# POVERTY-UNEMPLOYMENT RELATIONSHIP IN RURAL INDIA

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This paper seeks to examine the efficacy of the time criterion of unemployment in poor agrarian economies from the point of view of identifying poverty groups. It indicates that even with the alterations and dis-aggregations which have been recently suggested in the literature, the time measure of unemployment leaves large gaps. Further, the unemployed persons need not necessarily be poor, irrespective of the category of workers to which they belong. It is suggested that alternative criteria for measurement of unemployment, like the productivity criterion, are likely to be useful supplements to the time based measurements, for getting a holistic picture of unemployment and poverty.

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The extent of rural poverty in developing countries, in most of Asia, is much more widespread than the recorded levels of rural unemployment. This had led to a scepticism regarding the validity of the conventional time-criterion' of measuring employment in agrarian settings from the point of view of economic utility of the work done (Acharya, 1983; Raj Krishna, 1976; Sen, 1975). The fundamental relationship that links work with wage (income) could be highly distorted in agrarian economies since assumptions such as work-rationalization and non-zero marginal productivity, need not hold. In view of this observation, a number of alternative measures have been evolved to estimate surplus labour (Ahuja, 1975; Mehra, 1976). In a recent paper, Visaria (1981) has suggested that, with some adaptation, the time criterion approach itself can provide better estimates of the under-utilisation of the labour time available. Visaria has demonstrated an association between unemployment and poverty and has further shown that the bulk of the unemployed are concentrated among the landless and the near landless labourers[1].

This paper attempts to re-examine the adequacy of the time criterion of employment/unemployment, to highlight the fact that, in spite of the adaptations in the data classification, the time criterion measure is inadequate for explaining the extent of poverty and for identifying approaches for poverty eradication[2]. More specifically, it seeks to (a) examine the linkage between the extent of employment and levels of living, (b) study the composition of the labour force to adjudge the employment and levels of living in its different components, and, (c) decompose the unemployment by components and levels of living to identify which categories of the unemployed are poor. In no way is it, however, being suggested that the large surveys conducted to measure idle time do not serve any purpose. The paper only intends to highlight that the prevalence of the extent of underemployment *a la* Nurkse cannot be fully captured by the time criterion.

The data used in this paper are drawn from the 32nd round of the National Sample Survey (NSS) pertaining to 1977-78 for All-India.

## Definitions

The NSS uses three methods simultaneously for measuring the activity status of a person. The activity on which a person spends major part of his/her time during the 365 days preceding the date of the survey is considered the usual activity status (US) of the person. The second method is the current weekly status (CWS) which initially records a unique activity status with reference to the week preceding the date of survey. A person is classified as (un) employed if he/she has (not) worked for even one hour during the reference week (and is actively seeking or is available for work). The last method is the current day status (CDS) in which the unit of classification is a 'half day'. A person is classified as having worked a full day if he/she has worked for 4 hours or more in a day. He/she is classified as having worked for half a day if he/she has worked for one hour or more but less than 4 hours in the day, and is unemployed for half a day if he/she is seeking or available for upto 4 hours for work on that day. If a person is not engaged in any gainful activity even for one hour during the day and is available for work for 4 hours or more, he/she is classified as unemployed for the entire day.

Table 1 shows the extent of unemployment in rural India as measured by the three methods described above.

**Table  1**

**INCIDENCE  OF  UNEMPLOYMENT  IN  THE  LABOUR  FORCE  AGED  5  AND  ABOVE BY  DIFFERENT  APPROACHES,  RURAL  INDIA  1977-78.**

| Approach | Unemployed | |
|---|---|---|
| | M | F |
| Usual  Status | 2.12 | 5.52 |
| Current  Weekly  Status | 3.57 | 4.13 |
| Current  Daily  Status | 7.12 | 9.18 |

Source: GOI 1981

## Poverty-Unemployment  Linkages

The first relationship sought to be established here is the one between income (expenditure)[3] and the extent of employment and unemployment in rural India. For this purpose, employment as per the CDS, which is the closest to the flow concept of labour time, is tabulated by expenditure class in Table 2. It is evident from the table that the incidence of employment (unemployment) is higher in the higher (lower) expenditure brackets. The simple correlation co-efficient between the mean per capita expenditure and employment of persons (i.e. row 3 of table 2), is 0.86, which is highly significant. The span of variation in unemployment is, however, small, ranging between 4 and 15 per cent, while the expenditure classes, at least theoretically, range between 0 and 00. Some explanation of the gap between employment and levels of living can be attributable to the economic dependency ratio, in view of the fact that the expenditure in Table 2 relates to 'per capita expenditure of the household'. It is *not* the individual income. However, even after adjusting the data for this factor, a large gap still remains[4].

**Table 2**

**DISTRIBUTION OF EMPLOYMENT AND UNEMPLOYMENT BY CDS IN (00) AND PERCENTAGES FOR RURAL MALE AND FEMALE**
WORKERS ACCORDING TO EXPENDITURE GROUPS (FOR AGE 5+)

| Household per Capita Expenditure (Rs.) | | 0.00–9.99 | 10.00–19.99 | 20.00–29.99 | 30.00–39.99 | 40.00–49.99 | 50.00–69.99 | 70.00–99.99 | 100.00–149.99 | 150.00–199.99 | 200 + |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. No. of days available (Labour Supply) | M | 702 | 13237 | 93274 | 194516 | 227932 | 360550 | 255505 | 130703 | 35028 | 25623 |
| | F | 419 | 8144 | 48619 | 91338 | 96167 | 133315 | 87590 | 40644 | 9815 | 6278 |
| | P | 1121 | 21381 | 141893 | 285854 | 324099 | 493865 | 343095 | 171347 | 44843 | 31901 |
| 2. No. of days worked | M | 585 | 11321 | 82724 | 177225 | 210034 | 336876 | 240698 | 123854 | 33909 | 24674 |
| | F | 372 | 6707 | 41650 | 81357 | 86999 | 122169 | 81309 | 38489 | 9351 | 5966 |
| | P | 997 | 18028 | 124374 | 258582 | 297033 | 459045 | 322007 | 162343 | 43260 | 30640 |
| 3. Incidence of unemployment | M | 0.17 | 0.14 | 0.11 | 0.09 | 0.08 | 0.07 | 0.06 | 0.05 | 0.03 | 0.04 |
| | F | 0.11 | 0.18 | 0.14 | 0.11 | 0.10 | 0.08 | 0.07 | 0.05 | 0.05 | 0.05 |
| | P | 0.15 | 0.16 | 0.12 | 0.10 | 0.08 | 0.07 | 0.06 | 0.05 | 0.04 | 0.04 |

Note: M, F and P refer to Males, Females and Persons.

Data on the distribution of population by expenditure classes shows that 49.6 per cent of the persons are below the poverty line while the extent of unemployment does not exceed even 20 per cent.[5] At the aggregate level, therefore, it is evident that the relationship between expenditure levels and employment is strong but limited. Attempt is, therefore, made to disaggregate the data by its occupational composition because of the heterogeneity of the nature of work and workers.

In Table 3, we present data on the incidence of unemployment, as per CDS, according to the type of households[6] and its major source of income to scrutinize whether the composition of the work force provides any explanation for the gap between the reported incidence of poverty and unemployment.

Table  3

COMPOSITION OF THE TOTAL WORK FORCE AND THE INCIDENCE OF
UNEMPLOYMENT (CDS) BY HOUSEHOLD TYPE (US) FOR RURAL INDIA

| Household  Type | Percentage Composition of the Total Rural Work-Force | Incidence of Unemployment | | |
|---|---|---|---|---|
| | | M | F | P |
| Self-Employed  in  Agriculture | 51.72 | 2.83 | 2.26 | 2.68 |
| Self-Employed  in  Non-Agriculture | 10.73 | 5.19 | 6.37 | 5.48 |
| Agricultural  Labourers | 26.41 | 14.69 | 18.40 | 16.36 |
| Other  Labourers | 6.48 | 12.50 | 13.18 | 12.73 |
| Others | 4.65 | 8.31 | 10.86 | 8.80 |
| Total | 100.00 | 7.12 | 9.18 | 7.70 |

The table shows the highest incidence of unemployment among the agricultural labourers. The marked similarity in the unemployment incidence among the households of agricultural labourers, the unemployment in the lower expenditure groups shown in Table 2, and the fact that about 56 per cent of the total unemployed are agricultural labourers, may lead one to conclude that poverty is concentrated among the agricultural labourers, who also manifest high unemployment rates.

But Table 4, which presents a classification of the employed persons by CDS, disaggregated by the household type, calls for more caution before drawing conclusions.[7] There is a large percentage of the poor among the *employed* in all categories of jobs. It is true that the poor are less among the self-employed and are more among the agricultural labourers, but the problem of poverty is substantial among cultivators, who till the uneconomical^ small plots of land, or artisans whose tools permit extremely limited productivity.

To adjudge the extent of poverty of the working poor, vis-a-vis the unemployed, a co-efficient of the extent of poverty is defined.[8] Let P be the said poverty line and Mo be the mode of the frequency distribution of persons over the expenditure classes. The measure of the extent of poverty is defined as:

$$E = \frac{Mo - P}{\sqrt{fx^2 / N}}$$

Table 4

DISTRIBUTION OF EMPLOYMENT (CDS) BY HOUSEHOLD TYPE FOR WORKFORCE OF AGE 5 + BY HOUSEHOLD MONTHLY PER CAPITA EXPENDITURE (ROW PERCENTAGES)

| Household Type | | Expenditure Class | | | | | | | | | | % below Poverty |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0.00–9.99 | 10.00–19.99 | 20.00–29.99 | 30.00–39.99 | 40.00–49.99 | 50.00–69.99 | 70.00–99.99 | 100.00–149.99 | 150.00–199.99 | 200 + | |
| Self-Employed in Agriculture | M | 0.03 | 0.52 | 4.52 | 11.54 | 15.78 | 28.62 | 22.00 | 11.66 | 3.11 | 2.20 | 100 | |
| | F | 0.04 | 0.94 | 5.96 | 13.68 | 17.08 | 27.08 | 20.39 | 10.62 | 2.59 | 1.61 | 100 | |
| | P | 0.03 | 0.63 | 4.91 | 12.12 | 16.13 | 28.21 | 21.56 | 11.38 | 2.97 | 2.04 | 100 | 42.28 |
| Self-Employed in Non-Agriculture | M | 0.00 | 0.66 | 5.69 | 13.54 | 17.19 | 29.09 | 19.79 | 9.85 | 2.52 | 1.67 | 100 | |
| | F | 0.06 | 1.13 | 8.06 | 17.17 | 18.98 | 27.81 | 16.93 | 7.39 | 1.58 | 0.91 | 100 | |
| | P | 0.02 | 0.77 | 6.27 | 14.43 | 17.62 | 28.78 | 19.09 | 9.25 | 2.29 | 1.48 | 100 | 47.74 |
| Regular Employees in Agriculture (incl. unpaid) | M | 0.20 | 2.24 | 11.91 | 18.58 | 18.06 | 22.97 | 14.77 | 7.66 | 2.11 | 1.49 | 100 | |
| | F | 0.07 | 2.02 | 12.09 | 20.47 | 19.20 | 20.38 | 15.12 | 7.39 | 2.26 | 0.99 | 100 | |
| | P | 0.19 | 2.22 | 11.93 | 18.78 | 18.18 | 22.70 | 14.80 | 7.64 | 2.13 | 1.44 | 100 | 58.11 |
| Regular Employees in Non-Agriculture | M | 0.09 | 0.41 | 2.39 | 6.79 | 10.90 | 24.17 | 24.69 | 17.29 | 6.89 | 6.37 | 100 | |
| | F | 1.12 | 3.26 | 8.15 | 11.72 | 11.30 | 17.83 | 16.80 | 15.29 | 7.32 | 7.19 | 100 | |
| | P | 0.24 | 0.82 | 3.20 | 7.49 | 10.95 | 23.27 | 23.56 | 17.00 | 6.95 | 6.49 | 100 | 29.68 |
| Labourers in Agriculture (Agricultural Labourers) | M | 0.06 | 2.07 | 13.65 | 23.98 | 21.51 | 23.50 | 11.07 | 3.29 | 0.60 | 0.26 | 100 | |
| | F | 0.03 | 2.02 | 13.69 | 23.50 | 21.04 | 23.68 | 11.82 | 3.44 | 0.56 | 0.23 | 100 | |
| | P | 0.05 | 2.05 | 13.66 | 23.80 | 21.34 | 23.57 | 11.36 | 3.55 | 0.58 | 0.24 | 100 | 67.97 |
| Labourers in Non-agriculture | M | 0.05 | 1.13 | 8.96 | 18.66 | 20.16 | 26.64 | 15.31 | 6.85 | 1.29 | 0.95 | 100 | |
| | F | 0.22 | 2.64 | 13.14 | 21.78 | 19.40 | 25.15 | 12.28 | 4.25 | 0.61 | 0.51 | 100 | |
| | P | 0.10 | 1.56 | 10.14 | 19.54 | 19.94 | 26.22 | 14.46 | 6.11 | 1.10 | 0.82 | 100 | 59.15 |

The denominator is the standard deviation which incorporates the spread effect. The variables f, x and N in the formula are the frequencies, the mid-values of the expenditure classes and the total population, respectively, as in Table 4. The formula is similar to the Pearsonion skewness co-efficient with the signs reversed, except that the 'mean' is replaced by P. The formula follows the logic that the purpose here is to determine the distance of the modal frequency from a fixed poverty-line, moderated by the spread effect, in a number of similar shaped distributions, with a view to guage their relative distances from P. 'E' will be positive in less groups and the magnitude will rise with the fall in poverty. The converse is also true, i.e. in groups reporting a large incidence of poverty, the index will be small and may even become negative. With a rise in poverty, the index will rise with a negative sign. A zero value indicates a situation where the mode coincides with the poverty line. It has no other significance. Theoretically, the index can range between -00 to +00. The values are computed for the six categories of employment in Table 4. It is also computed for the umemployed, for a contrast.

Table 5 shows that the extent of poverty among the working regular employees in agriculture and working labourers in non-agriculture is similar to that among the unemployed persons. Further, the extent of poverty among the *working* agricultural labourers is much more than that among the unemployed workers. Thus, to say that the poorest are so because they are unemployed, is not necessarily true. Some employed are very poor, while some *unemployed* probably wait for better opportunities.

**Table 5**

CO-EFFICIENT OF THE EXTENT OF POVERTY, FOR
THE EMPLOYED (CDS) AND THE UNEMPLOYED (CDS)

| Household Type | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| E<br>Co-efficient<br>for persons<br>(both sexes) | 0.18 | 0.13 | 0.03 | 0.30 | −0.18 | 0.03 | 0.03 |

Note: Nos. 1 to 6 refer to the same household type categories as in Table 4. No. 7 refers to the unemployed.

## Compostion of the Unemployed

Following from the above, attempt is now made to disaggregate the unemployed persons by their household type and poverty status. The breakdown of the unemployed persons by type of household and expenditure patterns, is as such, not available. We, therefore, calculate these figures using an indirect method.

For simplicity's sake, consider that there are two categories of workers and only one sector.[9] The total unemployed persons can be categorized into those belonging to self-employed households and are poor ($X_{11}$), those belonging to the self-employed households and are not poor ($X_{12}$), those belonging to labourers' households and are poor ($X_{21}$) and those belonging to labour households and are not poor ($X_{22}$). The following identities can be then established.

$$X_{11} + X_{12} = U_1$$
$$X_{21} + X_{22} = U_2$$
$$X_{11} + X_{21} = P_1 \qquad\qquad (1)$$
$$X_{12} + X_{22} = P_2$$

Here $U_1$ and $U_2$ are the unemployed persons belonging to the self-employed and the labour households, and $P_1$ and $P_2$ are the poor and the non-poor unemployed workers. $U_1$, $U_2$, $P_1$ and $P_2$ are known from Tables 3 and 4, respectively. The system is, however, still under-determined since $U_1 + U_2 = P_1 + P_2$. An additional condition is necessary for a solution of the system. Let us hypothesize a relationship, $X_{11} = \alpha\, X12$, where $\alpha$ is the ratio of the quantum of unemployment reported by the poor and the non-poor among the self-employed households.

The value of $\alpha$ is obtained indirectly under restricted conditions. First, the relationship between the levels of living and the size of land-holdings is assumed to be continuous and monotonia Under this assumption it is possible to obtain the land size holding at the poverty line from a two-way cross tabulated data on the levels of living and land holding of cultivators. Let this be L. Next, the data on currently unemployed persons whose principal occupation otherwise is agriculture, are tabulated by their land size holdings. Under the assumption that land holders are all cultivators by the usual status, the figures for the number of the poor and non-poor unemployed cultivators can be calculated by demarking these data by L. The numerical values of $\alpha$ for male and female workers are 4.75 and 6.64, respectively.[10]

The solution of system (1) based on these values of a is given in Table 6.

| Household Type | Poverty Status | Poor | Non-Poor | Total |
|---|---|---|---|---|
| | M | 4726.96 (4.97) | 22453.04 (23.59) | 27180 (28.56) |
| Self-Employed | F | 1122.22 (2.34) | 7450.78 (15.53) | 8573 (17.87) |
| | P | 5849.18 (4.09) | 29903.82 (20.89) | 35753 (24.97) |
| | M | 50147.04 (52.68) | 17869.96 (18.77) | 68017 (71.44) |
| Labourers | F | 29825.58 (62.18) | 9567.42 (19.95) | 39393 (82.13) |
| | P | 79972.62 (55.86) | 27437.38 (19.17) | 107410 (75.03) |
| | M | 54874 (57.65) | 40323 (42.35) | 95197 (100) |
| Total | F | 30947.80 (64.52) | 17018.20 (35.40) | 47966 (100) |
| | P | 85821.80 (59.95) | 57341.20 (40.05) | 143163 (100) |

Note: Figures in parentheses are the percentages to the total unemployment.

It is evident from this table, that among the unemployed persons belonging to the labour households, some 26 per cent are not poor. Among the unemployed persons, belonging to self-employed households, some 18 per cent are poor.[11] It follows that poverty is prevalent among the employed and the unemployed, in all types of households, and vice-versa. This result thus points out that, in addition to the agricultural labourers, some cultivators and other own account workers also face the brunt of poverty during their period of unemployment. Small and uneconomical land size holding may neither provide employment on a continuing basis nor yield productivity.

The time criterion, it is demonstrated, is not able to capture all the dimensions of poverty in agrarian structures. In this regard, the productivity/income criteria of unemployment can be used as alternative methods to supplement the existing time estimates.

**Productivity Criterion Estimates**

The productivity (or the income) criterion yields meaningful estimates from the point of view of identification of poverty groups and determination of surplus labour in rural agrarian settings. These cannot, however, be calculated from the groups NSS data. Some of the estimation methods are laid down in Islam *et al* (1982) and Acharya (1983). Here we present estimates from some studies for illustrative purposes.

The methods followed by different authors for measuring unemployment by the productivity criterion can broadly be classified into two categories. The first method entails the calculation of the 'required' labour for performing a certain operation, given the technology. This is then subtracted from the total utilized labour to obtain the unemployed (surplus) labour. The second method assumes that economically meaningful employment is one which yields a marginal productivity at least equal to the prevailing wage rate. All those persons whose marginal productivity (some authors have used variations of average labour productivity) is less than the average wage, or a stipulated income, are considered unemployed. For the sake of convenience, we will call these as method A and B, respectively. In Table 7, some estimates are provided as examples.

Table 7

UNEMPLOYMENT RATE BY TIME AND PRODUCTIVITY CRITERIA
AND EXTENT OF POVERTY

| Source and Location | Year | Method for Productivity Criterion | Unemployment Rate by Criteria (%) | | Poverty (%) |
|---|---|---|---|---|---|
| | | | Productivity | Time | |
| — Acharya (1983): Bihar | 1971 | B | 48 | 6 | 59 |
| — Acharya (1983): Haryana | 1971 | B | 18 | 22 | 24 |
| — Islam *et al* (1982): Nepal | 1976 | A | 37 | — | 65 |
| — Hauzer (1972): South-East Asia | — | A & B | 22-36 | 5-10 | 21 |
| — Mehra (1966): Assam | 1961 | A | 40 | 1.5 | 29 |
| Rajasthan | 1961 | A | 36 | 5 | 33 |
| Punjab | 1961 | A | 19 | 4 | 22 |

It is evident from Table 7 that the productivity criterion of unemployment is closer to explaining the poverty status. The gap which still exists could be due to the method followed, since in method A, it is possible that any rationalization may not yield statisfactory labour productivity due to the prevailing technology and agro-climatics. The economic dependency ratio may also cause variations. In some cases, the poverty is lower than unemployment. This is quite possible when some unemployed persons are able to share the earnings of the employed and, thereby, avoid falling below the poverty line.

## Conclusion

This paper examines the relationship between poverty and unemployment in rural India with a view to assess the efficacy of the time criterion of unemployment for the identification of poverty groups. The relationship between poverty and unemployment is found to be strong but limited. It is also seen that large numbers among the employed are poor in all categories of workers, though the agricultural labourers are found to be poorer than the cultivators. Further, not all unemployed persons are poor even in the category of the labourers. The time criterion of measurement is thus of limited importance in the identification of poverty in agrarian societies. Alternative measures like the productivity/income criterion are suggested to be more meaningful.

### NOTES

1. The 'adaptations' referred to by Visaria are, (1) disaggregation of the labour force and treatment of each of the segments separately, and (2) usage of multiple definitions of time use. We have used both these adaptations in this analysis, with the difference that data on one of the definitions of unemployment is not available to us. This however, does not change the character of the arguments presented here. The data used by Visaria are from the National Sample Survey (NSS), 27th round, 1972-73. The NSS collects nationwide large samples on different facets of the socio-economic situation of the country on a continuing basis in its different rounds. The data are highly representative and authentic. The data are published in grouped forms in one way and two way classifications on a variety of economic, social and demographic variables. Re-grouping or cross tabulating is not always possible from the published tables. The raw data are kept confidential.

2. Visaria too admits that poverty is higher than unemployment, as a passing reference.

3. The NSS collects data on the household expenditure. Data on income are not collected. Expenditure is used as a proxy for income.

4. The average dependency ratio across expenditure classes i.e. the proportion of economically active persons in the household, is 0.41, with a standard deviation of 0.02. The deviation is so small that one would easily take the dependency ratio to be 0.41 for the population. An adjustment with this ratio will provide a crude estimate of earnings per worker if expenditure is equated to earnings. Even with this adjustment, the argument does not change much. Moreover, every society has a dependent population. Normatively, the quantity of earnings should be such that there is scope of feeding a 'normal size' dependent population with the household earnings.

5. Poverty is defined as per the accepted norms laid down by the Government of India. (See GOI 1980).

6. The details of occupation/industry/status are standardized by the ILO, and similar definitions are followed in most countries. Not all categories are applicable in all countries. Table 3 is the most typical disaggregation of the composition of rural work force applicable in Indian conditions.

7.  Table 4 has a minor modification in the disaggregation of the composition of the work force as compared to Table 3. A category of 'employees' is introduced, which constitutes less than 10 per cent of the labour force. About 4 per cent are in agriculture and 5 per cent in non-agriculture. The latter enjoy a better living standard  compared  to  any  other  category.

8.  We are aware of the more sophisticated measures of the extent of poverty. The Sen index is a typical example (see Sen 1980, Kakwani 1981). However, due to non-availability of data on the actual mean values of the interval classes, the Gini co-efficient, which is a pre-requisite for computation of any of these  formulae,  cannot  be  accurately  computed.

9.  This assumption is not very unrealistic keeping in view, the frequency distribution of the persons over the expenditure classes in Table 4. Further, the size of the non-agricultural sector is small.

10.  This method, at best, provides crude approximation of $X$ since the levels of living and land holding need not be continuous or follow a monotonic relationship. Next, it is not necessary that all land owning persons are self-employed by usual status. In spite of these limitations the estimates can be acceptable for  such  an  aggregative  exercise.

11.  These are calculated from the row percentages not directly readable from the table.

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