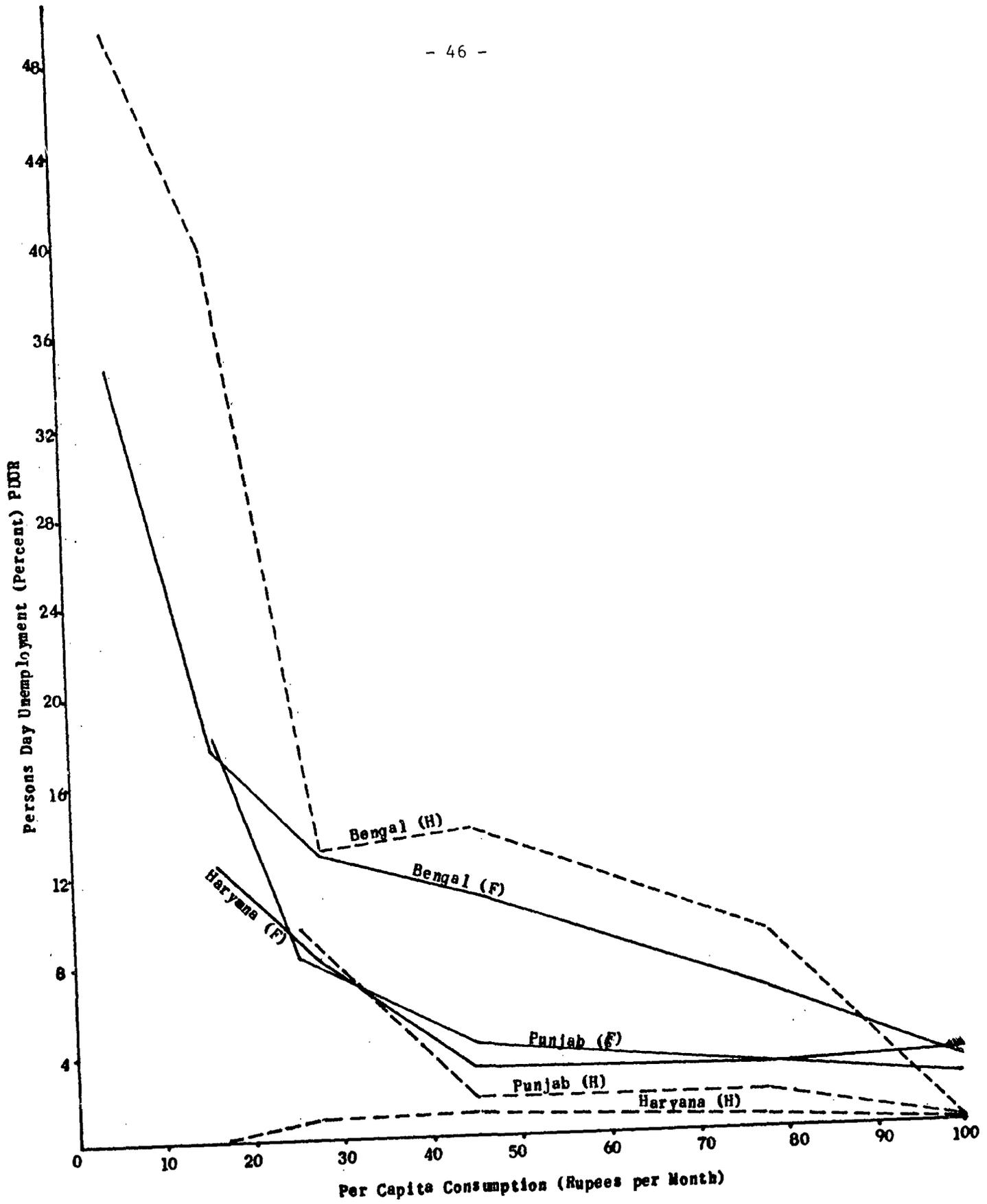


Figure 7A: FULL INTENSITY (F) AND HALF INTENSITY (H) PDUR AND PER CAPITA CONSUMPTION (C) 1972-73

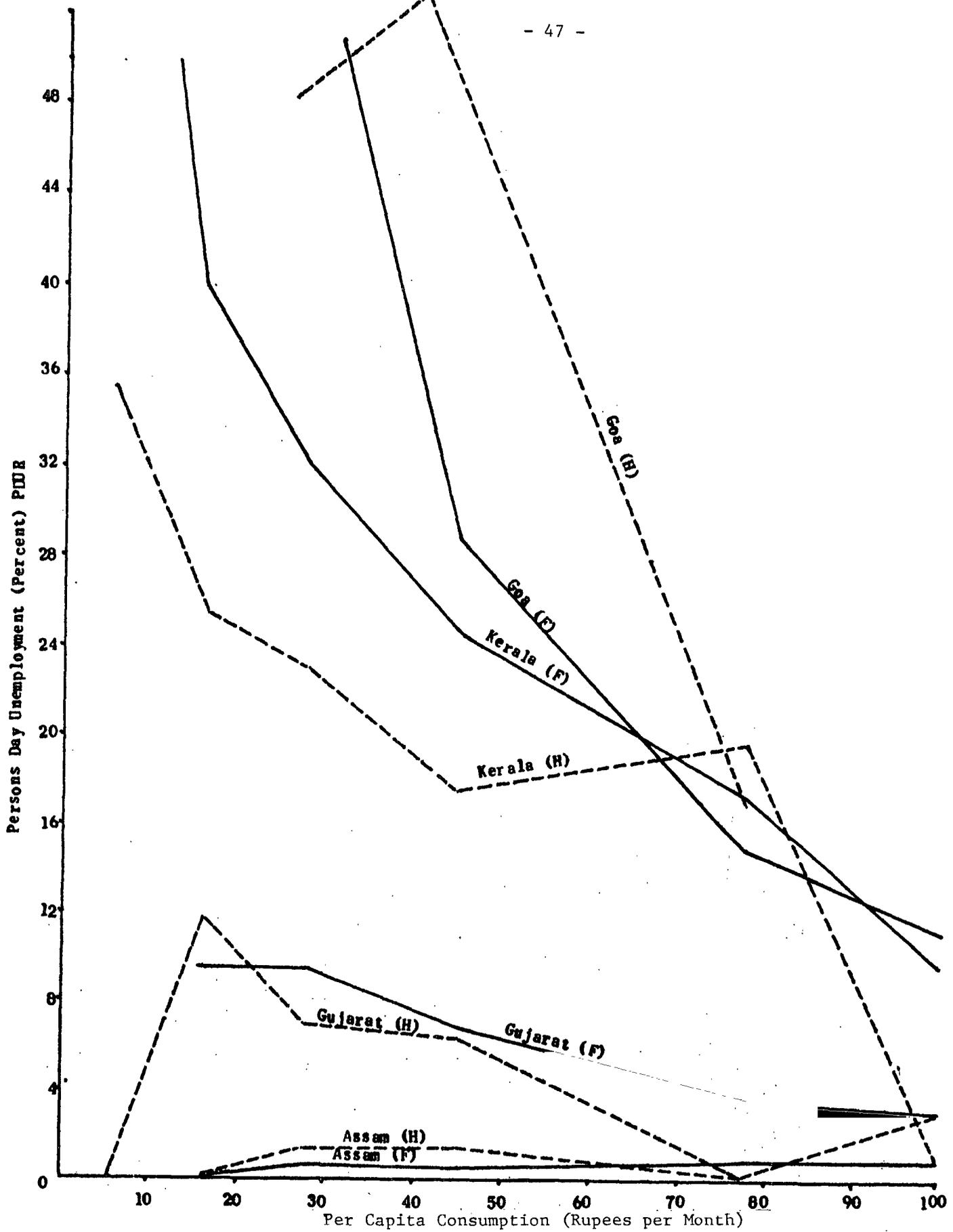


Figure 7B: FULL INTENSITY (F) AND HALF INTENSITY (H) PDUR AND PER CAPITA CONSUMPTION (C) 1972-73

In most of the States the correlation is negative: increasing per capita consumption is associated with a decreasing person-day unemployment rate. But it is a striking fact that, in almost every case, in some middle income range the person-day unemployment rate rises in one or two intervals and then falls again. One can hypothesize that after some increase in consumption households try to shift to a better kind of employment and therefore prolong their search periods.

126. Work Preferences: In the 27th Round persons seeking or available for work were asked whether they prefer farm work or non-farm work inside or outside the village. Among the illiterate persons the highest proportion indicated a preference for non-farm work outside the village in six States and farm work inside or outside the village in nine States. On the other hand the educated in 14 States preferred only non-farm work outside the village. In fact there is only one State (Andhra Pradesh) where 30 percent of the educated unemployed wanted non-farm work inside the village. Significant proportions of educated persons (with secondary education) also revealed their preference for farm work in Orissa, Maharashtra, Kerala, Gujrat and Bihar. But in no case was the proportion of such persons higher than the proportion of persons seeking non-farm work outside the village. There can be no doubt that the desire for movement outside the village for non-farm work remains the strongest preference of the unemployed.

127. Migrant Unemployment, Composition and Expectations: An important finding of the 25th Round is that the proportion of persons ready to leave the village for full-time employment is very high--7.9 percent in small farm families and 12 percent in landless families. (Table 14). Both proportions are higher than the corresponding proportions of persons seeking or available for work--about 3 percent. 1/ The proportion of females among willing migrants is rather small.

128. It is highly significant that in the case of males the proportion of willing migrants (called 'migrants' hereafter) is nearly 3 to 4 times the proportion seeking or available for work without reference to migration. Indeed the former may even be a more significant measure of unemployment for it represents willingness to move outside the village for full-time work whereas the latter only represents the need for some work without any specification of location or duration. Males in small farm and landless families are clearly willing to be highly mobile for regular work.

129. In the 27th Round also three categories of rural workers were asked whether they were seeking or available for full-time wage employment: (a) regular farm workers, (b) non-farm workers and (c) casual workers. The proportion of workers in these categories desiring wage employment turned out to be 10.7, 9.1 and 56.3 percent respectively. Once again these proportions are many times the proportions of workers found to be unemployed without reference to full-time wage employment. More than half of the casual workers are evidently in search of full-time wage employment and 9 to 10 percent of regular farm and non-farm workers are also looking for such employment.

1/ As proportions of the labor force, rather than the population, all these proportions would be much higher.

130. The 25th Round data provide information on several interesting characteristics of willing migrants. Persons in the prime working age group (15 to 44 years) account for more than 80 percent of these migrants. (Table 15). A large majority of them--73 to 90 percent--are illiterate. (Table 16). Detailed tables also show that persons with higher educational qualifications form a consistently lower proportion of these migrants. And a very high proportion of the migrants would prefer public works employment to other employment.

131. These findings clearly indicate that the provision of public works employment for illiterate persons in the prime working age group deserves the highest priority in any employment policy intended to benefit the rural unemployed in small farm and landless households.

Table 14: PROPORTION OF PERSONS WILLING TO MOVE OUTSIDE
THE VILLAGE FOR FULL-TIME EMPLOYMENT
25th ROUND (1970-71)

	<u>Small Cultivators</u>			<u>Landless Farm Workers</u>		
	Public Works	Other	Total	Public Works	Other	Total
			(Percent)			
Males	5.70	1.35	7.05	8.09	1.76	9.85
Females	0.64	0.22	0.86	1.72	0.46	2.18
Persons	6.34	1.57	7.91	9.81	2.12	12.03

Source: NSS Report No. 230/1.

132. Some interesting information is also available about the income expectations of the migrants. The highest proportion of males as well as females in small cultivator and laborer households expect an annual wage in the range of Rs. 800-1200. (Table 17).

133. A higher income is expected by potential migrants in some States viz. Gujrat, Haryana, Kerala, Mysore, West Bengal, Punjab and U.P. The potential female migrants in Bihar have the lowest income expectations.

Table 15: PROPORTION OF PERSONS IN THE
AGE-GROUP 15-44 IN WILLING MIGRANTS

<u>Small Cultivators</u>			<u>Landless Workers</u>	
Males	Females	(Percent)	Males	Females
83.7	81.4		83.0	86.7

SOURCE: NSS Report No. 235/1.

Table 16: PROPORTION OF ILLITERATES IN WILLING MIGRANTS

<u>Small Cultivators</u>			<u>Landless Workers</u>	
Males	Females	(Percent)	Males	Females
72.8	90.7		73.6	88.1

SOURCE: NSS Report No. 235/1.

**Table 17: EXPECTED ANNUAL WAGE INTERVAL WITH THE
HIGHEST FREQUENCY OF WILLING MIGRANTS**

	Small Cultivators		Landless Families	
	Males	Females	Males	Females
	(Rupees)		(Rupees)	
India	801-1200	801-1200	801-1200	801-1200
A.P.	801-1200	801-1200	801-1200	801-1200
Assam	801-1200	N. R.	801-1200	N.R.
Bihar	801-1200	1- 200	801-1200	1- 200
Gujrat	1601-2000	801-1200	801-1200	801-1200
Haryana	1601-2000	N.R.	1601-2000	801-1200
J & K	801-1200	N.R.	1601-2000	N.R.
Kerala	1601-2000	801-1200	801-1200	801-1200
			1601-2000	
M.P.	801-1200	801-1200	801-1200	601- 800
Maharashtra	801-1200	201- 400	801-1200	801-1200
		401- 600		
Mysore	1601-2000	1201-1600	1201-1600	401- 600
				801-1200
Orissa	801-1200	401- 600	801-1200	401- 600
Punjab	201- 400	N.R.	1601-2000	801-1200
Rajasthan	801-1200	601- 800	801-1200	601- 800
Tamil Nadu	801-1200	801-1200	801-1200	801-1200
U.P.	801-1200	601- 800	1601-2000	N.R.
W.B.	1601-2000	1601-2000	801-1200	801-1200
H.P.	1- 200			
	1601-2000	N.R.	N.R.	N.R.
Manipur	1201-1601	N.R.	1201-1600	1201-1600
Pondicherry	1601-2000		1201-1600	
	2001-2500	801-1200	2001-2500	801-1200
Tripura	1601-2000	801-1200	1601-2000	801-1200

SOURCE: NSS Report No. 230/1.

N.R.: Not recorded.

134. In Figure 8 we plot the proportions of potential migrants in various expected annual wage intervals in the country as a whole. The backward bending migrant labor supply curve can be detected in all the figures. It seems, in fact, that there are three backward bending supply curves between 3 income ranges. (Table 18).

Table 18: EXPECTED INCOME RANGE AND PROPORTION OF MIGRANTS

Income Range	Proportion of Migrants		
	Rising	Peak	Declining
Rs.	Rs.	Rs.	Rs.
0 - 400	0 - 200	0 - 200	200 - 400
400 - 1600	400 - 1200	800 - 1200	1200 - 1600
1600 +	1600 - 2000	1600 - 2000	2000 +

135. Within each of these ranges, labor supply (as represented by the proportion of willing migrants) increases and then decreases. We can hypothesize that perhaps three income levels are considered attainable by classes of migrants with substantially different education/skill levels and other endowments. When the peak income level attainable by each class is attained, labor offered declines until another class of potential migrants with higher endowments enters the flow. When the peak income level attainable by this class is attained, their labor offer declines. Then the third class enters the flow until leisure preference reduces the offer of additional labor to the vanishing point. These hypotheses need detailed testing with original schedules.

136. Further analysis of the migrants' expected wage in Table 19 shows that male workers expect a daily wage of Rs. 3.4-3.6 and female workers a daily wage of Rs. 2.2-2.3 from regular work outside the village. In each case the wage expected is about 60% above the wage reported to have been actually earned. The excess seems to be the premium just sufficient to induce workers to migrate.

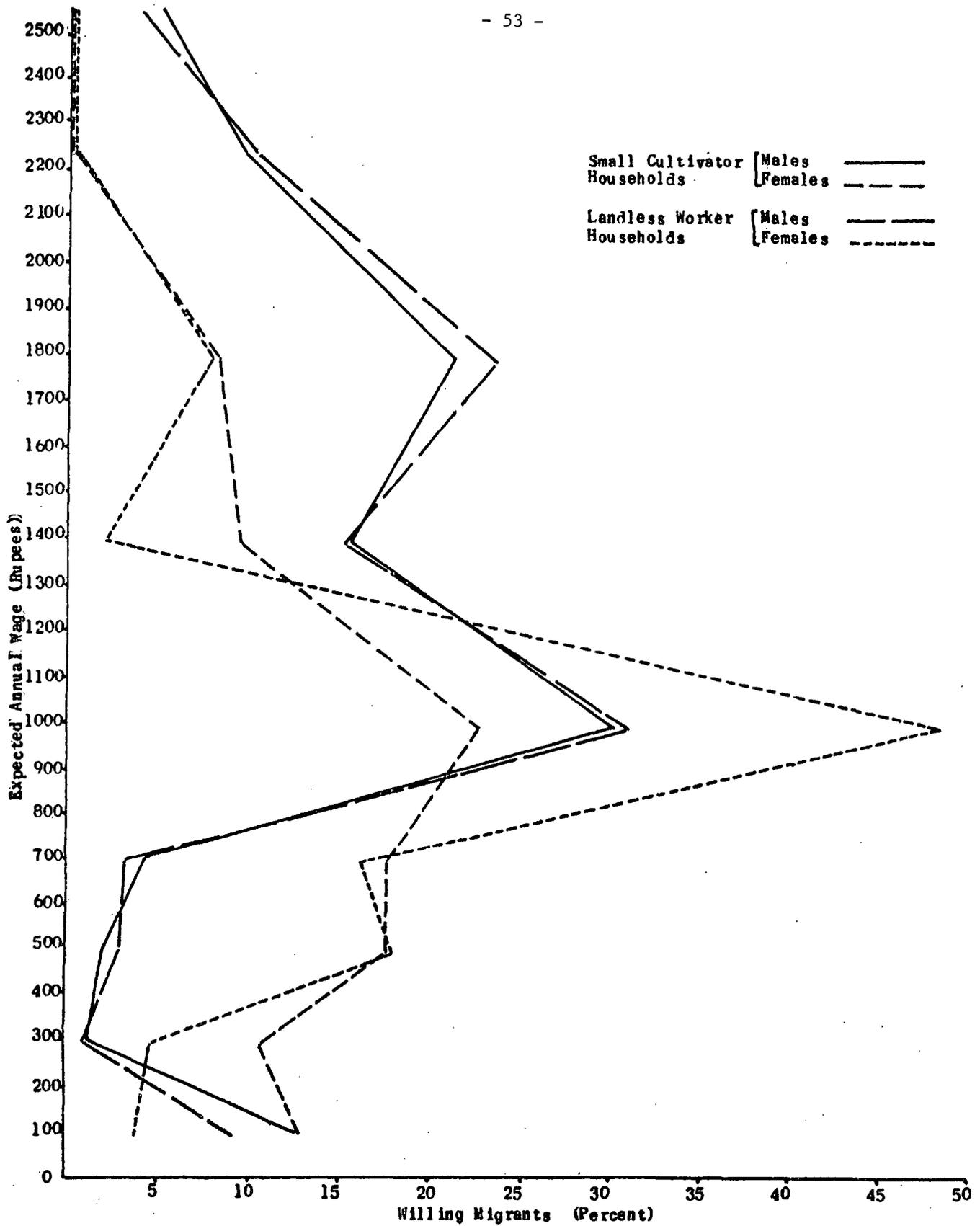


Figure 8: EXPECTED ANNUAL WAGE RANGE AND FREQUENCY OF WILLING MIGRANTS - 25th ROUND NSS 230/1

Table 19: ANNUAL WAGE EXPECTED AND PROPORTIONS OF POTENTIAL MIGRANTS IN SMALL FARMS AND FARM LABOR HOUSEHOLDS NSS 25TH ROUND (1970-71)

Annual Wage Expected (Rupees)	Midpoint of Wage Interval (Rupees)	Proportion of Willing Migrants Expecting the Wage			
		Males (Percent)	Females (Percent)	Males (Percent)	Females (Percent)
1- 200	100	12.34	12.05	9.12	3.67
201- 400	300	1.28	10.84	0.92	4.59
401- 600	500	2.14	18.07	2.87	17.89
601- 800	700	4.42	18.07	3.07	16.06
801-1200	1000	30.39	24.10	31.15	48.17
1201-1600	1400	15.55	9.64	15.27	1.83
1601-2000	1800	21.26	8.43	23.46	7.80
2001-2500	2250	9.56	0.00	10.25	0.00
2500+	2500*	2.57	0.00	3.89	0.00
Weighted Expected Wage per Year (Rs.)		1241.95	789.11	1318.03	841.41
Weighted Expected Wage Per Day (Rs.)		3.40	2.16	3.61	2.30
Average Actual Wage Earned by Employees Per Day (Rs.)		2.08	1.38	2.30	1.47
Ratio of Expected Wage to Actual Wage		1.63	1.57	1.57	1.56

Computed from data in NSS Report No. 230/1, pp. 165, 226, 23.

* Assumed to be the minimum = Rs. 2500*

6. SURPLUS LABOR

137. The relationship of the concept of 'surplus labor' with the flow and stock rates defined in section 2 can now be seen clearly. In theory, surplus labor is the number of workers which can be withdrawn from a sector without loss of output. But in empirical studies it is approximated as the difference between the potential supply of labor time by a given working force and the labor time required to produce current output with existing technology and organization. The potential supply of labor time is computed with normative standards of working time per person, but the demand for labor time per hectare or unit of output is kept unchanged. The intention is to reduce work-sharing which becomes customary when the amount of work available is insufficient to keep all the workers fully occupied. The surplus time computed on the assumption that each worker carries a fuller workload can be converted into the number of surplus workers with the same norms which are initially used to compute the potential labor supply.

138. In the notation used above surplus time is simply

$$\begin{aligned}\bar{U}^t &= L^{st*} - L^{dt} \\ &= h^* L^{sp} - L^{dt}\end{aligned}\quad (12)$$

where h^* is the potential labor time per worker. Dividing (12) by h^* we get the number of surplus persons

$$\begin{aligned}N^{ul} &= L^{sp} - \frac{L^{dt}}{h^*} \\ &= L^{sp} - L^{sp*}\end{aligned}\quad (13)$$

where L^{sp*} is the number of workers needed to supply time L^{dt} if every person works h^* hours or days. In the example of Table 1 surplus labor time with a normative labor supply is simply 18 days. Since three persons can supply the 17 working days demanded with the assumed norms, four workers can be counted as surplus workers.

139. Estimates of surplus labor with Indian data have been made in three well-known studies: Mehra (1966), Rudra (1973) and Ahuja (1975). The estimates are summarized in Table 20.

140. Mehra keeps the average labor input per acre (L_i) on farms in size class i unchanged. But person-days per worker are increased to the actual number on farms of the largest size class (n), which are assumed to have no surplus labor. (Person-days per worker on these large farms = L_n/N_n = person-days per acre/workers per acre). Therefore, the number of surplus workers per acre on an average farm of class i

Table 20: SURPLUS LABOR ESTIMATES, INDIA

Study	Coverage	Unit	Year	Labor Employed	Labor Required	Surplus Labor	Surplus Labor Rate (Percent)
Mehra (1966)	14 States India	Million persons	1961	28.404	20.828	7.576	26.67
Ahuja (1975)	Rajasthan State, India	Million person days	1971	1733.990	1678.010	55.980	3.22
Rudra (1973)	168 Farms Hooghly District, West Bengal, India	Adult males	1971	265	192	73	27.50

$$S_i = N_i - (L_i N_n / L_n) \quad (14)$$

The total number of surplus workers is

$$S = \sum_{i=1}^{n-1} A_i S_i \quad (15)$$

where A_i is the number of acres in size class i . On this basis 29.1 percent of the work-force was estimated as surplus in Indian agriculture in 1961. (If at least one worker per farm is added to the required work-force to allow for the indivisibility of workers the surplus rate reduces to 6.4 percent).

141. In Rudra's exercise to calculate surplus labor on 148 farms in the Hooghly district of West Bengal in 1970-71, the total labor input of 259,170 hours by 265 adult males on these farms would require only 108 adult males, if all of them worked 2400 hours a year. Therefore, 157 males or 59 percent of the total number can be counted as surplus workers. But in order to cope with 15360 hours of peak season work within 10 days, 192 males would be needed. Therefore, even after providing for the peak season workload, 73 male workers or 27.5 percent of the total number could be released. This estimate excludes altogether the unutilized capacity of adults engaged in nonfarm work and in studies, and the underemployment of women and children in the work force. It should be noted, again, that Rudra keeps the labor time required and hence the technology and organization of production unchanged. But the working time per person is increased to reduce work sharing.

142. In Ahuja's calculations of surplus labor in the agriculture of Rajasthan, surplus labor time is calculated instead of the number of surplus workers. The available labor time is calculated as 2400 hours per male worker and 1800 hours per female worker per year. The required labor time is calculated on the basis of person-days per hectare and per animal estimated from Farm Management Studies with suitable adjustments. On these assumptions, Ahuja concludes that surplus labor time as a proportion of available labor time, would be only 3.2 percent in Rajasthan as a whole in 1970-71. 14 out of 26 districts had a surplus labor ratio of 11.7 percent and 12 districts had a labor deficit of 8.2 percent. Disaggregation of the labor surplus by seasons revealed that in the kharif season, the deficit was 26 percent and in the rabi season, the surplus was 33 percent.

143. In Ahuja's methodology, once again, technology remains unchanged in the sense that labor time per acre and per animal is assumed to be the actual average time; and surplus labor is estimated by assuming that all male and female workers carry a full workload throughout the year.

144. It is clear from these exercises that surplus labor estimates correspond to unemployment based on a normative labor supply. If the estimate is made in units of time (hours or days) the surplus labor rate is simply the normative flow rate. But if the estimate is converted into the number of 'removable' persons, it differs from the stock rate, for the stock rate is computed by counting all workers with a positive flow rate \bar{u}^{t*} , while the number of surplus persons is computed simply by dividing the surplus time by the norms of labor supply per person. Thus the normative stock rate as defined in Table 3 and the stock of surplus persons are derived from the same basic estimate of surplus time but they differ in the way in which the surplus time is converted into numbers of persons.

145. It is also clear that surplus labor estimates cannot be regarded as estimates of low-productivity employment in the full sense of the term. For they allow an increase in working time per worker, but not an increase in productivity per unit of working time. If we use some average productivity norm, we can get an additional estimate of surplus labor as the excess of labor time actually applied over the labor time technically necessary to produce a given output. Suppose the current output Q requires time L^{dt} supplied by L^{SP} workers, each working h hours. If only h is raised to h^* , L^{dt} remaining the same, the number of surplus workers vide equation (13) above is

$$N^{u1} = L^{dt} \left(\frac{1}{h} - \frac{1}{h^*} \right) \quad h^* > h \quad (16)$$

$$= \frac{Q}{v} \left(\frac{1}{h} - \frac{1}{h^*} \right) = Q \left(\frac{1}{vh} - \frac{1}{vh^*} \right)$$

where productivity per hour $v = Q/L^{dt}$. If v is also raised to v^* the number of surplus persons increases by

1/ The following example illustrates the difference between N^{u1} and N^u . Four persons produce 160 units of output when each person works four hours (h) and productivity per hour (v) is 10. Two persons are surplus if h alone is raised to 8 hours but three persons are surplus if v is also doubled.

Number of Workers	Output Q	Output per Hour $v = Q/L^{dt}$	Hours of Labor Time L^{dt}	Hours per person	Persons Required $L^{SP*} = Q/hv$	Surplus Persons
4	160	10	16	4	4	0
4	160	10	16	8	2	2
4	160	20	8	8	1	3

$$N^{u2} = \frac{Q}{h^*} \left(\frac{1}{v} - \frac{1}{v^*} \right) \quad v^* > v \quad (17)$$

The gross surplus labor due to working time adjustment as well as productivity adjustment is $\frac{1}{v}$.

$$N^u = N^{u1} + N^{u2} = Q \left(\frac{1}{vh} - \frac{1}{v^*h^*} \right) \quad (18)$$

146. The usual empirical estimates only measure N^{u1} , because the technical coefficient v is kept constant. But if underemployment existing in the sense of the extremely low productivity of the employed is to be quantified we also need estimates corresponding to equation (17). For in developing economies underemployment of the "working poor" due to the meagre productivity of full-time work is no less important than underemployment due to work sharing.

147. In societies where all working time is employed with some minimum desirable efficiency N^u will be identical with labor time not employed at all N^{u1} ; in societies where all labor time is 'employed' but used inefficiently N^u would be identical with N^{u2} . But in developing countries we should expect both components of unemployment to exist for the poor in these countries suffer from the double curse of unutilized labor as well as unproductive labor.

148. The choice of the labor productivity norm v^* involves some unavoidable arbitrariness. For any group of n producing units it would be dangerously simple to say that v^* should be v_{\max} of the group $\frac{1}{v}$ because every unit cannot be expected to achieve the highest labor productivity of the group without much additional cost. In fact the choice of any average productivity norm whatever would involve serious theoretical difficulties.

149. Individual production units (or sets of similar units) in developing countries often face differential input and output prices, and operate with different resource constraints and even on different production functions. In their diverse circumstances, their privately optimal input combinations and hence labor productivity must differ widely.

$$\frac{1}{v} \quad \text{Then } N^{u2} = \sum_{i=1}^n \left(\frac{1}{v_i} - \frac{1}{v_{\max}} \right) \left(\frac{Q_i}{h^*} \right) \quad (19)$$

In the presence of factor-market, product-market and technological fragmentation, estimates of surplus labor derived from the application of any uniform labor productivity standard to all production units must be highly artificial. The estimated surplus labor may not in fact show up as such if the millieus facing different units make it optimal for them to use the amount of labor which they do. 1/

150. The marginal productivity approach to the measurement of surplus labor appears to be an improvement on the use of any average productivity norm. With the average productivity norm surplus labor is measured as the excess of labor actually used over the labor required with the norm; with the marginal productivity approach surplus labor is measured as the excess of labor in existence over the amount of labor at which its marginal productivity would be zero.2/ In both cases it is critical to distinguish between surplus time and surplus workers. For, as we have seen, product per worker equals working time per worker multiplied by output per unit of time; and therefore the number of surplus workers depends on whether one or both components of average product are raised to some standard level. Similarly, the marginal product of labor estimated from a production function would depend on whether the labor input in it is measured as time applied to production or as the number of workers wholly and partly engaged in production.

151. In most of the cross-section farm production function exercises the labor input has been measured as person-days spent in agricultural operations. (See, for example, Rao 1965, Saini, 1969 and Bardhan 1974). All the functions estimated by these writers with sample data from 9 regions of India not only show the marginal product of labor days to be significantly positive but invariably higher than the wage rate for hired labor. The time actually spent in production cannot normally have a zero marginal productivity because, even in inefficient agriculture, the hours which make no contribution to production at all would not be spent on production and would not be recorded as such. If labor available in the sample households, rather than labor-time actually applied on the farm, is included as a variable in the production functions there is greater likelihood of the marginal product of labor turning out to be zero. But this has not been done in the production function studies.

152. Even if the labor input is properly defined and its coefficient turns out to be non-significant, it would be difficult to know whether

1/ Analogous difficulties arise in assuming normative labor supply per person to be more or less than the voluntary supply which may be subjectively optimal with given preferences, opportunities and constraints.

2/ This latter excess is, of course, different from the excess of actual labor use over optimal labor use even when marginal product is positive. Optimal labor use here is the amount which equates the positive marginal product to the relevant opportunity cost of labor.

this result was due to multicollinearity or simultaneous equation bias or the existence of true disguised unemployment.

153. It is also obviously necessary for a rigorous test of the surplus labor hypothesis that only those farms are included in the sample for estimating production functions which use no hired labor at all or only a very small amount of hired labor, because on farms using hired labor the marginal productivity of labor cannot be expected to be zero; otherwise farmers would be paying a positive wage for labor whose marginal productivity is zero. The Desai-Mazumdar (1970) study of 99 West Bengal farms is exceptional for it presents separate production functions for farms (A) using and (B) not using hired labor. For group A the marginal product of labor turns out to be positive and for group B it is not significantly different from zero in most specifications. The latter result clearly shows that surplus labor exists on farms in group B, mainly, as the authors show, due to the relatively smaller availability of complementary non-labor inputs. An estimate of surplus labor on these farms would include two components: (i) the excess of labor-time available in the households over the time applied to production and (ii) the excess of labor-time applied in production over the time that would be required if the intensity of working-time was raised, say, to the intensity of hired labor-time or family-labor time in a milieu of labor shortage. The important point here is that when even the marginal product of labor-time actually applied to production is found to be zero, it is clearly "softer" time, disguising inefficiency and definitely includes a component of surplus labor.

154. If the objective of production function research is not merely to test the surplus labor hypothesis but to assess the optimality of labor used even though its marginal product is positive, we face the difficulty that there is no single appropriate cost of labor with which it may be compared, if due to labor market segmentation this cost differs for different sets of farms.

155. Marginal productivity also differs at various levels of labor use if the usual log-linear production function specification is used. An estimate of marginal productivity at the geometric mean input and output levels of a sample has no particular economic significance. Ideally, then, we would have to estimate and compare the marginal productivity and the effective cost of labor separately for each farm and then compute the amount of unnecessary labor used in each farm. Such work has not been done.

156. Just as we cannot assume that the marginal productivity and the opportunity cost of labor is the same on all farms, we cannot always assume that all farms are on the same production function. It would, therefore, be necessary to identify and group farms whose technology is homogeneous in some objective sense and estimate parameters separately for each group. The identification of such groups becomes difficult when technology has begun to change.

157. It appears, then, that if realities run counter to the basic assumptions behind the usual cross-section production function exercises, namely (1) the homogeneity of technology and (2) the uniformity of prices at which output can be sold or factors of production, particularly labor, are available to different sets of farms, so that privately optimal input combinations and marginal productivities would differ enormously across farms, future studies using the production function approach to the measurement of surplus labor or the assessment of the optimality of labor use must incorporate more disaggregation of farms along many dimensions.

158. In the final analysis, the problems of defining privately optimal labor supply and labor absorption and accounting for the gap between the two cannot be solved without a more inclusive theoretical model of the labor market. In an economy where millions of rural households take their own labor supply and labor use decisions, the level of unemployment and wage levels will be the aggregate resultant of these decisions. A model alone can show the conditions under which excess labor supply can exist when every household is offering a privately optimal labor supply and every producing unit absorbs a privately optimal amount of labor. In this disequilibrium situation, there is no set of positive wages at which voluntarily supplied labor time is fully absorbed. This situation is of course different from the low-wage equilibrium case under which the labor market is cleared but the lowest wage in the set of equilibrium wages is excessively low. The model should also reveal the conditions of this low-wage equilibrium.

159. The specification of a socially optimal (normative) labor supply (\bar{L}^S) different from the voluntary supply (L^S), and some normative level of labor absorption, different from the actual, must also remain arbitrary without a model in which these are derived from the maximization of some social objective function under relevant constraints.

160. But the results of such a programming exercise may not be operationally very useful in an economy where the Government does not directly control labor supply and labor demand decisions. It can directly control the volume and wages of public sector employment, but if the employment gap is too large to be absorbed by direct public sector employment, other policies are necessary to induce greater private labor absorption. This brings us back to the critical need to understand, with a model, the relative strength of different forces which determine private labor absorption. Policy makers can then choose appropriate instruments to influence these forces.

7. TOWARD A MODEL OF THE LABOR MARKET

161. A model of the labor market is presented in another paper 1/ but it may be useful to summarize here the key features of its specification and the causes which produce a surplus labor disequilibrium and/or a low-wage spectrum.

162. A realistic modelling of the rural labor market requires that dualism, both in the absorption of labor and the supply of labor, is recognized. The large commercial farm sector which uses only hired labor should be distinguished from the small farm sector which uses only family labor and sells surplus family labor to the large farm sector. Similarly, on the supply side, rural households must be divided into small farm households whose labor supply is allocated between large farms and their own small farms; and landless households who hire out their entire labor supply to the commercial farm sector. We can safely assume, without altering any important conclusion, that the commercial farm households do not supply any manual labor and the small farms do not hire any labor, though in reality the small farms do hire some labor and the commercial households may supply some manual labor. We also abstract from the existence of tenancy in the basic model. Another variant incorporates a crop-sharing sector.

163. The demand for labor on the large farms can be specified as dependent on the marginal productivity of labor in the production function of the large farm sector. The supply of hired labor from the small farms will be the surplus left after they have absorbed an optimal amount of family labor on their own farms. This surplus is determined in a complex way by the utility function of small farm households and the production function of small farms subject to a minimum reservation price equal to the average product which small farm households can obtain by employing all available household labor on their own farms. The supply of labor from the landless families should depend on their income preferences subject to the restriction that the minimum labor time supplied by them must equal the subsistence income divided by the going wage.

164. Given these specifications the rural wage rate for hired labor is determined by the equality of the demand for labor on the large farms and the total supply of hired labor from the small farms and the landless families. The total labor supply is allocated between large farms, small farms and the pool of unemployed labor.

165. The reduced form of the model can be written as a rural unemployment or excess labor supply function.

166. Since the rural labor market interacts intensively with the urban market the model also specifies the mode of this interaction. The urban market, as is widely recognized now, should consist of two sub-sectors:

the organized sector where wages are kept at a relatively high level by legislation and/or unionism; and the informal sector where entry is free and wages are competitively determined. Migration to the urban sector can be determined by a Harris-Todaro (1970) type of mechanism which equates rural earnings to the expected earnings in the organized urban sector and in the unorganized informal sector. We also specify that the probability of getting an organized sector job from a state of open unemployment is higher than the probability of getting such a job from the informal sector. 1/ There are then two wage differential equations instead of one.

167. The complete model, with the addition of two urban sectors and wage differential equations, determines three wage rates and the allocation of labor between four labor-using sectors and the pool of the unemployed.

168. The model shows that unemployment is a function of:

(a) the parameters of income-leisure preference in the small farmers' and landless laborers' utility functions and their reservation prices which determine the supply of labor;

(b) the stock of non-labor factors, land and capital;

(c) substitution and technical change parameters of the production functions of different sub-sectors, which influence the demand for labor associated with a given stock of non-labor factors;

(d) the institutionally fixed level of wages in the organized sector; and

(e) job-search behavior which partly determines voluntary unemployment in search of high-wage jobs for periods over which job-search can be financed.

169. The equilibrium impact multipliers of each exogenous variable/parameter influencing unemployment can be obtained.

170. The results suggest the need to distinguish between income-preference unemployment, land/capital-shortage unemployment, technological-unemployment, distortion-unemployment and job-search unemployment according to the dominant cause of it in any particular situation.

171. In a mixed economy, policy-makers can do very little to alter private preferences and job search behavior which determine the supply of labor; but the rate of accumulation, technological choices and factor

1/ This feature was introduced by Sabot in his model of the urban labor market (1974).

price distortions which determine labor absorption are all controllable with appropriate public policies. They can also influence the level of employment by inducing changes in the final demand-mix, though some studies (Krishna 1972, Morawetz 1974) show that overall growth and technological changes have a much greater effect on the growth of employment than the composition of final demand in low-income countries.

172. If institutional constraints on policy prevent a substantial improvement in the rate of investment and choices of processes and products so as to absorb the available labor supply, there is a strong case for a direct expansion of public sector employment, to produce mass consumption goods and/or infrastructure and social services, assuming that this policy option is more feasible than an improvement of the rate and pattern of development itself.

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