



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
<http://ageconsearch.umn.edu>
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

Vol XXX
No. 3

ISSN 0019-5014

CONFERENCE
NUMBER

JULY-
SEPTEMBER
1975

INDIAN JOURNAL OF AGRICULTURAL ECONOMICS



INDIAN SOCIETY OF
AGRICULTURAL ECONOMICS,
BOMBAY

ESTIMATION OF SURPLUS LABOUR IN AGRICULTURE AND PROBLEMS IN MOBILIZATION

Ashok K. Mitra*

Mobilization of rural surplus for development does not necessarily confine itself only to the generation of monetary and other near money resources, but also covers the aspect of the mobilization of surplus labour generated in agriculture which could be effectively utilized for the development needs.

Ever since Joan Robinson propounded the theory of disguised unemployment,¹ Arthur Lewis brought out his celebrated article on Economic development with unlimited supplies of labour² and Ragnar Nurkse wrote on the problems of capital formation in underdeveloped countries,³ a great deal of work has been done by the contemporary Indian economists on the theory and estimation of surplus labour in Indian agriculture.

The theory of surplus labour is based on the marginal productivity of labour and the view is that a large part of labour force engaged in agriculture has zero marginal product, at times even negative. Evidently, labour with zero or negative marginal productivity does not add anything to the total product and hence is surplus which could be syphoned off from agriculture with a little or no reorganization of the existing resources and with no decrease in output. When it comes to the actual estimation of the marginal product of labour there seems to be a lot of confusion not only in the estimation but also in the concept of labour itself. The usual procedure of computing marginal product of labour has been through the cross-section production function fit. More often than not, the results of such fits have shown marginal productivity of labour to be greater than zero and at times greater than the market wage rate. The doctrine of zero marginal productivity of labour and the consequent surplus, which was once the most widely held view, is now being challenged on the basis of the findings of greater than zero marginal productivity of labour. It is now being increasingly heard that symptoms of underdevelopment characterized by the existence of surplus labour in agriculture is illusory and that the improved agricultural practices are efficient enough to make full use of the total supply of labour in agriculture. The confusion and therefore the questionable logic are embodied in the unit of measurement of the variable in question. In other words, it makes quite a difference whether the labour is measured in terms of hours or days of work or is measured in terms of numbers.⁴ As Ashok Rudra has pointed out, it is perfectly pos-

* Gokhale Institute of Politics & Economics, Poona.

1. Joan Robinson, "Disguised Unemployment," *The Economic Journal*, Vol. XLVI, June, 1936, pp. 225-237.

2. Arthur Lewis, "Economic Development with Unlimited Supplies of Labour," *The Manchester School of Economic and Social Studies*, Vol. 22, May, 1954, pp. 139-192.

3. Ragnar Nurkse: *Problems of Capital Formation in Underdeveloped Countries*, Oxford University Press, Fair Lawn, N. J., 1953.

4. A. K. Sen, "Peasants and Dualism With and Without Surplus Labour," *The Journal of Political Economy*, Vol. LXXIV, No. 5, October, 1966, p. 425.

sible for the marginal productivity of labour measured in hours of work to be positive and that of number of labourers to be zero.⁵ Possibly because of the above confusion the surplus labour seems to have disappeared from our agriculture.

We however feel from all our experience and general observation regarding the nature and extent of labour inputs used in agriculture that the existence of surplus labour is not illusory. In this paper we make an attempt to estimate the surplus labour directly by size-group and also spell out the difficulties and problems involved in mobilizing the surplus for development purposes.

II

The data used in this study are taken from the Studies in the Economics of Farm Management, and the present exercise is confined to the Ferozepur district of Punjab only.⁶ Before making any estimation of surplus labour it is perhaps necessary to know the structure of farm workers. By farm workers we mean the family workers who are engaged full-time in the cultivation of their own farms. Table I gives the distribution of farm family workers by farm size. The number of family farm workers per farm increases with the increase in the farm size but per acre the number decreases by farm size. It is therefore obvious that the per acre utilization of family labour input would go down with the increase in the farm size. We present the average annual

TABLE I—NUMBER OF FARM WORKERS PER FARM AND PER ACRE

Size-group (acres)	1967-68		1968-69		1969-70	
	Per farm	Per acre	Per farm	Per acre	Per farm	Per acre
0—15	1.6	0.14	1.8	0.16	1.7	0.16
15—22	1.5	0.08	1.9	0.11	1.9	0.10
22—35	1.8	0.06	2.4	0.09	1.8	0.06
35—59	2.2	0.05	2.6	0.06	2.1	0.05
59 and above	2.1	0.03	2.8	0.03	2.4	0.03
Average	1.8	0.06	2.2	0.07	1.9	0.06

5. Ashok Rudra, "Direct Estimation of Surplus Labour in Agriculture," *Economic and Political Weekly*, Vol. VIII, Nos. 4-6, Annual Number, February, 1973, pp. 277-280.

6. Studies in the Economics of Farm Management, Ferozepur District, Directorate of Economics and Statistics, Ministry of Agriculture, Government of India, 1973.

labour days put in by a farm family worker by size of farms in Table II. The employment is in terms of days of 8 hours of work spent in crop production. The general observation is that the number of labour days put in by a family farm worker stays around 150 days except in 1967-68. It is further observed

TABLE II—AVERAGE ANNUAL EMPLOYMENT PER FARM WORKER IN CROP PRODUCTION

Size-group (acres)	1967-68	1968-69	1969-70
0 — 15	190.82	134.05	131.68
15 — 22	188.32	136.34	138.64
22 — 35	208.36	169.87	158.70
35 — 59	205.88	160.27	174.85
59 and above	164.70	94.95	117.28
Average	197.58	148.33	149.86

that the labour days per farm worker increase with the farm size excepting in the highest size-group in 1968-69 and 1969-70. Since the total quantum of work on bigger farms is more and since the number of farm workers does not increase proportionately with the increase in the farm size the farm worker has to put in more labour on bigger farms.

III

It is quite likely that during the busy weeks and months the labour days put in by a family farm worker are much higher than the annual average suggests. It would therefore not be very correct to assess the extent of unemployment and the consequent surplus labour on the basis of the average annual employment for the surplus estimated then would be subject to seasonal fluctuations. Therefore for estimating surplus labour which could be dispensed with we make use of the peak period labour requirement and the number of family farm workers who can satisfy the quantum of work during the peak period when fully employed. We compute the monthwise distribution of labour days per family farm worker by farm size from the similar data given for the average of all size-groups. The most busy months in terms of number of labour days per family farm worker are April and May involving harvesting and threshing of *rabi* crops; and this we take as peak period labour requirement for our computation of surplus labour. In fact, the seasonality factor in its entirety could be taken into account only if data are available in further break-up of the labour days put in the actual duration of peak period but unfortunately the published reports do not give data in such form. We shall have to make do with the labour days during the busy month instead of during the exact peak period in that month.

We take the peak month load per family farm worker as the quantity of labour that cannot be dispensed with throughout the year without bringing about any major organizational changes and perhaps decrease in total output. Thus by multiplying the peak month work load per worker by 12 we get the total quantity of labour per worker in a year that cannot be dispensed with. By multiplying this labour days with the number of farm workers and further by multiplying by the number of farms in each size-group, we arrive at the estimate of total labour days in each size-group that cannot be dispensed with. We then compute the minimum number of farm workers who can put in the above quantum of work assuming 300 days available per worker when fully employed. It should then be possible to estimate the surplus labourer under each size-group by subtracting minimum number of workers in these groups from the corresponding actual number of workers reported. Evidently the surplus estimated thus would be free from seasonality factor.

Thus, surplus labour $S = (W - W_0)$ and

$$W_0 = \frac{12L_{\max.} \times W \times m}{300}$$

where, $L_{\max.}$ = peak period quantity of labour per worker,

W = number of farm workers per farm,

m = number of farm in each size-group.

The result of our estimate is given in Table III. On an average, the estimate shows around 22 per cent and 28 per cent surplus labourer in 1968-69 and 1969-70.* The striking feature of the result is that the proportion of surplus labourer is highest in the largest size-group which is perhaps contrary to the general expectations. The only explanation there could perhaps be to this phenomenon is that the farmers in the highest size-group are very big farmers and they themselves do not participate very much in the physical work on farms though they are counted as farm workers. Evidently, they appear to be surplus labourer though actually non-working is perhaps voluntary and cannot be considered as unemployed and therefore surplus.

If therefore we rule out the largest size-group, we see that during 1968-69 and 1969-70 the proportion of surplus labourer decreases with the increase in the farm size. It indicates that the family farm workers on the smaller farms suffer from large-scale unemployment and under-employment, inasmuch

* The data on average annual labour days per farm worker and its distribution in 1967-68 do not seem to be in tune with that of 1968-69 and 1969-70 (Table II). We suspect that there is some mistake in presenting the basic data regarding this in the farm management report in 1967-68, and since our entire estimation of surplus labourer is based on the labour days put in per family farm worker, the estimate of surplus in 1967-68 would present a very different picture compared to 1968-69 and 1969-70 and might vitiate the whole analysis. We therefore confine our discussion to 1968-69 and 1969-70 only.

TABLE III—ESTIMATE OF SURPLUS LABOURER BY FARM SIZE

Steps involved in estimation of surplus labourer	1968-69 (acres)					1969-70 (acres)						
	0-15	15-22	22-35	35-59	59 and above	Ave- range	0-15	15-22	22-35	35-59	59 and above	Ave- range
1. Peak period quantity of labour in days per worker L_{max}	17.63	17.93	22.34	21.08	12.49	19.51	15.02	15.82	18.11	19.95	13.38	17.10
2. $L_{max} \times 12$	211.56	215.16	268.08	252.96	149.88	234.12	180.24	189.84	217.32	239.40	160.56	205.20
3. Number of farm worker per farm (W)	1.80	1.90	2.40	2.60	2.80	2.20	1.70	1.90	1.80	2.10	2.40	1.90
4. Number of farms under each group (m)	35.00	28.00	38.00	38.00	11.00	150.00	34.00	34.00	31.00	37.00	14.00	150.00
5. $\frac{12L_{max} \times W \times m}{300} = (W_0)$	44.43	38.16	81.50	83.31	15.39	257.53	34.73	40.88	40.42	62.00	17.98	194.94
6. $S = (W \times m - W_0)$	19.00	15.00	10.00	15.00	15.00	72.00	23.00	24.00	15.00	16.00	16.00	90.00
7. Percentage of S to $(W \times m)$	30.16	28.30	10.64	15.68	50.03	21.96	39.91	36.72	27.56	20.21	46.49	31.58

as more than 30 per cent of the adult farm family workers are surplus on the smaller farms. On the whole, it is observed that our estimate of surplus labour is considerably large and it goes on increasing by farm size upto a limit, suggesting that these labourers can be spared from any farm work without affecting family work load during the peak period and hence the total output.

The district chosen in the present study is Ferozepur which is noted to have used the high-yielding or improved varieties of crops and other improved agricultural practices but even then there is no sign of the disappearance of the surplus labour from agriculture. Therefore the view that the surplus labour in agriculture is illusory and that the improved agricultural practices are efficient enough to make full use of the total supply of labour in agriculture do not seem to hold much water. Our estimate shows that a considerable number of workers could be spared from agriculture who could perhaps be fruitfully utilized elsewhere; thus there seems to be considerable scope for mobilization of surplus labour in agriculture for development. Even after removal of the surplus labourer thus estimated the remaining workers would still suffer from some under-employment but that would be because of the seasonality of operations, the treatment of which is beyond the scope of this paper.

IV

Having estimated the surplus labour, the problem before us is the mobilization of such labour from agriculture for development needs elsewhere. As is well-known, the household constitutes the bulk of the productive units in agriculture and as such self-employment figures very prominently. The institutional set-up of our tradition-bound rural society is such that it allows any number of persons to be absorbed in the agricultural sector. Thus the prevailing family system and strong attachment to the agricultural employment come in the way of mobilizing surplus labour in agriculture; the intensity of the situation however might vary from region to region. The workers have to be induced with some incentive in order for them to snap the ties of their traditional family system and strong attachment to the agricultural employment and go for work somewhere else. It is suggested that the workers would not go for the wage employment unless it gave additional remuneration to make up for the loss of advantages of the prevailing family system. In fact, years of experience shows that it is not only additional money wages that would help in mobilizing the rural labour surplus but there are a host of other psychological and human factors which too have to be tackled simultaneously.

The problems and the difficulties that are likely to be faced in the process of mobilization could perhaps be classified under three heads, *viz.*, (1) is there enough work to provide additional employment?, (2) are people willing to be employed on such work? and (3) the cost involved in organizing such work.

As regards the first question, essentially the works should be such as would provide employment to a large number of unskilled workers without putting any strain on resources which are scarce. Several types of works fall in this category, for instance, road construction, minor and medium irrigation, soil conservation, afforestation, etc. Regarding the second question it is the behavioural pattern of the rural poor which is relevant. If the unemployed agricultural workers are to be mobilized for additional employment it should fit into their behavioural pattern, *i.e.*, rural works programme should be planned at the local or village level. The aim should be to provide full-time employment throughout the year on a continuous basis which is dependable.⁷ The organization entrusted with this work must be able to persuade the people willing to work to go wherever work exists. It has been observed that sometime the workers after reporting for work for some days do not turn up subsequently, the reason being the distance of the site of work from the place of residence.⁸ The cost of execution of such work has to be kept at minimum so that it does not become a drag on already strained financial resources with the State. In fact to reduce pressure on scarce resources roughly 80 per cent of the project expenditure should go into the payment of wages to unskilled labourers.

SURPLUS FARM FAMILY LABOUR IN UTTAR PRADESH AND ITS MOBILIZATION FOR ECONOMIC DEVELOPMENT

V. K. Pandey, S. L. Shah and A. K. Singh*

As a result of technological change, the traditional Indian agriculture now looks somewhat commercialised. Several studies¹ have been conducted relating to the problems of and factors affecting unemployment and under-employment. However, the other aspect of the farm labour, that is, its surplus and mobilization for economic development has received somewhat less attention, and in the discussions, the economic theorists have emphasized the role of agriculture in providing surplus farm labour to industries after the initial take off stage in agricultural production.² In the context

7. V. M. Dandekar and Nilakantha Rath : Poverty in India, Indian School of Political Economy, January, 1971.

8. D. P. Apte, "Crash Scheme for Rural Employment," *Economic and Political Weekly*, Vol. VIII, No. 12, March 24, 1973, pp. 595-600.

* Associate Professor, Professor and Senior Research Assistant, respectively, Department of Agricultural Economics, G. B. Pant University of Agriculture and Technology, Pantnagar.

1. For some such studies refer to *Indian Journal of Agricultural Economics*, Vol. XXVII, No. 4, October-December, 1972.

2. For an elaborate discussion on the subject, refer to Bruce F. Johnston and John W. Mellor, "The Role of Agriculture in Economic Development," *The American Economic Review*, Vol. LI, No. 4, September, 1961, and reprinted in *Readings in the Economics of Agriculture*, edited by Karl A. Fox and D. Gale Johnson, The American Economic Association, Richard D. Irwin, Inc., Illinois, 1969.