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Wage and Labour Market in Agriculture: Some Comments

by

SAJJAD ZOHIR*

I

In queries into labour market in traditional agriculture (or, in rural economies), references are often made to time specificity of labour contracts. When one attempts to rationalize the existence of longer term labour contracts, it is presumed that short period (or daily) labour contracts are more expected (than longer period contracts). Moreover, in the often made contrasts between wage contract, sharecropping and fixed-rent contract, there is a tendency to view wages as daily wage rates that get determined in daily labour markets. At a formal level, markets may be defined only if one is able to define a commodity as well as its supply and demand. In a porfit-maximizing model, demand for labour is a derived demand that depends on how labour is specified in a production function. Since a conventionally used production function considers one homogeneous labour for either the whole crop year or specific to operation periods, it is argued in Section III that daily labour markets are not always consistent with such specification of labour. The question posed, therefore, is why daily (casual) labour markets arise. A tentative explanation is suggested in Section IV. The arguments presented in these sections hold independent of what one may observe in the real world. It is, however, difficult to ignore the latter if assertions are made that daily—casual labour contracts are the predominant form of labour contract in traditional agriculture/rural economies. The following section, therefore, critically examines the empirical basis of one such assertion.

II

In their review of contractual arrangements, employment and wages in rural labour markets, Binswanger and Rosenzweig assert that daily (casual) labour is the predominant form of labour contract in South and Southeast Asia.[1] For empirical support, they refer to Binswanger *et al.* (1984), Ryan and Ghodake (1984) and Bardhan and Rudra (1980a, 1980b).[2] In the first study, no such

*The author is a Research Fellow at the Bangladesh Institute of Development Studies. The present note is one of the many digressions while writing his Ph. D. Dissertation (Zohir 1988) at the University of Toronto, Toronto.

[1]See Binswanger and Rosenzweig (1984a), pp 7-10.

[2]The reference (in Binswanger and Rosenzweig 1984a) is made to Bardhan and Rudra (1981). Since the latter is based on the two articles cited, references in this text have been to them.

(empirical) evidence may be found. In the second, the assertion holds true for two cotton-growing villages (out of six villages under study), where the market (under study) is dominated by female labour participation.[3] The last set of articles are based on a single survey, and have greater relevance to the kind of conclusion reached in Binswanger and Rosenzweig (1984a). The reasons are due to the large coverage of sample villages in the study and because the authors make similar conclusions upon interpretation of the data.[4] I will discuss only the study by Bardhan and Rudra to argue why the conclusion (on predominance of daily labour contracts) do not follow from the type of data collected.

Findings presented in Bardhan and Rudra (1980a, 1980b) are based on a survey of 110 randomly selected villages in West Bengal (India) and data were collected during 1979. It is reported that 83.6% of total "labour families" in all sample villages are "casual labour families". I ignore possible discrepancies between "labour families" and actual number of labour days under particular arrangement, as well as possible bias due to the study's exclusive focus on hired labour market that excludes the vast majority of labourers engaged in own operational holdings. Rather, a query is made into the classification of labourers used in the study so that an appropriate interpretation of the reported statistics may be made.

Bardhan and Rudra make the following classification of labourers;[5]

(1) totally unattached labourerers (or, "casual labourers"),

(2) totally attached labourers (or, farm servants), and

(3) semi-attached labourers.

The last group is further classified into three types:

Type I : "attached to one employer for a part of the year, but for the major part of the year, they have the freedom to work for other employers";

Type II : "they are obliged to work for the employer whenever called for a stipulated number of days in a stipulated period"; and

Type III : "they are obliged to work for the employer whenever called, for an unstipulated number of days over an indefinite period".

Given the above classification, the focus of the study is on contrasting "attached" and "unattached" labourers. As the definitions of different types of "attached" labourers indicate, they either involve extra-economic relations or reflect "interlinked contracts".[6] And "unattached labourers", by definition,

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[3]Ryan and Ghodake (1984), p. 176. Since it is not a representative case for the South Asian sub-continent, I do not discuss the study here. It may, however, be of interest to study if the factors that cause increasing female participation in rural labour market, also underlie the emergence of daily labour market.

[4] See Bardhan and Rudra (1981), p. 108.

[5] All quotes on the classification are from Bardhan and Rudra (1980a), p. 1478.

[6]Braverman and Srinivasan (1984) define interlinked contracts as, "contracts made between the same pair of individuals concerning exchanges of more than one commodity or service, the contracts being linked in an essential way" (pp. 63-64).

are the residuals. This is reflected in the phrases used to define "totally unattached labourers" (the italics are mine):[7]

> By 'totally unattached labourer' we mean what is commonly called a daily or casual labourer. Such a labourer, *in his pure form*, is one who enters into an agreement or a contract with a particular employer for just a single day at a time, different contracts being negotiated on different days, *in principle* with possibly different employers, the contract for one day with one employer not having any influence on the contract with another employer on another day.

The above definition remains ambiguous about whether it is the "unattached" aspect of a labourer that is under consideration, or if it is the time dimension (i.e., daily) of a labour contract that is being measured. That it is not the latter, is reflected in the following quote from Bardhan and Rudra (1980b):[8]

> In 58 per cent of sample villages daily wage payment on a piece rate (for a job done, like ploughing of a given plot), or somewhat less frequently, on a share rate system (payment to the labourer of a fraction of the total number harvested by him, for example), prevail along with other modes of wage payment.

The concept of "daily wage payment" suggested above clearly indicates that labourers measured are not "daily (casual) labourers". Thus, based on the aforementioned classification of labourers, it is erroneous to conclude that casual or daily labour contracts are the predominant labour contracts in traditional agriculture of South and Southeast Asia.

III

There are possibly more social researchers who are skeptical of the view that wages, in traditional agriculture (or, underdeveloped rural economy), get determined in daily labour markets. Nevertheless, I raise the issue since the views expressed in the earlier mentioned studies appear to be commonly shared by a group of economists engaged in analyzing aspects of traditional agriculture (or of underdeveloped rural economy).[9] Even though determination of wage is a thorny issue, the presumption that wages are daily wage rates that get determined in daily labour markets, underlie most modelling exercises on contractual arrangements in traditional agricultural/rural economies. It is, therefore, necessary to examine if such views are consistent with the way labour is specified in an input-output relation. For the prupose of

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[7]Bardhan and Rudra (1980a), p. 1478.

[8]Bardhan and Rudra (1980b), p. 1946. See also Table 7, p. 1947. The findings cited on modes of wage payment, are obtained from the same set of data analysed in Bardhan and Rudra (1980a).

[9]See Binswanger and Rosenzweig (1984), Newberry (1975) and Stiglitz (1982). Note also that all attempts to explain long term contracts implicitly assume that daily or spot market contracts are the norm.

exposition, I consider a single crop economy,[10] and therefore, the discussion is on labour markets that arise in association with the production of the single crop.

I adhere to the generally accepted view that demand for a factor arises due to its use in production of one or more outputs. The view is held irrespective of how one specifies the relation between the factor and the output(s). The focus of this note is on the specification of labour in input-output relation and on how such specification pre-defines certain aspects of the labour market considered in abstraction.

Since the reference is made to neoclassical analyses, I consider the production function that is often used in such analyses. In the context of traditional crop production, output is assumed to be functionally related with land and labour. There are two contexts in which the concept of time arises: in the specification of labour and in the specification of a production function. Since much confusion may lie due to ignoring the distribution, I discuss them briefly.

The general practice, in the literature, is to identify labour as "labour days".[11] Since it is the flow of (labour) services that effect output, one needs a measure to identify the unit of such flow. Unfortunately, "efforts" cannot be measured in the same way as one measures fluid substance (e.g., in cubic feet). The measure chosen is a day of labour on the assumption that different labourers (as well as same labourer at different times) provide identical amount of "efforts" in a day's work. Thus, the factor identified is "labour day", where "labour" is the physical quality of the factor and "day" is the unit of measuring "labour".

The element of time also arises in the context of specifying a production function. Crop production is carried out over a long period, and I identify this period as a crop year. If output is defined in terms of only one type of homogeneous "labour days" (beside other non-labour factors), one may only derive demand for "labour days" that applies over a crop year. If, alternatively, operation-specific "labour days" are considered to be heterogeneous factors in a production function, one may obtain demands for "labour days" that are specific to different operation periods. Thus, time dimension in the demand for "labour days" depends on how one specifies the production function.

I have identified the factor "labour day" that is considered in neoclassical production analyses. Furthermore, it has been argued that the time dimension of the demand for this factor depends on the way one specifies a production function. However, a market for this factor may not be defined unless one identifies the supply of this factor along with its time dimension that is consistent with the way demand may be defined. I consider two hypothetical

[10]In most neoclassical analyses of contractual arrangements, a single product economy is considered.

[11]Often "effort" is included in a production function instead of "labour days". I consider stadardized "labour days" that are homogeneous in "efforts".

cases of labour supply in terms of the time dimension. In the first instance, supply of "labour days" is defined for the whole crop year: labourers who participate in crop production, do so for the whole crop year. In the short term, supply of "labour days" (during a crop year) may be a function of wage paid for a day's work if the stock of labourers remains fixed.[12] A second way to specify labour supply may be through identifying period-specific supply functions for mutually exclusive sub-periods (say K number of them, K>1) within a crop year. In the extreme case, K may be large enoough to define each sub-period as one day. Rather than defining "wage" to be daily wage rate and "labour market" to be daily labour market where wage gets determined, it is shown below that various possible outcomes may be derived from different combinations of demand for and supply of "labour days".

At first, I consider the case where the demand for "labour days" is derived from a production function that specifies one homegeneous "labour days". Broadly, two possible outcomes may be defined depending on the nature of supply. If labour supply is also defined for a crop year, one may define a market for "labour days" that is valid over a crop year. An equilibrium obtained in such a market would define payments for a "labour day" and total "labour days" of employment over the crop year.[13]

Alternatively, with labour supply defined specific to (earlier mentioned) sub-periods, market equilibrium is achieved for a crop year where aggregate supply of "labour days" (i.e., one obtained by aggregating period-specific supplies of "labour days") is equated with the demand for "labour days" in a crop year. The equilibrium wage rate (i.e., payment for a "labour day") thus obtained determines equilibrium employments in each of the sub-periods. The wage rates in all sub-periods will be identical since, otherwise, an employer will find it gainful to hire labourers (i.e., buy "labour days") during a period when wages are lower than some other periods.

Even though the production function more often used in the theoretical literature specifies one homogeneous "labour day", it is recognized by many that operation-specific "labour days" are more appropriate in the context of

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[12]For long-term analyses, supply may depend on total wages received by a labourer over the crop year.

[13]One may identify the payment for a "labour day" to be daily wage rate as long as it is qualified that the wage rate is not determined in the daily labour market. Thus, "daily" wage rates" may be defined evern though daily labour markets cannot be defined.

crop production.[14] In such case, demands for "labour days" are specific to operation periods and wages would then get determined in markets defined for these operation periods (provided supply may also be defined accordingly). Even though such a construct allows one to explain why variation in wages between operation periods may arise, yet the factors behind possible emergence of daily labour markets remain unexplained.[15]

Since a production function with day-specific "labour days" as heterogeneous factors is hardly acceptable, it is difficult to derive demand for "labour days" on a daily basis. On the supply side, if one relies on an income-leisure model (or, some variant of it), day-specific supplies are euqally difficult to derive since preferences are unlikely to be defined on a daily basis. Thus, markets for "labour days", where wages are determined, may not be defined on a daily basis. This does not, however, rule out the possibility that "labour days" are purchased and sold on a day-to-day basis. For example, in the case where demand is defined for an operation period, the price of a "labour day" is determined at the market defined over that period. Yet, an employer may hire labourers (i.e., buy "labour days") on a daily basis. He/She may also hire one or more labourers for the whole operation period if the labourers are willing to supply "labour days" on different days within the operation period as wished by the employer. If the latter condition is fulfilled, hiring on a daily basis is equivalent to hiring for a longer period (i.e., either for a crop year, or for an operation-period). However, in the presence of transaction costs (i.e., costs involved in negotiating labour contracts), longer period labour contracts are more likely to be the outcomes. The latter may also be expected if there are uncertainties in period-specific labour supplies. It is, therefore, necessary to explain why daily labour contracts arise.

IV

Since the type of labour market depends on how one may specify the demand and supply functions of "labour days", the logical query into labour market should begin from an examination of the latter (i.e., demand and supply aspects of the market). I consider the supply side first. Suppose, the economy under consideration is a closed economy where a single crop is

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[14]Sen (1966) discusses such a production function in a different context. A third specification of "technical production function" may be found in Bliss and Stern (1982). Beside other variables, it defines output to depend on the number of tilling and the number of weeding. With such a production function, one may obtain demand for operations and the prices (i.e., wage payments if only land and labour are involved) may be defined specific to operations. As may be noted, the approach accommodates possible existence of piece-rate pricing in labour market. Moreover, depending on the relation between laabour (days) requirements for individual operations, one may also derive demand for labour (days). Since such specification is not used in the theoretical literature (referred to earlier), possible outcomes due to it are not pursued here.

[15] In most cases, operation periods exceed one day.

produced. Since there is no alternative employment opportunity, one may hypothetically consider supply of "labour days" to be based on a crop year (or for a longer time horizon). If alternative employment opportunities increase, characteristics of labour supply to crop production will be affected by the way the non-crop sector(s) engages prospective crop-sector labourers. For example, if only permanent employment is available in the non-crop sector and it is not possible to participate in crop production (if one engages in non-crop activity), the labour supply to crop activity is unaffected (i.e., it is still based on a crop year). If seasonal employments are possible in non-crop sector,[16] supply of labour to crop production may be defined over seasons. A third scenario may be considered where daily labour markets exist in the non-crop sector and the latter activity is carried out in an area that is in close proximity to the place where crop production is carried out. This may be observed in villages that are in close proximity to urban centres, or where there are rural-based non-crop activities, such as, petty trading, construction, rural industries, etc. In such cases, labour supply to crop production may be defined on a daily basis.

On the demand side, there are several aspects to be considered. First, the nature of total demand for labour will depend on the specification of labour in a production function. If the employer (either a landowner or a tenant) does not provide any (family) labour, demand for hired labour will be same as total demand for "labour days". In such case, time dimension of labour demand depends on the specification of the production function. The second aspect arises due to variation in demand that is due to variation in the nature of own (i.e., family) supply of labour. If supply of "labour days" of a prospective employer (of farm labourer) to non-crop activities (and thereby, to own farm) varies on a daily basis, demand for hired labour may be identified on a daily basis even though the specification in a production function does not suggest so.

There is another aspect that may allow one to define market demand (which is assumed to be the aggregate of individual demands) on a daily basis. So far only a single crop has been considered, and because land is considered to be homogeneous, operation periods for all plots in an area may be expected to be identical. When new crops are introduced, such clear identiifcation of operation priods may not be feasible. Since operation periods for different crops may overlap without being identiecal, it may not be possible to associate labour demand (in an area) with any given period until the distribution of land under various crops stabilizes. In such transitional phase, aggregate labour demand may vary on a day-to-day basis even though demands based on individual crops may be specific to well-defined operation periods.

The conditions under which demand for and supply of labour (in crop production) may be defined on a daily basis, outlined above, may not be

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[16] One may conjecture that seasonal employment in non-crop sector is an outcome of seasonality in labour demand associated with crop production. I do not discuss such dynamics here.

exhaustive. The discussion, however, suggests that labour arrangements (that consider time dimension of contracts) cannot be analyzed in a closed model with single crop economy. Broadly, three factors are identified that should be looked into in order to explain why daily labour markets may arise. They are, (1) nature of participation by prospective labourers in non-crop activities, (2) nature of participation of prospective employers in non-crop activities,[17] and (3) state of the crop economy with regard to introduction of new crops. In the last case, it is hinted that daily labour contract may arise during transitional phase and longer term labour contracts may reappear once the crop economy gets stabilized.

V

I have considered a neoclassical production function and adhered to the generally accepted proposition that labour demands are derived demands. Discussions have been made to distinguish between the time concept that arises in identifying the factor "labour" and the time dimension of labour demand that is related to the way a production function is specified. Based on hypothetical cases of labour supply, it has been argued that longer period labour contracts are more expected than daily contracts in a closed single crop economy. Some tentative suggestions have also been made to explain how daily labour contracts may arise. Even though the latter discussion is not complete, there are reasons to believe that emergence of daily labour contracts is likely to be associated with the development of non-crop sector. Thus, in theoretical exercises based on a closed model of a single crop economy, it may not be appropriate to presume that wages are determined in daily labour markets.

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[17] Scope of participation in non-crop activities will depend on the nature of non-crop activities both within and outside the rural economy.

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