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AGRICULTURAL LABOUR MARKET :
A SYNOPTIC VIEW

by
V.S. Vyas

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AGRICULTURAL LABOUR MARKET - A SYNOPTIC VIEW

V.S. Vyas[*]

Structure and functioning of labour market for Indian Agriculture has not been a major area of interest of the research workers. Most of the studies on agricultural labour are focused on the occupational structure of agricultural labour households, the strength of such households, employment and unemployment, wage rates and wage structure.[**] Empirical studies on the demand and supply of labour, factors influencing the availability and requirements of labour and, the nature of interplay of these forces which may determine the equilibrium wage rate and level of employment etc., are not yet available in sufficient number and depth. The prevailing notion on the labour market in agriculture is that it is an imperfect market with institutional constraints on the free play of economic forces and that it is characterised by features such as surplus labour, backward sloping supply curve, etc. Due to these notions the idea of determination of wage and employment levels in the demand-supply framework did not receive serious attention for a long time.

In this paper we will first review the forces affecting the supply of labour as well as demand for labour in Indian agriculture and the interplay of these forces as expressed in terms of the level of wages and then, will summarise the main characteristics of the agricultural labour market.

I

Supply of Agricultural Labour

Most of the studies in the area of agricultural labour had assumed a more or less perfectly elastic labour supply due to the existence of surplus labour, and built their theoretical edifices on this basic assumption. The only qualifications added were in terms of various social and institutional constraints to the supply of labour. The social constraints were mostly caste taboos

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or prohibition on certain types of work for different groups,
especially for 'high caste'Hindus and for female labourers.
The institutional characteristics were expressed in terms of
various modes of ownership of land and labour on land (owner
cultivators, tenant farmers, share croppers, bonded labourer)
and varying degreesof monopsony leading to the exploitation
of the labour - a tendency strengthened by the existence of
surplus labour.

For any pertinent exercise in measurement of supply of
labour an assessment of labour units expressed in terms of
mandays available for work at relevant wage rates for a specific
period of time is necessary. Obviously, this involves something
more than mere counting of heads, although the latter has to be
the starting point to assess the supply position. The data
provided by the population Census could be utilised for this
purpose. In our country the decennial population Census
provides information on economically active and inactive
population by sex and age-groups. The economically active
persons are further classified according to the types of
economic activities in which they are engaged.

These data, however, have some important limitations which
restrict their usefulness for the study of the labour market.*
For example, the Census data do not provide any information
about the duration of employment or unemployment; similarly,
they do not throw any light on the variations in the workforce
in different periods of a year; the reference periods
specified for collecting data on the worker/non-worker status
of persons is another limitation. The difficulties in using
the Census data due to these limitations are further compounded
by the change in concepts and definitions from one census to
another. Thus in the 1951 Census, the enumerated persons were
classified according to eight means of livelihood classes
(such as, cultivators of land wholly or mainly owned/unowned
and their dependents, cultivating labourers and their
dependents, production other than cultivation, transport,
commerce etc.). The persons thus classified were further
sub-divided into three categories viz. (a) self-supporting
persons (b) earning dependents, and (c) non-earning dependents.

In the 1961 Census, persons were classified as 'workers'
and 'non-workers'. The 'workers' were liberally defined.
For example, a person who reported 'work for at least one hour

*For a fuller discussion of these limitations, see, Visaria, Pravin,
Survey of Research on Employment in India, Department of Economics,
University of Bombay, Bombay; 1972 (mimeo.)

a day throughout the greater part of the working season' was treated
as a worker. The workers were classified into nine industrial
categories (such as cultivators, agricultural labourers, workers
in household industry, other manufacturing, construction,
trade, transport etc.). In 1971, the 1961 basis of classifying
persons into 'workers' and 'non-workers' and classification
of workers into the nine industrial categories have been retained.
But in 1971, the 'workers' were those who reported their
'main activity' to be work; they were distinguished from the
persons who reported their main activity to be "other than work"
(but who reported 'work' as "subsidiary activity") as well as
from 'non-workers'. As yet, the 1971 census data are available
only for persons who reported their 'main activity' to be work
and for non-workers. These variations in concepts and
definitions render comparison of the data of the three censuses
extremely difficult.

However, some basis for comparison exists in the small
sample of 1961 data which is retabulated in 1971 categories.
While granting the difficulty in comparability caused by the
definitional changes, the 1971 census results clearly indicate
a swelling of the ranks of the agricultural labourers during the
decade 1961-71. This is an important feature on the supply side.*

Another important determinant of the supply is the participa-
tion rate of the potential workers. The recent evidence suggests that
participation rate of the members of the agricultural labour households
is fairly high and, in fact, may be slightly increasing. This has
been the net result of smaller participation of children and larger
participation of women and a marginal addition of the older people
in the workforce with the improvement in the standards of health.
Besides, seasonal labour participation rate fluctates as is well-known;
such fluctuations are more pronounced in the case of work on own farms.
In the peak season the workforce swells with the inclusion of women
and, often, children; in the off-season they withdraw themselves.

With the changes in socio-economic conditions, the participa-
tion rates will also change. Changes in cropping intensity and
productivity, development of non-agricultural sector, changes in
literacy rate, changes in sex ratio, growth in population etc.,
are the factors which influence the participation rate. No
concrete evidence is available on the impact of these
factors on participation rate. However, S.M. Pandey in a recent
study, has done a regression analysis on the 1971 Census data.

* For an explanation of this increase in number in one of the states
of India, Gujarat, see, Vyas V.S., "Structural Change in Agri-
culture and the Small Farm Sector," Economic and Political Weekly,
January 10, 1976, pp. 24-31.

His basic unit of analysis is the State.*

The study reveals that spread of literacy and increase in the growth rate of population severely depress the overall as well as male participation rate in rural areas suggesting thereby that more and more young children especially males, are going to school which reduces the size of active labour force. The female participation shows no significant effect on either rural overall or male partcipation rate. A higher sex ratio increases rural participation rate. A larger size of non-agricultural sector and a higher level of cropping intensity tend to depress rural participation rate, especially among females. It seems that with the development of agricultural and non-agricultural sectors, and the resultant increase in the employment opportunities and incomes tendency among rural people, particularly young children, females and old aged males to withdraw from the active labour force becomes strong.

The above conclusions, however, cannot be the basis of any sweeping generalisations as the states in our country are too big and hetrogeneous units. Such regression analysis for one noint of time could be useful only when it is attempted at much more disaggregated level, say, for districts or talukas.**

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* The model he used was,

$$\text{Log } y = \log a + b_1 \log x_1 + b_2 \log x_2 + b_3 \log x_3 + b_4 \log x_4,$$
$$+ b_5 \log x_5 + b_6 \log x_6$$

where

a = constant   y = rural participation rate
x_1 = size of non-agril. sector x_2 = intensity of cropping
x_3 = rural literacy rate x_4 = rural sex ratio
x_5 = growth rate of rural population x_6 = rural female participation rate

See, Pandey S.M., "Determinants of Urban-Rural Worker Participation Rates in India; An Exploratory Analysis, "Indian Journal of Industrial Relations, Oct. 1973, pp.209-225.

**An earlier study using 1961 Census data for the districts of Punjab had come out with the results that variations in the work partici- pation rates were largely associated with the factors (1) proportion of workers engaged in agriculture; (2) literacy among the females; and (3) gross value product per worker, being an indicator of economic development. The latter two depress the female participation rate in agriculture.

See, Arjan Singh, "Female Work Participation, Green Revolution and Mechanisation — The Punjab Case" in Problems of Farm Mechanisation, The Indian Society of Agricultural Economics, Bombay, 1972, pp.128-140.

To complete the picture on the availbaility of agricultural labour one will have to know more about (a) the income leisure preference of the labour households, and (b) inter-sectoral mobility of labour. Any important change in these two aspects can seriously affect the supply of the agricultural labourers. However, there are no definitive works in either of these areas.*

The composition of the agricultural labour force among the landless and landed labourers provides a structural feature of the labour supply. According to Boudhayan Chatterjee,** the structural features can be represented by (1) percentage of agricultural labour households among all rural households, denoting the total supply of agricultural wage labour; (2) percentage of casual labourers among all agricultural labourers, representing the supply of free wage labour i.e. labour which is not employed under any obligatory terms, and (3) average number of unemployed days per casual worker.

Thus, a simplistic assumption about perfectly elastic supply of agricultural labour is not very helpful in the analysis of the labour market. On the supply side there are several attributes which have to be properly assessed in an analysis of labour market in agriculture. At the same time it can be readily appreciated that in the agricultural economy of India, the demand for labour is the more significant aspect in determining the functioning of the labour market. Besides, in the short-run policy instruments can hardly influence the supply side. Measures, such as birth control to limit supply or social changes to relax caste taboos are long-run measures. For the short-run the supply of agricultural labourers can be considered as a datum.

II

Demand for Labour

Our understanding of demand for agricultural labour is somewhat firmer. Studies have been made on the estimational aspects as well as on the diagnostical side, several factors such as impact of family labour employment on the demand for hired labour, the relationship between the size of farm, extent of irrigation, mechanisation of agricultural processes, proximity to urban centres,

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* It may be observed that the concept of backward sloping supply curve in underdeveloped countries reflects certain type of income-leisure preference. Assumptions in this regard are, however, based on a priori grounds or on impressionistic observations.

** See, Chatterjee,Boudhayan,"Studying the Labour Market in Agriculture - Some Methodological Issues," Indian Journal of Labour Economics, Oct. 1961, pp. 218 - 226.

etc. have been studied by a number of researchers.* It has
been rightly observed that the demand for the services of the
hired agricultural labourers is, in part, governed by the
same factors that determine the total demand for labour
in agriculture but, in part, by forces which lead to the
substitution of hired labour by self-employment or the
converse

The two Agricultural Labour Enquiries (ALE) pertaining
to the years 1950-51 and 1956-57 provide useful information
on the functioning of agricultural labour market. Results
of these enquiries have been analysed in depth. On the
basis of the results of the first and second ALE, D. Ghosh**
noted that the index of agricultural output increased by 30
per cent between 1950-51 and 1956-57 and the gross area sown
by 13 per cent. The irrigated area increased by about the same
proportion. If one ignores the differences in the quantum
of labour required for cultivating lands of different qualities
and also the extra labour required in bringing fresh land into
cultivation, one can conclude that the demand for agricultural
work increased by about 13 per cent as a result of the
extension of the area under cultivation between 1950-51 and
1956-57. Another 5 per cent of the demand for agricultural
labour may be added on account of extended use of fertilisers
and improved practices. Thus, the total demand for agricul-
tural labour, hired and self-employed, increased as much as,
if not more than, the percentage increase in the number of
agricultural labourers, viz., 13 per cent.*** Ghosh concludes
that if the wages of hired workers fail to rise, it must
have been due to the replacement of hired labour by the
labour of the cultivating owner and his family. The fall
in the average size of the operating farm from 7.50 acres in
1950-51 to 5.70 acres in 1956-57, and the increase of

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*   See, Vyas and Shivmaggi, op. cit. p. 203 - 205

**   Ghosh, D., "The Agricultural Labour : 1950-51—1956-57 "in
     V.K.R.V. Rao (ed) Agricultural Labour in India, Asia
     Publishing House, 1962, pp 77-81

*** Ghosh arrives at the number of agricultural labourers on the
     following assumption: the agricultural labour families increased
     at least pari pasu with rural families. In 1950-51 the former
     constituted 30.39 per cent of the latter. Assuming the same
     proportion in 1956-57, a total of 20.4 million agricultural
     labour families in that year is arrived at. And as the number
     of wage earners per family was 2.2, one gets a total of 41.1
     million wage earners in 1956-57 compared to 35.89 million in
     1950-51, which suggests an increase of 13 per cent. See
     Ghosh, D., op. cit p. 80

emphasis, under land reforms legislation, on personal cultivation
as a criterion for fixing the size of holdings, lend further support
to the hypothesis that there has been some replacement of hired
labour by the family labour of the cultivators. Thus, between
1950-51 and 1956-57, the total demand for the services of hired agri-
cultural workers had failed to increase as much as their supply.
This imbalance accounts, in the main, for the fall in the wage
rate of the agricultural worker and the income of his family.

A systematic attempt to project the labour requirements in
agriculture will have to take into account three main determinants,
viz., (i) level of national income; (ii) income elasticity of
demand for agricultural products and (iii) output-labour ratio in
agriculture. An exercise on these lines was undertaken by V.M. Rao.*
Giving different values to the three variables, Rao observes the
relative position of demand and supply of agricultural labour in 1981.
The pertinent result of the calculations is that even 1 per cent annual
increase in output-labour ratio results in surplus labour in agricul-
ture if the increase in national income is less than 5 per cent per
annum and the income elasticity of demand for agricultural products
is relatively low, say, .5. This implies that for full employment of the
increasing labour force in agriculture the technological progress in
agriculture may have to proceed at a relatively slower pace than that
in the non-farm sectors. However, absorp ion of surplus labour through
constancy or decline in output-labour ratio is not a desirable solution.

The assumption of rising output-labour ratio is both consistent
and more realistic in projecting the problem of surplus labour in Indian
agriculture. If this assumption is accepted, the results of Rao's
study underline the dependence of development of farm sector on the
development of non farm sector to bring about adequate transfer of labour
from the former to the latter sector. However, a study conducted
by this author has estimated the broad dimensions of labour shift from
agriculture to non-agricultural sector if surplus labour is to be
transferred from agriculture to non-agricultural sector. The magnitude
of employment growth rates in the non-agricultural sector implicit in
such transfer, ranging from about 3% for zero transfer of likely
additional agricultural labour force to about 10% for full transfer
of it makes this alternative almost unworkable.**

* Rao, V.M., "Labour Requirements in Agriculture in India in 1981",
Indian Journal of Agricultural Economics, April-June 1963, pp.55-56

** See, Vyas V.S., "Rural Labour Utilization and Agricultural Development:
The Case of India, " Artha Vikas, Jan. 1970, pp. 50-65.

Besides, the basic assumptions implicit in arriving at such findings are questioned by some writers who find that the strategy based on high-yielding varieties is both labour intensive and output maximising.* The new agricultural strategy (more popularly known as High-Yielding Varieties - HYV - Programme) is a significant development in this direction. The programme entering round high-yielding varieties of seeds and other complementary inputs has, in certain areas, changed the production profile in a remarkable way. In those areas it is supposed to have ushered in a "Green Revolution". The immediate impact of the programme, wherever it is successful, is to raise agricultural production. These increases, in turn, have significant social and economic implications. Here we are mainly concerned with the impact of new varieties on the demand for agricultural labourers.

A number of scholars have emphasised the role of new strategy in ushering an era of fuller employment and adequate incomes in the countryside.** According to them, the HYV Programme represents a labour-intensive technology since what is required is not only the high-yielding varieties of seeds, assured water supply, inorganic fertilisers, pesticides, etc. but also careful and time-specific operations. Some of the developments in technology, such as short-maturing crops, further enhance the labour absorption capacity because they permit multiple cropping and more intensive use of land and labour. Besides, this strategy pivoting around a biological innovation, i.e. the high-yielding variety of seed, is size-neutral. Therefore, the small farmers, who constitute the bulk of the peasantry, can also benefit from this technology.

Empirical studies in several parts of the country have shown that exotic seeds and other modern inputs in agriculture have substantially increased the demand for labour, particularly during the peak seasons of harvesting and threshing. In one district of Delhi State, for example, it is reported that the introduction of Mexican wheat varieties has doubled the amount of family labour used per acre and has also resulted in an increase in the amount of hired labour.*** In Ludhiana,

*   Vyas, V.S., "Institutional and Development Implications of Green Revolution - A Perspective and Policy Guidelines" in Report on the Asian Regional Seminar on Contribution of Rural Institutions to Rural Development Particularly Employment, 1972, Geneva.

** See, Vyas and Shivamaggi, op. cit. p. 193

*** Indian Agricultural Research Institute, Five Years of Research in Dwarf Wheats in New Delhi, 1968, p.45.

in the Punjab, where the impact of HYVP is the most pronounced, it is
reported that the number of jobs has increased faster than the rate
of growth of the population.*   This finding has been corroborated
by data collected from several other parts of the country by a
series of micro-level, village studies, e.g., studies conducted
by the Agro-Economic Research Centres, as well as by more compre-
hensive sample studies, such as those by the Programme Evaluation
Organization (PEO).

The estimate of additional labour demand is also attempted
with the help of the data pertaining to pre-HYV years revealed
in the National Sample Survey (NSS) and from the Farm Management
Studies conducted between 1954-55 and 1960-61, and comparing the
same with the figures available for the later years from the
studies of HYVP for the years 1967-68 and 1968-69 conducted
by the Programme Evaluation Organization of the Planning Commission.
Using data from these sources R.K. Lahiri** estimated the increase
in demand for hired labour due to the new technology on the
basis of the difference in the hired labour utilisation between
the HYV and non-HYV crops. Such differences in the hired
labour utilisation were multiplied by the areas under the HYV
crops in each State, thus arriving at the increase in demand for
agricultural labour days, by states and by crops. This exercise
revealed that the immediate impact of HYVP on the rural labour
market was an increase in the demand for agricultural labour
to the extent of 446 million mandays, of which U.P. alone
accounted for more than 40 per cent. Comparing these estimates
of increase in demand for agricultural labour with the estimates
of total number of unemployed days from the second ALE it was
concluded that the HYV programme in U.P. absorbed 40 per cent of
the unemployed labour days that were reported due to 'want of
work'. The Punjab reduced its unemployed labour days due to 'want
of work' by 50 per cent. The per hectare as well as total reduction
in unemployment were the lowest in Assam, where HYV programme
was not progressing satisfactorily.

C. Muthiah, in his study of Thanjavur district in Tamil Nadu,
following more or less similar methodology, concluded that the
additional demand per acre for labour as a result of adoption of

* James W. Gough, "Agricultural Wages in Punjab and Haryana: A
   Note" Economic and Political Weekly, March 27, 1971

** Lahiri, R.K., "Impact of HYVP on Rural Labour Market."
   Economic and Political Weekly, Sept. 26, 1970, pp. A-111-A-114.

HYV varied from 16 to 40 per cent.* Data for this study were
drawn from Farm Management Studies, PEO Studies and the Report
of the Comission of Inquiry on the Agrarian Labour Problems of
East Thanjavur district.

The main limitations. of such broad, aggregate, estimates
are that these ignore the time distribution, i.e. within
agricultural season, of demand for labour. As Vyas and Shivamaggi
observed, "However, general analysis in terms of yearly averages
ignores the highly uneven nature of the demand for labour.
With the introduction of the new inputs the demand for
labour at peak seasons increases dramatically: the inevitable
result is an increase in wages in those periods; and this
increase can be substantial if there is an effective organisa-
tion of the labour. Labour troubles and disputes become more
frequent. The logical reaction to the possibility of labour
shortages at peak periods, increased wages and labour trouble,
is to minimise risk and opt for labour saving machines. If
credit is also available on favourable terms, the labour-
replacing farm mechanisation gets a further fillip...
The employment effects of mechanisation will differ in the short -
and in the long-run and one must be aware of this distinction.
The bulk of the evidence suggests that in initial stages, mecha-
nisation in the context of the 'new strategy' will almost
certainly lead to an increase in the demand for agricultural
labour, as an increase in cropping intensity is made possible.
But, as mechanisation proceeds, this trend will be reversed."**

III

Agricultural Wages

Another aspect of agricultural labour market which has not
been pro erly analysed is the wages. There have been a few
historical studies to bring out the trends in wages right
from 1891 and also diagnostical studies to indicate the relative
importance of various factors in explaining the behaviour of wages.

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*   C. Muthiah, "Agricultural Labour Problem in Thanjavur and
    the New Agricultural Strategy", Indian Journal of Agricul-
    tural Economics, July-Sept. 1970, pp. 15-23.

** Vyas and Shivamaggi, op. cit., p, 195 and p. 197.

But our understanding of the wage fixation in agriculture is far from perfect.

An important development brought out by the historical studies[*] is growing importance of economic forces in the agricultural labour market. Datta's study has shown that wage rate in agriculture was more directly affected by economic factors during the period following First World War (1916-1945) compared to the earlier period (1891 to 1911).[**]   The movement of the indices of nominal wage rates, with 1916 as base, showed that for all-India, wage rates rose during the first two quinquennia (118 in 1921 and, 147 in 1926), then started to decline because of the world-wide depression. The fall continued up to 1935 (the index was 82 in 1931 and, 65 in 1936). With the approach of the Second War nominal wage rates turned the corner and the rising phase started. In 1941 a slight upward movement was observed when the index number rose to 93. In 1946 it rose to the impressive level of 302. The wage indices in all regions followed the course exhibited by the all-India index throughout this period, except the indices of northern region during 1922-26 (the latter fell from 145 in 1921 to 136 in 1926) and of eastern region during 1917-21 when the index fell to 75 in 1921.

A more systematic effort to collect agricultural wage and price data was started with the enactment of legislation on minimum wages. In view of the provision in the Minimum Wages Act of 1948, it was decided by the Ministry of Labour and Employment, in consultation with the Planning Commission, to construct consumer price index number of agricultural labourers on the basis of 'weights' provided by the 1950-51 ALE. The collection of retail prices of about 70 selected commodities from a number of villages selected on the principle of stratified random sampling was entrusted to the field staff of the NSS directorate. The price collection started simultaneously with

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[*]   Among the historical studies mention may be made of Ghosh, Kamal Kumar, "Agricultural Labourers in India, Indian Publications, Calcutta; Datta, K.L., "Report on Causes of Rise in Prices in India, Vol. I; and Chandra, Suresh, "Agricultural Wages: Rates of Wages and Methods of Payment in Western Districts of United Provinces," Indian Journal of Agricultural Economics, April 1948.

[**] See Datta, Op. Cit.

the conduct of the second ALE by the end of 1956. On the basis of
prices furnished by the NSS directorate, consumer price index
numbers for 1956-57, on base 1950-51 = 100, for States were
compiled by the Labour Bureau. This series is being
regularly updated.*

On comparison of this index with the agricultural wage
index in 1956-57, it was found that except in Orissa and the
Punjab agricultural wages in other States lagged behind the
consumer price index numbers.** For all-India, the consumer
price index number was 101 in 1956-57 (with 1950-51 = 100.) while
the agricultural wage index was 88. The lag was more pronounced
in respect of Assam, West Bengal, Bihar, Andhra Pradesh, Bombay,
Madras, Madhya Pradesh and Rajasthan.***

There is enough evidence to support the conclusion of the
second ALE that the real wages had fallen over the period 1950-51
to 1956-57.**** Some of the researches indicate that in recent
years the wage position of the labourers could have improved
in regions where agricultural development is taking place at
a rapid pace.

In areas where HYV have been introduced the indications
are that cash wages have generally risen, especially in the
case of seasonal workers. However, a comparison of the level
of cash and real wages in the Punjab and Kerala between 1959-60
and 1968-69 by Pranab Bardhan[@] reveals that the real wages in
certain parts of India have actually decreased in the latter years,
probably due to the substitution of machines for men. In the
Punjab, the real wages of labourers engaged in ploughing and

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* In a penetrating study of published wage data V.M. Rao has come
  to the conclusion that the published agricultural wage data
  are quite adequate to suggest directional changes, but are not
  good enough for inter-seasonal comparison. See Rao V.M. "Agri-
  cultural Wages in India - A Reliability Analysis", Indian Journal
  of Agricultural Economics, July 1972.

** Government of India, Labour Bureau, Simla: Agricultural Labour in
  India, Second Enquiry, 1956-57.

*** It is, however, important to note in this connection that the
  imputation of wages paid in kind was done at wholesale prices
  whereas the consumer price index numbers were based on rural
  prices. The observed differences between wage and price index
  is due, among other, to this factor.

**** See Rao, V.K.R.V. (ed), Agricultural Labour in India, Asia
  Publishing House, 1962.

@ Bardhan, Pranab, "Green Revolution and Agricultural Labourers,"
  Economic and Political Weekly, July, 1970, Special Number, pp.1239-'46

sowing, for example, have remained practically static, the general
rise being mainly accounted for by increases at harvesting time.
Bardhan concludes that when the average daily wage rates are
deflated by the consumer retail price index numbers for agricultural
labourers (issued by the Labour Bureau), the real wage rates appear
to have declined in the Punjab including Haryana between 1956-57 and
1964-65 as well as between 1960-61 and 1967-68.

The same author noted that in Kerala the agricultural
development resulted in an increase in real wage rates and this
rise was considerable - the weighted average daily wage rate for
casual male agricultural labour went up by 139 per cent between
1960-61 and 1967-68, while the Labour Bureau Consumer Price Index
Number for agricultural labourers in Kerala during this period went up
by 67 per cent, indicating a considerable rise in the real wage rate.
In spite of a much larger number of landless people flooding the labour
market (according to the NSS 17th Round data for 1960-61, 30.9 per
cent of Kerala's rural households were landless, whereas for the
Punjab and Haryana together it was only 12.33 per cent) and an
appreciably smaller rate of growth of agricultural production, agricul-
tural real wage rates seem to have gone up much faster in Kerala
than in north-west India.

However, by 1968-69, the terminal year in Bardhan's study, the
HYV programme was in the initial phase even in the Punjab, as only
22 per cent of the gross cropped area was brought under HYV programme.
Therefore, to infer from the data pertaining to the period 1959-60
to 1968-69 the impact of 'green revolution' on farm wages would be
misleading. Besides, one can legitimately question, as Visaria has
done*, Bardhan's procedure of simple averaging the daily wage rates
for different operations, for each month. Such averaging overlooks
the possible change in the proportion of labour employment for
different operations, particularly harvesting and threshing,
as a result of increased output. The extent to which agricultural
labourers with some land gain from additional employment on their
own holdings is also worth investigating. Another controversial
point in these studies is the price deflator. Apart from the
difficulties in selecting any such index number, further difficulties
arise as the rural prices in different parts of the country
differ significantly, without any evidence of regularity. For
example, more liberal releases from the fair price shops in an area
can result in subdued agricultural prices and hence in cost of
living index. There is enough evidence to support the view that
not only in Punjab but wherever HYV Programme has spread in a

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* Visaria, P. "Survey of Research on Employment", Indian Council of
  Social Science Research, 1971 (mimeographed).

measurable way, wages have moved in an upward direction.*

One recent study**which examines the trend in wages for the
period 1956-57 to 1971-72 for the different states has found
out that real wage rates improved significantly not only in
Punjab (including Haryana) and Kerala, but also in Tamil Nadu,
Uttar Pradesh and Gujarat. However, these States account
for less than 30% of the agricultural labour force in the
country. The study also reveals that the inter-state dispari-
ties in money wage rates have tended to increase since 1964-65.

Appreciable rise in demand for hired labour resulting
from the introduction of various agricultural development
programmes like IADP, HYVP, multiple cropping, etc. during the
crucial period of plant growth has decisively affected the
labour market situation in the benefited areas. Thus, in
Thanjavur, according to Muthiah***, between 1966-67 and
1969-70 the demand for labour increased by nearly 60 per cent
while the time available for the harvesting and threshing
of first crop, and for preparing the land and transplanting
the seedlings for the second crop had decreased. Such a situa-
tion strengthened the bargaining power of the labour; consequently
labour was able to exert more pressure by collective bargaining,
notably during rush seasons of transplanting and harvesting.
Thus in January 1969, wage rates for harvesting operations were
increased at a uniform rate of $1/2$ kg. of paddy, which worked
out to a rise of 9 to 12 per cent in different areas depending
upon the then locally prevailing wages. In May 1969, the
government accepted the recommendations of a further increase
of 10 per cent in wage rates recommended by a Committee. It
seems that in the Indian context, the bargaining strength of agri-
cultural labourers may be at least as important a determinant
of high real wage rates as the spread of technological
progress in agriculture.

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* See, Vyas and Shivamaggi, op. cit., pp. 193-200

** Josa, A.V., "Trends in Real Wage Rates of Agricultural Labourers"
Economic and Political Weekly, March 30, 1974, Review of Agri-
culture, pp. A25-A30.

*** Muthiah, C. "Agricultural Labour Problem in Thanjavur and the
New Agricultural Strategy," Indian Journal of Agricultural
Economics, July-Sept. 1970, pp.15-23.

The research on the factors influencing wage rates is another neglected area. In one of the earlier attempts, Mavinkurve* tried to identify the key factors influencing the wage rates in agriculture. He suggests that the following factors are responsible for the variations in wages: (a) Supply and Demand: His study of four districts in Bombay Karnatak reveals that the coastal taluka of Honavar has little difficulty in getting labour while Sirsi and Yellapur rely largely on the coastal talukas for their labour supply. Consequently, wages in Honavar are lower than in Sirsi and Yellapur, while wages in Yellapur are higher than in Sirsi because at the former place the forest contractors compete with the owners of the gardens for the labour that migrates into the taluka. (b) Nature of Work: The wage rate in agriculture is not uniform for all types of work. Where labour involves more strain (e.g., in ploughing), or greater skill (e.g., in boiling sugarcane-juice for manufacturing gur) or greater risk (e.g., the 'Ketle-Tying' operations in betelnut gardens where the labourer has to leap from one tree to another), etc. the wages are 50 to 100 per cent more than for ordinary agricultural operations such as weeding, transplantation, etc. (c) Type of Crop: Since the nature of work differs from crop to crop, the wage level too varies according to the type of crop. The work in grain fields and vegetable gardens, for instance, is less strenuous than in sugarcane fields. In those villages where the former type of crops predominates, the wage level will be relatively lower. Again, generally the wage level in commercial crop areas is higher than in those parts where food crops are grown. (d) Seasonal Variations: The wage rate at the harvest time is double the normal. According to the author this is more due to custom which appears to be a relic of the corporate life of the Indian village of the pre-British period than to actual competition between employers for the labour available in the villages. (3) Terms of Contract: The period of employment also affects wages because the greater the security of employment, the lower the wage rate. Thus, the casual worker gets a daily wage higher than the labourer employed for a month or a season. Obviously such general explanations do not provide enough insights into the real world situations. Detailed empirical evidence supported by a logical framework is needed to unravel the causes of differential growth in agricultural wages, overtime, over space, and for different operations.

A few studies aimed at correlating variations in the demo-
graphic and economic features of the villages with the level of
wage r tes were attempted by the Agro-Economic Research
Centres*. In one of the typical s tudies of this nature,
Vyas** found that among the four factors related to the
level of wage rates, i.e., (i) per capita income of the
cultivators; (ii) per agricultural worker availability of
gross cropped area; (iii) income of the agricultural labour
households from subsidiary sources; and (iv) number of agricul-
tural workers, positive correlation could be established only
with (i) and (iii). This study was based on a survey of
four villages in Gujarat and Rajasthan.

Agro- Economic Research Centre (Delhi), "Wages and Employment
of Agricultural Labourers--Some C oss-sectional Analysis--
1968-69."

Agro-Economic Research Centre (Jabalpur), "Rural Labour in
Seven Villages in Madhya Pradesh - 1962-63", (mimeographed).

Agro-Economic Research Centre (Jorhat), "Changes in Conditions
of Agricultural Labour - 1962-63."

Agro-Economic Research Centre (Madras), "Changes in the
Conditions of Agricultural Labour in South Indian Villages
(No.1)," 1955-52; 1962 No.2, 1955-62, 1963.

Vyas, V.S., Agricultural Labourers in Four Indian Villages,
Agro-Economic Research Centre, Vallabh Vidyanagar, 1964.

See also Dasgupta, Biplab, "A Typology of Village Socio
Economic Systems from Indian Village Studies", Economic
and Political Weekly, Special Number, 1975, pp. 1395-
1414.

IV

Labour Markets - The Integrated View

An understanding of the nature of supply and demand for agricultural labour and the interplay of social and economic factors in determining the wages is necessary to obtain an integrated view of the functioning of labour market in Indian agriculture. Due to the paucity of data and lack of appropriate analytical attempts our understanding of these components is, as has been noted above, far from perfect. At the same time this has not deterred a few imaginative researchers to probe into various aspects of the problem and also to obtain an overview.

In one of the earlier studies undertaken to obtain an integrated view of the demand-supply conditions of the agricultural labour and to find out the impact of these on wage levels, it was shown that wage rate is sensitive to change in demand for and supply of agricultural labour.* The author of the study, Ramakrishnan, observed that in spite of the general excess of labour on land for most part of the year, there are times of heavy demand - for harvesting and preparatory cultivation - when the local supply of labour is far from sufficient for carrying them out within the time severely limited by natural factors. Wages then rise to relatively greater heights. At the time of Ramakrishnan's study, in 1948, the large-scale substitution of labour by machines was not on the horizon. However, machinery andimproved implements were being slowly introduced for some of the operations, like ridging and bound forming, levelling, lift-irrigation, chaff-cutting, sugarcane crushing, etc. This had an adverse impact, though marginal, on the demand for labour.

In a later study of employment and unemployment in Indian economy K.N. Raj** provides a general framework of agricultural labour market and then concentrates on the level of wage rates as an indicator

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* Ramakrishnan, K.C., "Labour in Agriculture - Supply and Demand," Indian Journal of Agricultural Economics, January, 1948.

** Raj, K.N., "Employment and Unemployment in the Indian Economy; Problems of Classification Measurement, and Policy", Economic Development and Cultural Change, 1958.

of effective demand and supply of labour. He identifies the
surplus labour as the main cause for low wages in agriculture.
This is verified by examining the regional differences
in wage rates and relating them to the availability of labour.
He concludes, 'broadly speaking wage rates correspond to the
regional differences in the distribution of agricultural
labour. Thus in regions where agricultural labourers are
around 10 per cent or less of the tural population, wage rates
are also found to be generally around Rs.2. a day or over.
Where they are above 30 per cent of the rural population,
wage rates are generally between Re. 1 and 1.5 per day or even
less'. He further maintains that an index to the volume of
excess supply of labour is the amplitude of seasonal varia-
tions in wage rates within each region or sub-region. The
empirical evidence collected from the Farm Management Studies
corroborates this hypothesis.

A more rigorous study of labour market is attempted by
V.N. Mishra* who has examined a number of hypotheses relating to
wage-demand relationship, wage-supply relationship and wage
determination in terms of demand for and supply of labour.
It is hypothesised that the wage-demand relationship for
labour varies for different sizes of farms. Similarly, the
supply of labour does not seem to be wage elastic. Consequently,
the role of market forces of demand for and supply of labour
in the determination of wage rates would be virtually ineffective.
The author has tried to substantiate the above hypothesis with
the help of cross-section data for 1960-61, relating to
different districts of Gujarat. The demand for labour is postu-
lated to depend on wage rate, per capita income, crop pattern
and the percentage of irrigated area. The supply of labour
has been made dependent on wage rate and the ratio of employment
in non-agricultural occupations to the total rural labour force.
In the final analysis, wage rate has been related to the ratio
of agricultural workers to the total working force and per acre
hired labour, the latter two representing supply and demand
side respectively. Whereas the demand for labour was found to
be elastic in relation to all the variables considered in the model,
the author's attempts to identify the factors affecting the supply
of labour have not yielded satisfactory results. The attempt

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* Mishra, V .N., "Labour Market in Agriculture: A Study of Gujarat
  Districts," Indian Journal of Agricultural Economics, July - Sept.
  1970.

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to relate wage rates to the two variables mentioned above has
also not improved the results. The author concludes that the
analysis of the labour market variables in Gujarat districts
show that they play a limited role in the allocation of labour.

This conclusion seems to be rather hasty, as Jai Krishna has
observed* in the light of the inherent limitations in the data
used by the author. Bus 'cc th.. demand variable used by him
viz. hired labour per acre of gross cropped area which showed
unexpected negative association with wages is criticised to be
defective. First, the census figures of hired labour pertain to
only whole-time employees excluding casual agricultural labourers.
The data on agricultural wages, however, relate to casual
labourers also. Second, if the census figures indicate the net
number of hired labourers (i.e., one labourer being counted only
once even if he worked for more than one season), then, net
cultivated area ought to have been used as a denominator to work
out the ratio of hired labourers per acre of land, used in the
regression model. If, however, gross cropped area is used, as has
been done by Misra, the denominator is unduly exag„erated to the
extent of the double cropped area. Thus, other things being equal,
the ratio would decrease with an increase in the area under double
copping. It is difficult to assume that all the districts in
Gujarat had an equal proportion of area under double cropping in 1961.
A negative sign for the coefficient of hired labour per acre of
gross cropped area, interpreted in this light, may indicate a
positive association between the demand for labour and wages. If
this is so, the results obtained by him would be quite in conformity
with the idea of positive wage-demand relationship.**

S.M. Pandey*** tries to explain wage determination in Indian
agriculture with demand and supply on the basis of a regression analysis
for 1971 data pertaining to 83 districts located in the north-central
wheat zone of the country comprising Haryana, the Punjab, Madhya Pradesh,
Rajasthan, and Uttar Pradesh. Pandey uses two supply variables viz.

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* Jai Krishna, "Labour Markets in Rural Areas," Indian Journal of
Agricultural Economics, October-December 1970.

** See Pandey, S.M., "Wage Determination in Indian Agriculture:
An Empirical Analysis", Indian Journal of Industrial Relations,
July 1973, pp. 84-85.

*** Pandey, S.M., Ibid, pp. 83-99;

(i) proportion of agricultural labourers to total rural workers and
(ii) man-land ratio measured by the number of persons per hectare
of cultivated land in rural areas of the selected districts.
On the demand side three variables are employed viz. (i) the inten-
sity of cropping measured in terms of proportion of gross area
sown to net area sown; (ii) proportion of gross irrigated area
in gross cropped area; and (iii) effective size of cultivated
holdings measured by the ratio of area under cultivation in
hectares to total number of cultivators.*

The study comes out with the result that the market forces of
demand for and supply of labour are capable of explaining the
large part of variation in agricultural wage rates; and that
for analysis for each region the relevant variables should be
used as the different variables explain wage determination to
varying degrees.

The study, however, reveals that in a developing agricultural
sector the demand for labour plays a much more important role
than supply. The demand variables show up very prominantly in
all the models for all districts as well as for districts with
high and low man-land ratios. The analysis also suggests that
the supply is not much in excess of its demand in the north-
central wheat zone. The finding that the sum of the coeffi-
cients for the demand variables alone are more than unity
suggests that the marginal productivity of labour is probably
above zero, and hence, there is further scope for increase in
wages and employment through increasing the intensity of cropping
and bringing more area under irrigation. This region, probably,
is capable of absorbing increasing number of workers.   It
may also be possible to increase its productivity by a redistri-
bution of population within that sector.

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The weight of evidence clearly suggests that functioning of
agricultural labour market can be understood in a demand supply
framework. This would need of course clear specifications of the
supply of labour and demand for labour, as also careful appraisal
of the wage and price data. A gross picture of all these
variables can be extremely misleading. So also is the case
with any attempt to have generalised model of the relative
importance of various factors for the country as a whole. The
researches at more disaggregated level, say at the level of

homogeneous economic regions, are needed to clarify the issues
related to agricultural labour market. Sooner or later the concept
of market structures as used in commoditiy and assets markets will
have to be utilised for understanding the agricultural labour
situation.   At the same time it needs to be underlined that the
tool of neo-classical economics found sufficient to explain
a situation cannot, for that reason, be adopted for devising
a strategy of change. The latter will have to be informed as much
by ideological and political considerations as by the economic
calculus.