

# HIRED LABOUR AND RURAL LABOUR MARKETS IN ASIA

*Studies Based on Farm-level Data*

*Edited by:*

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# Preface

During the late 1970s and early 1980s, the ILO's Asian Employment Programme (ILO/ARTEP)' conducted a series of studies on the comparative experiences of labour absorption in agriculture in several countries of the Asian region. These studies were designed to examine the factors responsible for the considerable variations that were observed within and among countries in land and labour productivity and labour-use per unit of land, as well as the potential that the agriculture sector as a whole carried in absorbing the growing labour force. These as well as other ARTEP studies show that while the agriculture sector has performed reasonably well in terms of growth, it has generally failed to utilise labour input optimally. Poverty and landlessness have risen substantially in many Asian economies despite their registering near-self-sufficiency in food and other crop production. In terms of poverty, it is the landless hired workers who have come to constitute the major 'target' group.

Although in most studies on agrarian relationship and productivity, a reference to hired labour is almost inevitable, there hardly exists any exclusive study on a proper diagnosis of hired labour. The ILO/ARTEP thus initiated the present study, taking four countries of Asia as case studies: Bangladesh, Pakistan, Philippines and Thailand. The major objectives of the studies were: to provide estimates of the magnitude of hired labour; to disaggregate hired labour into more meaningful units and categories; to spell out the impact of traditional, non-market arrangements on labour use in village economies; to identify sources of demand for and supply of hired labour; to assess the impact of institutional and technological changes on the demand structure; to examine the nature of non-agricultural activities, especially small industries nearby, and their potential impact on hired labour through various linkages with village communities. Some of the country studies also delved into the rationale behind the substantial dependence on hired labour among the small farmers, market segmentation for hired labour, the structure of the rural labour markets and the substitution of family labour for hired labour and vice versa.

The studies are essentially meant to be diagnostic in nature, and the idea has been to highlight the major issues. The lack of data base to capture these issues was anticipated and hence the studies had to be based on farm-level data collected through village surveys. The methodologies of survey and sampling are

given in the text. The common norms have been that in each country three villages have been surveyed: a high agricultural growth village, a low agricultural growth village and a village near to an industrial centre. Control conditions, such as agro-climatic factors, cropping intensity, tenurial patterns etc., have been as far possible followed.

As mentioned earlier, the present study is more information-oriented than policy-oriented. The conclusions emerging from each study are based on farm-level studies; and no attempts have been made at generalisations, although some of the observations do tend to hold clear policy implications. The focus has been on raising issues and providing analytical insights in respect of the functioning of rural labour markets and conditions of hired labour. It is hoped that these issues which are raised in this study would constitute a firm basis for further policy-oriented research with particular focus on how wages, employment and other conditions of hired labour can be enhanced, whether through policy interventions or group action.

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# Acknowledgement

The study is the outcome of hard and conscientious efforts put in by the respective authors of the four country case studies: M. Mustafa Alam and M. Muqtada (Bangladesh); Mahboob Elahi and M. Jameel Khan (Pakistan); Germelino M. Bautista (Philippines); Leuchai Chulasai, Suwarat Bhekasut and Thongchai Shusuwan (Thailand). Our special thanks go to these authors.

At various stages in the execution of the study — formulation of the proposals and methodologies, survey designing, computational formats and close scrutiny of and comments on the drafts of country reports — several present and former colleagues at the ARTEP rendered invaluable assistance, especially R. Amjad, G. Edgren, W. Gooneratne, R. Islam, A.R. Khan and E. Lee. We are grateful to all of them for their help and encouragement. We are also thankful to Madhu Dhawan for patiently and skilfully typing the various drafts of the report which underwent frequent modifications.

Finally, we should like to put on record our gratitude to the Swedish International Development Authority (SIDA) through whose generous financial assistance the present work has been published.

THE EDITORS

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# Issues on Employment Poverty and Hired Labour in South and Southeast Asia: An Introduction

*S. Hiroshima and M. Muqtada*

## 1.1 Objectives and Scope of the Study

It is well known that raising and sustaining agricultural productivity constitutes a prime policy concern of most of the South and Southeast Asian countries. Furthermore, in aggregate terms, the agricultural sector in the 1980s will be charged with two other important tasks : promotion of employment and alleviation of mass poverty in the rural areas. This perception is rather self-evident, and is based on the largely common understanding with respect to the performance over the last three decades of the agricultural sector in South and Southeast Asia.

First, agricultural output in South and Southeast Asia has registered a relatively high growth rate during the last three decades.<sup>1</sup> However, land productivity, labour input and per capita growth rate have remained low.<sup>2</sup>

Second, inspite of the various attempts at reforming obstacles to growth presented by land tenure arrangements in the 1950s and 60s, the basic structure remains unaffected. Inequality in land resource distribution has become even worse due to the diminishing land frontier and population explosion.

1. Agricultural growth rates registered by the countries under study during 1960-70 and 1970-82 are: 2.7 and 2.3 per cent in Bangladesh; 4.9 and 2.7 per cent in Pakistan; 4.3 and 4.8 per cent in the Philippines; and 5.6 and 4.4 per cent in Thailand. On the other hand, the agricultural growth rates in Japan during 1889-1940 and 1956-76 are 1.3 and 2.1 per cent respectively. World Bank, *World Development Report 1984*, Oxford University Press, 1984, S. Hirashima, "Growth, Equity and Labour Absorption in Japanese Agriculture", in S. Ishikawa, S. Yamada and S. Hirashima, *Labour Absorption and Growth in Agriculture: China and Japan*. ILO/ARTEP, Bangkok, 1982.
2. Shigeru Ishikawa, *Labour Absorption in Asian Agriculture*, ILO/ARTEP, Bangkok 1981. Wilbert Gooneratne ed. *Labour Absorption in Rice-Based Agriculture*, ILO/ARTEP, 1982.

Third, agricultural production in aggregate terms in most South and Southeast Asian countries has increased drastically with the introduction and dissemination of high yielding rice and wheat varieties in the latter half of the 1960s. However, the extent of irrigation development and the pattern of land tenure condition decisively the distribution of benefits accruing from the new technologies in agriculture.<sup>1</sup>

Fourth, during the last three decades, many countries of South and Southeast Asia have experienced rapid increase in the number of hired labour households within the rural sector. Despite the rapid increase in production, the crop and livestock sectors have failed to generate sufficient demand for the giving hired labour population. In addition to the uneven distribution of irrigation infrastructure and land resource, inappropriate choice of technology in the context of factor proportion accounts for this. Moreover, the urban modern sectors have failed to generate necessary employment opportunities for the surplus rural labour force.

Fifth, in many South-Southeast Asian countries, the proportion of those who are below poverty line has been reduced. However, the magnitude of rural poverty in absolute terms does not seem to have declined. Furthermore, income and asset distribution is observed to be highly skewed and has steadily worsened over time.<sup>2</sup> Table 1.1 provides a summary picture of poverty and inequality in rural Asia.

Based on this perception of agrarian problems in South and Southeast Asia, this study tries to examine the issues on employment expansion and poverty alleviation, taking hired labour households as a focal point. The reason why we have decided to study hired labour problems in South and Southeast Asia can be spelled out as follows.

First, it is important, but often forgotten, that village communities in Asia, in particular South and Southeast Asia, contain a sizable number of farming as well as non-farming households who earn a major part of income by working for others. Hired labour is generally derived from both landless households as well as small/marginal households who tend to supplement their income through wage-earnings. The proportion of hired labour households is seen to range between 20 to 60 per cent of the total households in village communities.<sup>3</sup> In terms of rural labour force, the percentage of hired labour is seen to be even higher (see Table 1.2). The table also shows that generally there exists a high proportion of landless population and low levels of average per capita land in most of the Asian countries. These two forces would normally account for the extent of hired labour in these economies.

1. S. Hirashima, *The Structure of Disparity in Developing Agriculture*, Institute of Developing Economics, Tokyo, 1978.
2. A.R. Khan and Eddy Lee eds. *Poverty in Rural Asia*, ILO/ARTEP, Bangkok, 1984 Medhi Krongkaew, "Agricultural Development, Rural Poverty and Income Distribution in Thailand," in *Developing Economies*, December 1985.
3. S. Hirashima ed. *Hired Labour in Rural Asia*, Institute of Developing Economies, Tokyo, 1977.



Hired labour households have been continuously neglected by policy makers as well as by the academic community and this indifference has been perhaps due to the following :

- Increment of agricultural production has been the prime concern of the agro-based, food deficit societies;
- Development of urban-based modern manufacturing sector was expected to absorb surplus labour force in rural areas; and
- Hired labour households in village communities have been assumed to be under the protection of traditional community relations.

Second, shift of policy emphasis from institutional reforms in the 1950s and early 60s to technological advancement in the latter part of the 1960s and 70s resulted in the rapid increase in crop production in most part of South and Southeast Asia. In the process, however, two important expectations of policy makers and academicians were betrayed. One is reflected in the desperately low growth of labour absorptive capacity of the modern industrial (in particular, manufacturing) sector in the face of high rate of population growth. The other is the fact that the benefits of new technological advancement in the crop sector have been shared mostly by land owners in the irrigated areas.

Third, institutional reforms introduced in 1960s and early 70s were not designed to give solutions to problems of hired labour households in rural areas. Moreover, their socio-economic status seems to have become unstable after the introduction of new technologies in agriculture, rapid liquidation of traditional community relations and conversely rapid penetration of market relations in agrarian economy, and slow growth of demand for hired labour under the present choice of institutional and technological arrangements.

Fourth, given the apparent magnitude of hired labour households in rural areas, it has become unrealistic to formulate agricultural policy with respect to prices, technology and organizational structure of production without taking hired labour households into consideration. However, the information on this segment of rural population is scattered and relatively scarce.

Fifth, the study on hired labour households would provide us an opportunity to reexamine the validity of various assumptions behind development economics in relation to the nature and function of the rural labour market.

The present study attempts to analyse various issues pertaining to hired labour in the context of the functioning of rural labour markets. Based entirely on farm-level data, the studies concentrate on a diagnosis of salient features of rural labour markets in two South Asian (Bangladesh and Pakistan) and two Southeast Asian (Philippines and Thailand) economies. In the process of investigating the basic nature of hired labour market in these economies, the following issues are examined in some details — the emphases depending upon country-specific context:

- Magnitude of hired labour in village communities;
- Factors affecting demand for and supply of hired labour;
- Traditional institutions for labour use;
- Impact of institutional and technological changes on hired labour;
- Migratory movement of hired labour;
- Process of substitution of hired labour for family labour; and
- Non-farm employment and income of hired labour households and poverty alleviation.

Apart from providing a comparative picture of differing hired labour market scenarios in Asia, the study also undertakes to examine the impact of regional diversities within each country, viz the impact of low and high growth agriculture as well as nearby location of industrial activities on the conditions of hired labour households.

Primary level information has been generated to examine the above issues since in none of the countries concerned there exist any consistent sets of national level data. By the same token, the study refrains from macro-level analyses although implications for macro policy formulations are, at times, cautiously drawn.

## 1.2 The Context of Hired Labour in the Present Study

At the outset, one should note that in this study, we use the term hired labour instead of wage labour. We know that a good deal of labour is employed under non-market relations in South and Southeast Asia where the major form of transaction is highly personal and the wage rate is governed not by demand and supply in a strict sense, but by customary rates in cash and/or commodity terms. In view of this, hired labour in this study refers to the one being used for others regardless of the nature of transaction, be it traditional or modern. Also "hired labour household" used in this study refers to a household earning more than 50 per cent of income from hired labour and/or spending more than 50 per cent of mandays on hired labour.

Household as a unit of observation is crucial in Asia, not only because a household is a unit of production and consumption, but because most hired labour households are multi-occupational. Since hired labour is supplied also by farming households, the data showing the exact magnitude of hired labour and hired labour households are not yet uniformly available.

As our case studies will show, wage labour is sometimes only a fraction of the total hired labour in South and Southeast Asian agriculture. Hired labour is still confined within a village community or within the adjacent villages. Geographical mobility is limited. Since villagers live closer to each other in most Asian villages, buyers and sellers of labour are known to each other for generations and

share much in common with social life. Here, buyer and labourer are often inseparable; buyers cannot be altogether indifferent to the welfare of the labourer and the labourer's household. This face to face relationship inherent in Asian village communities has various implication regarding the functioning of labour market.

Hired labour situation in rural South and Southeast Asia is rather diversified. Previous studies have attempted' to classify Asian countries using two criteria; incidence of hired labour and social status of hired labour. South Asia excluding Sri Lanka and a part of Southeast Asia, notably Indonesia and the Philippines, were found to be the countries having high incidence of hired labour. It was found out also that the social status of hired labour households was extremely low in India, Pakistan and Bangladesh, but there was not much clear social distinction between employers and employees in Southeast Asian countries.<sup>1</sup>

In the present study, we felt it important to add another criterion, that is the strength of community relations, or conversely the extent of market relations in agrarian economy. However, it is found that this addition do&. not quite improve the classification of work. For example, in Northern Thailand, the incidence of hired labour is relatively low and the community relations are strong, while in(ii) Central Thailand, the opposite holds true. A similar observation can be made in the Philippines; between Ilocos Norte and Central Luzon. The present exercise takes the following criteria into consideration.

First, we have selected four countries using two criteria previously used. Pakistan and Bangladesh were selected to represent countries where the incidence of hired labour is high and social status of hired labourers is low. The Philippines was selected to represent a country where the incidence of hired labour is high, but there is less social-distinction between hired labourers and their employers. Thailand was selected to represent a country of low incidence of hired labour and social distinction between hired labourers and their employers is not observed like the case of Indonesia.

Second, in each country, we have selected three survey points using two criteria; agricultural growth rate and the accessibility to the industrial and commercial activities. In other words, we have selected an area where agriculture has stagnated (hereafter we call this area as LAG), and area where agriculture has been growing rapidly (we call it HAG hereafter) and an area located near industrial and commercial activities (we call it NIC hereafter).

Third, in this sampling design, we presupposed that in the course of development transformation from low growth to high growth is a natural consequence, and that the process of this transformation is one of market penetration into agrarian economy and the resultant liquidation of traditional community relations.

1. See Hirashima, 1977, *op. cit*

Moreover, we expected, under the constraint of time and funds, that the plausible changes in hired labour situation over time could not be captured by the cross-section survey.

Fourth, a study of a village near to an industrial centre was included to test the conviction that hired labour problems cannot be solved within the agricultural sector alone.

Fifth, with this sampling design, it was expected that we would be able to abstract common factors that effect hired labour situation across the countries.

### 1.3 Major Issues on Employment and Income of Hired Labour

Several studies, both theoretical and empirical, exist that deal with agricultural workers in general, particularly in respect of such issues as their unemployment rates, wages, their demand and supply, and some attempts at explaining these through various behavioural, technological and, occasionally, institutional factors.<sup>1</sup>

The present set of studies also examines the above issues, albeit with specific focus on hired labour households, and tends to bring out the context within which some conventional findings and contentions are either supported or challenged. Through micro-level information, containing country and regional diversities, the studies shed light on aspects of labour mobility, institutional factors affecting market functioning as well as the impact of the status and role of community relations on the local labour markets. In the process, aspersions are cast on the conventional idea of a rural labour market : What constitutes a labour market in the rural areas where there exists multiplicity of functions within a household as well as an individual? Can we define a 'formal' rural labour market? As the case study on Bangladesh contends, the multiplicity of roles together with the coexistence of wage and self-employed occupation within a household *and* an individual make an assessment of labour markets very difficult.

The present study maintains that the present stock of knowledge on hired labour and rural labour market is too small to endeavour rigorous exercise, and that much more systematic data collection is required for that purpose. The following stylized summary of our findings based on village surveys conducted in four countries in South and Southeast Asian<sup>1</sup> is yet a preliminary effort toward more systematic treatment of hired labour issues in development. The arguments and diagnosis forwarded on the basis of these findings are more often contingent on country specific situations and, consequently, are not drawn into this stylized version.

1. See, for instance, in the context of India, K. Bardhan, 'Rural Employment, Wages and Labour Markets in India — A Survey of Research', Parts I, II and III, *Economic and Political Weekly*, June-July 1977 (Nos. 26, 27, 28). Also see, Hirashima, 1977, *op. cit.*; Binswanger, H.P. and Rosenzweig, M.R. (eds.) *Contractual Arrangements, Employment, and Wages in Rural Labour Markets in Asia*, Yale University Press, New Haven and London, 1984.

### **1.3.1 Family Labour, Exchange Labour and Hired Labour**

Labour used in the agricultural sector is classified into three categories; family labour, exchange labour and hired labour. Hired labour is further divided into permanent labour and casual labour. However, this distinction is relevant only in the cases of Bangladesh and Pakistan in our study. Permanent labour is not recorded in Thailand and the Philippines. We may add communal labour in the labour category, but certainly the magnitude of it in total labour use is far less compared with other forms of labour.

It is generally understood that permanent labour and exchange labour are complementary to family labour, while casual labour, except during peak season requirements, is often regarded as a substitute for family labour. With respect to the combination of three categories of labour used in farming operations, the following findings are obtained in our four case studies.

In Bangladesh, proportion of family labour in total labour use in farming operations is the highest in LAG (60 per cent) and the lowest in NIC (53 per cent). Conversely, the use of hired casual labour is the lowest in LAG (27 per cent) and the highest in NIC (36 per cent).

Dependence on hired labour and its magnitude are, to a great extent, a function of farm size. All large farms use hired casual labour and its extent ranges from 36 per cent of total labour use (LAG) to 47 per cent (HAG). On the contrary, roughly one third of small farms use hired casual labour and its extent is from 14 per cent (LAG) to 23 per cent (HAG).

Exchange labour is also used in Bangladesh, but its usage is much less compared with other categories of labour. Proportion of exchange labour in total labour use range from 14 per cent in LAG to 4.4 per cent in HAG and it is mainly used in weeding and harvesting of Aman and Boro rice varieties. Taking permanent labour use in consideration, the magnitude of hired labour use in Bangladesh comes to around 40 per cent.

With respect to the relationship between permanent labour and casual labour, Bangladesh study reveals an interesting observation. Social status of permanent labourers is lower than that of casual labourers. It implies that the market for permanent labour is specific and open to a certain segment of rural people. This holds true in Pakistan as well.<sup>1</sup>

In Thailand, the proportion of exchange labour in total labour use is as high as 31 per cent in LAG, but the extent of hired labour use is only 4 per cent. Quite an opposite picture is obtained in HAG where the dependence on hired labour is high (32 per cent) and the use of exchange labour is low (15 per cent), leaving less family labour use compared with that in LAG.

In the Philippines, the use of hired labour is much higher than any other countries under study, ranging from 65 per cent in LAG to 83 per cent in HAG/NIC, with the variation depending on the size of operation.

1. S. Hirashima, *The Structure of Disparity*, op. cit.

Pakistan also shows high dependence on hired labour. In NIC, for instance, the proportion of hired casual labour in total labour use in rice cultivation is 67 per cent in average, ranging from 46 per cent (small farms) to 77 per cent (large farms). Sugarcane cultivation is usually done by family labour and permanent labour, leaving the participation rate of hired casual labour around 16 to 36 per cent. Casual labour use in wheat harvesting ranges from 20 to 90 per cent and in threshing from 20 to 50 per cent. This unexpectedly low dependence on hired casual labour is explained by the use of exchange labour in both operations.

Female labour plays an important role in groundnut harvesting in LAG and maize harvesting in HAG. Cotton harvesting, though not in our sample, is also exclusively done by female casual labourers coming from the non-farming households in the villages.

### **1.3.2 Demand for Hired Labour and its Determinants**

Several factors are considered to affect demand for hired labour in South and Southeast Asian agriculture.

- Overall level of agricultural productivity.
- Cropping pattern, cropping intensity and irrigation ratio.
- Choice of technology and factor proportions.
- Land tenure system and scale of farming.
- Organisation of labour use in village community.
- Demographic characteristics and social status.

Since all these factors are interrelated, we will summarize our findings under the following headings.

#### *Cropping Pattern, Cropping Intensity and Irrigation Ratio.*

In all cases we have examined, total labour input as well as hired labour use is higher in HAG and NIC than LAG, which is basically explained by the difference in irrigation ratio and the resultant changes in cropping pattern, cropping intensity and overall productivity level.

In Thailand, the cropping intensity in HAG is 168, while in LAG it is only 139. Because of the difference in the availability of irrigation water, the farmers in LAG grow dry season rice far less than the farmers in HAG; 6 per cent and 36 per cent respectively.

In Bangladesh, the cropping intensity of HAG is 147 in average, while that of LAG is 130, which is also explained by the difference in irrigation ratio; 31 per cent in HAG and 22 per cent in LAG. It is also noted that the rate of adoption of high yielding rice varieties is much higher in HAG than LAG and consequently the use of hired labour becomes higher in HAG. In fact, among three rice varieties grown in Bangladesh (Aman, Aus and Boro), Boro requires stable water supply and the percentage of hired labour use is the highest (40 per cent-

of the total labour use), followed by Aman (30 per cent). Higher use of hired labour in HAG is, therefore, attributed partly to the adoption of hired labour intensive varieties of rice.

Difference in total labour input and hired labour use is clearly shown in the case of the Philippines as a function of difference in cropping pattern. In HAG, rice and garlic combination demands 231-263 mandays of labour input per hectare and the component of hired labour is 69 to 86 per cent. In LAG, on the other hand, rice and sugarcane combination requires 155-169 mandays of labour, in which the proportion of hired labour is around 87 per cent.

The mode of irrigation strongly affects cropping intensity, labour input and the use of hired labour as illustrated in Pakistan's case study. According to this, the cropping intensity is the highest in NIC and the lowest in LAG. This is explained by the proportion of area irrigated by both canals and tube-wells; 88 per cent of area in NIC is irrigated by canal and tube-wells, while this proportion is 54 per cent in HAG and nil in LAG.<sup>1</sup> It is also shown, like the case in Bangladesh, that the difference in cropping pattern and the rate of adoption of high yielding varieties of seed affect the demand for both total labour and hired labour.

Given the current cropping pattern, cropping intensity and irrigation ratio, seasonality in demand for hired labour seems to be inevitable. In fact, our four case studies clearly indicate that the extent of seasonality in labour demand is the highest in LAG and the least in NIC.

Bangladesh case study reveals that the most acute shortage of labour demand occurs from June to November in LAG, while it occurs only in two months from February to March in NIC. Similar situation is prevalent in Thailand, where the slack season in LAG extends from January to June with its trough in April when the rate of unemployment is as high as 71 per cent. On the other hand, the slack season in HAG is from March to June with its trough in April when the unemployment rate becomes 52 per cent. In NIC, the rate of unemployment ranges from 15 to 26 per cent throughout year with its bottom level in June.

In the Philippines also, it is observed that the length of slack season is five months in LAG and two months in NIC/HAG. It is equally important to note that female labour participation rate is much less during the slack season as demonstrated in Thai case study. A similar observation is made in India as well.<sup>2</sup>

1. The basic form of irrigation system in Pakistan was shaped by 1917 during the British administration. Since the irrigation intensity was intentionally set at 66 per cent allowing for fallow period, water shortage persisted for long time. It was only after the introduction of tube-wells in canal irrigated areas in the 1960s that water shortage problem was partially solved. See, S. Hirashima, *The Structure of Disparity*, op. cit.
2. Kalpana Bardhan, "Work Patterns and Social Differentiation: Rural Women of West Bengal," in Binswanger and Rosenzweig eds. *Contractual Arrangements*, op. cit.

*Land Tenure System and the Scale of Farming*

Demand for hired labour depends, to a great extent, on the scale of farming and land tenure arrangements. Our case studies confirm the following relationships.

First, proportion of family labour in total labour input is less in large farms. In other words, demand for hired labour in larger holdings is higher than in smaller holdings.

Second, owner farmers depend more on hired labour compared with tenant farmers, if the scale of operation is conditioned. This implies also that large scale tenant farmers may use more hired labour than small owner farmers.

Third, there is a clear tendency that tenant ratio and the hired labour use are higher in HAG than in LAG. Conversely, the use of family labour and exchange labour is higher in LAG than in HAG and NIC.

These observations, under the present forms of institutions and technology, would suggest that demand for hired labour tends to be higher where agriculture is growing at a rapid rate and where land ownership and operational holdings are skewedly distributed in favour of larger farms. Conversely, it is indicated that demand for hired labour would be less where agriculture stagnated and where small owner farmers constitute an overwhelming majority. This observation gives rise to a policy question in terms of choice of institutions and technology in dealing with hired labour issues in development.

*Choice of Technology and Factor Proportions*

In South and Southeast Asian agriculture, one can observe a sort of division of labour in each farming operation. For instance, land preparation, irrigation, manuring and livestock care are usually done by family labour and permanent labour, and the operations such as transplanting, harvesting and threshing are mostly done by casual labour and in certain cases by exchange labour. It follows, therefore, that the relationship between choice of technology and demand for hired labour is often operation-specific.

It is widely accepted that hydrological technology enhances labour absorptive capacity by way of increase in cropping intensity, in land under cultivation and in overall productivity. Demand for casual hired labour increase with the increase in quantity to be harvested and threshed. Likewise, bio-chemical technology generally enhance labour absorption, since it demands more careful water management and weeding, and also the resultant increase in output requires more labour in harvesting and post-harvesting operations.

Mechanization in ploughing operation is expected to reduce the demand for family labour and permanent labour. Permanent labour is affected in particular when tractors replace animals, the care of which has traditionally been assigned to permanent labour. By the same token, labour saving technology in harvesting and post-harvest operations definitely reduce the demand for casual labour.



It is not yet fully determined whether the recent technological changes reduce the demand for hired labour in aggregate terms or not, for the kind and level of technological change varies substantially from one place to the other. In Thailand, for example, the diffusion of tractor is in its infant stage : 13 per cent in HAG and 12 per cent in LAG during wet season, and 6 per cent and 3 per cent respectively in dry season. Therefore, its effects on employment is not much felt. It should be noted, however, that our observation is obtained in Northern Thailand, which is substantially different from Central Thailand where the diffusion of tractor is very rapid.

In Pakistan where the mechanization in agriculture is most advanced in our case studies, its impact on employment is reported to be positive. This is primarily due to the low initial level of productivity both in terms of land and labour, and to the fact that the negative effects of tractors and threshers have been offset by the positive effects of tube-wells.

In Bangladesh, the positive employment effects of bio-chemical technology are recorded in the absence of other labour displacing technologies such as harvesters, threshers, weeders, sprayers and tractors. In the Philippines, the introduction of new technologies have induced the changes in the traditional institutions of labour use in village communities.

### *Organization of Labour Use in Village Communities*

It is argued that the traditional community relations could assure the stable demand for hired labour, and that risk and uncertainty in terms of securing employment have been increasing in consonance with the liquidation of traditional community relations.

In our present study, we have confirmed two things in this connection. First, traditional community relations are still found in LAG and relatively more widespread compared to market-penetrated HAG and NIC, and they provide hired labour households with employment opportunities to meet the minimum subsistence level of living. However, it is found out at the same time that the demand generated in traditional LAG for hired labour is far less compared with market-oriented HAG and NIC. It implies further that risk and uncertainty in securing job opportunities for hired labour households in HAG and NIC have become greater, despite the fact that the level of demand and the wage rates are higher than in LAG.

This is well illustrated in Pakistan case study where as many as 41 per cent of hired labour households (locally known as *kamnee*) in LAG are still maintaining traditional *seyp* relationship (inter-generational agreement of labour use between zamindars or land owners and *kamnees*) with employers, but those who have *seyp* relationship in HAG and NIC are 10 per cent and 5 per cent respectively. Consequently, the proportion of those whose labour is transacted in labour market is higher in NIC (52 per cent) and HAG (47 per cent) and lower in LAG (35 per cent).

In Bangladesh, it is reported that labour contract between employers and employees in LAG is based on personal contact, while 27 per cent of transaction in NIC is made through mediators.

Another contention we confirmed in our study is the fact that, even in the midst of rapid expansion of market relations, traditional community relations are playing an important role in certain areas, and that they are equally efficient in adjusting themselves to the changing demand and supply conditions. The case of the Philippines demonstrates this point.<sup>1</sup> Before the 1960s, any villager and seasonal migrant from outside could participate in harvesting and manual threshing operations in the Philippines. However, with the deterioration of man-land ratio and the development of new technologies, hired labour households began to claim exclusive right on harvesting and manual threshing by offering free weeding (known as *gama*), free pulling of seedling and planting (known as *bahig*) and free transplanting or weeding (known as *prendes*). These new arrangements of hired labour use are still in line with the traditional institutions and community labour use arrangements.

### **1.3.3 Agricultural Wage Rates and Non-farm Employment**

At the aggregate level, it is observed that the real wage rate has been declining over the last two decades in Bangladesh.<sup>2</sup> In India, there is a controversy on the trend of real wage over time.<sup>3</sup> Pakistan and Thailand registered increasing wage rate over time. However, it is found also that the rural income disparity has been widening.<sup>4</sup> A similar tendency is recorded in Punjab and Haryana, the heart of green revolution in India.<sup>5</sup>

At the micro level, our case studies reveal that:

- Wage rate is lower in LAG and higher in NIC and HAG, reflecting the difference in agricultural productivity and in availability of non-farm employment;
- Wage rate of permanent labourers is lower than that of casual labourers;
- There is a substantial wage gap between peak season and slack season,

1. This point is made also in Masao Kikuchi, Anwar Hafid and Yujiro Hayami, "Changes in Rice Harvesting Contracts and Wages in Java," in Binswanger and Rosenzweig eds. *Contractual Arrangements*, op. cit.
2. A.R. Khan, "Real Wages of Agricultural Workers in Bangladesh," in A.R. Khan and Eddy Lee eds. *Poverty in Rural Asia*, op. cit.
3. John W. Mellor and Gunvant Desai eds, *Agricultural Change and Rural Poverty*, Johns Hopkins University Press, Baltimore, 1985.
4. M. Irfan and R. Amjad, "Poverty in Rural Pakistan," and Rizwanul Islam, "Poverty, Income Distribution and Growth in Rural Thailand," in A.R. Khan and Eddy- Lee eds. *Poverty in Rural Asia*, op. cit., Medhi Krongkaew, op. cit.
5. G.S. Bhalla and G.K. Chadha, "Green Revolution and Small Peasants: A Study of Income Distribution in Punjab Agriculture," in *Economic and Political Weekly*, May 15 & 22, 1982.

but obviously, the wage rate during the slack season is not the market clearing rate. It is not certain whether the rate is conceived as a premium attached for the intention of securing peak season labour.<sup>1</sup>

As we have pointed out already, the duration of employment in LAG is shorter than in HAG and NIC, which implies that income generated in the agricultural sector is the least in LAG. In many cases, hired labour households could not sustain their minimum subsistence level of living by agricultural income alone. This situation gives rise to the question of non-farm employment.

As is expected, hired labour households are, in many cases, multi-occupational. In Bangladesh, for instance, the proportion of working members who do not have subsidiary occupations is only 2 to 5 per cent, and more than 50 per cent of them have at least 2-3 subsidiary jobs. Certainly, the availability of non-farm employment is much more in NIC and HAG than in LAG, as reflected in the income structure of hired labour households. Two important relationships in this connection deserve pointing out. First, one observes a positive correlation between the level of agricultural productivity and its growth rate and the development of industrial and commercial activities nearby. Second, direct employment effects of small and medium scale industries and commercial activities seem to be more favourable than in large scale establishments. However, it is shown that the latter brings indirect benefits in the form of self-employment to the-hired labour households in nearby villages.

### **1.3.4 Income Structure of Hired Labour Household**

The level of income of hired labour households is determined by such factors as demographic structure, demand generated in the agricultural and non-agricultural sectors and the respective wage rates.

In most Asian countries, household is the basic unit of production, consumption and decision making in investment, allocation of labour, etc. Wage rates, both in nominal and real terms, are crucial in determining household income level. However, duration of work is equally important in this respect, particularly so in labour surplus economy.

Our four case studies reveal that income level is the lowest in LAG and the highest in NIC. Two factors are accountable for this. First, demand generated in the agricultural sector is constrained by the lower productivity of land in LAG and hence wage rates are lower and the duration of work is shorter as well. Second, availability of non-farm employment opportunities is far less in LAG compared with that of HAG and NIC.

In Bangladesh, for example, non-farm income of hired labour households in LAG is 36 per cent of the total household income, while it is as high as 65 per

I. James G. Ryan and R.D. Ghodake. "Labour Market Behaviour in Rural Villages in South India: Effects of Season, Sex and Socio-economic Status," and Kalpana Bardhan, op. cit. in Binswanger and Rosenzweig eds. *Contractual Arrangements*, op. cit.

cent in NIC and 56 per cent in HAG. The proportion of households below poverty line is the largest in LAG (56 per cent) and the smallest in HAG (51 per cent). If there were no income from the non-agricultural sectors, the proportion shoots up to 77 per cent in LAG, 75 per cent in NIC and 67 per cent in HAG. These data suggest the importance of non-farm income on one hand, and the importance of the agricultural sector as a built-in-stabilizer in income generation, on the other.

Pakistan study reveals that hired labour households in LAG (majority of them are *kammee*) spend more than 50 per cent of their working hours in the least remunerative jobs; *seyp* work as mentioned earlier and livestock care. In contrast, hired labour households in HAG and NIC spend the least time in these two jobs and spend their maximum time in highly remunerative jobs such as self-employment and permanent non-farm employment.

In the Philippines, hired households in LAG earn as much as 82 per cent of total household income from hired labour in farming operations and the remaining 18 per cent from self-employment and non-farm wage employment. In the case of HAG/NIC, earnings from farm operations remains 51 per cent of the total and the rest comes from self-employment (28 per cent) and non-farm wage employment (21 per cent).

The present study is based on the micro empirical surveys conducted at three different points in each country selected. Let us summarize once again the basic features of these three points:

- (i) In low agricultural growth areas, traditional arrangements of labour use are still preserved. Hired labour, in aggregate terms is less, which is based primarily on the low agricultural productivity originated from lower irrigation ratio. Wage rates are lower, duration of work is shorter, and income level is lower.
- (ii) In relatively high agricultural growth areas, traditional arrangements of labour use have been steadily fading away. Incidence of hired labour and tenant farmers is high. Demand for labour in general and for hired labour is higher, reflecting higher agricultural productivity accountable to the higher irrigation ratio. Wage rates are higher, period of employment is longer and the income level is higher.
- (iii) In areas near to industrial or commercial activities, traditional community relations in labour use are being rapidly replaced by market relations. Incidence of hired labour is higher than in (ii) and the demand for hired labour in agriculture as well as non-agriculture is very high. It is important to note that NIC is characterized by a quickly growing agriculture in most cases. Wage rates are higher and the duration of employment is longer. Availability of non-farm employment is the highest and so is the overall level of income. However, risk and uncertainty in labour markets seem to be equally high.

The present study does not go deep into the theoretical questions with respect to the functioning of rural labour markets. Our empirical knowledge is yet far from sufficient to construct a meaningful model explaining demand and supply characteristics of hired labour in rural South and Southeast Asia. To take one example, in considering wage rate determination in South and Southeast Asian agriculture, it is important to recognize the fact that household is, in principle, a basic unit of production, consumption and decision making in labour allocation. It is further noted that the income earned by a principal working member of a household determines the level at which the remaining working members of the household place themselves in various labour markets or income earning 'opportunities'. Acceptable wage rates and kinds of labour markets for them are primarily determined by the level of income earned by the principal working member(s) and the extent of expenditure necessary for the reproduction of entire family members met by that income. In other words, if the minimum subsistence level of income cannot be earned by the principal working member, the remaining able members of the household, including female and children, have to place their labour in the available labour markets. Range of choice in terms of wage rate and the kinds of work becomes narrower and the wage rates would tend to become lower than their marginal productivity. Multi-occupational structure observed widely in poor agrarian societies give support to this argument. What is important, therefore, is not the wage rate per se, but the duration of employment or the level of aggregate demand.

## 1.4 A Few Policy Implications

We have already noted that the present study purports to strengthen the information base and provide pertinent analytical insights into the state of hired labour households. The impact of various development or employment-based welfare programmes is not examined in any details. As such, and also due to restrictive nature of farm level studies, the study abstracts from policy generalisations. However, some of the observations from the field investigation tend to give rise to certain policy considerations. Among these the following may be cited.

First, a deliberate programme to formulate policy prescriptions towards any segment of the economy begins with a serious effort to collect quantitative facts about that segment. There is always a possibility that lack of interest in gathering statistics on an issue can be construed as a lack of interest in the issue itself. This is true of hired labour households. Given the apparent magnitude of the problem in so many countries, a systematic data gathering in large scale on the issues of hired labour in rural areas is urgently required.

Second, given a systematic information base, further analytical studies are required to be undertaken, especially in order to rationalise various conceptual difficulties, some of which are raised in this study. A multi-disciplinary approach would perhaps better cope meeting some of these difficulties, e.g. in analysing the various contractual arrangements, formal and informal elements in the labour

market, nature of women and child participation, substitutability of family and hired labour, traditional community labour arrangements, etc. These features and others, as well as factors that affect or sustain them need to be analysed much more disaggregatively, in order to understand why such policy thrusts as minimum agricultural wages legislation or various welfare programmes cannot be either effected or remain tangential.

Third, it is emphatically observed that growth and improvement in crop production are crucial factors for increasing demand for hired labour ;and that the most important means to achieve this end is irrigation. Since the role of the state in irrigation development is paramount in most developing countries, magnitude and direction of public investment in irrigation determine the rate of transformation of LAG to HAG or NIC. It is important to realize also that improvement of the production base by means of irrigation not only enhances demand for hired labour in agriculture, but also induces the development of non-agricultural activities leading to a further employment expansion for hired labour households. There may be areas where the expected rate of return on irrigation investment is prohibitively low. So far these areas which have been completely left out of the public investment programmes would at least require priority in public works programmes. However, what seems to be more important is to place extra emphasis on human resource development, specifically the education of the children of hired labour households, as a long-run contribution to checking the inter-generational cycle of rural poverty.

Fourth, it has been observed that traditional labour use arrangements based on community relations have been steadily fading away in the process of transforming LAG to HAG and further to NIC. Wage rates and income have been observed to increase at the cost of stability and equity. A most recent Thai study, as mentioned already, indicates that with the rapid development of agriculture, the proportion of those who are below poverty line has decreased significantly, while income distribution has deteriorated steadily over time.<sup>1</sup> Efforts could be made to achieve high growth in agriculture making use of community relations. In this connection, it should be recognized that modern large-scale, centrally managed irrigation systems in most developing countries, for example, are not necessarily more efficient than the existing community-based water management systems.

Fifth, we have noticed that small and medium scale industries, for example, are more accessible to the hired labour households than large scale industries under the present level of education and skills. We have further hinted that stagnant agriculture does not provide a good base for the development of the non-agricultural sector. However, a caution has to be made on the optimism frequently expressed in academic literature and development plans with respect to

the labour absorptive capacity and its growth over time of those small and medium scale industries. Although it is true that at a given point in time labour absorptive capacity of small and medium scale industries expressed by the smaller capital-labour ratio is larger than large scale industries, it does not guarantee, however, that higher absorption can be maintained over time. What seems to be important is the organizational linkage between labour intensive small and medium rural, agro-based industries and large scale industries.

Sixth, one distinctive feature of hired labour households within the agricultural sector is their complete lack of access to land resources. There are three basic reasons for this. First, they do not have enough savings to participate in land market at the present level of income and occupational characteristics. Second, they do not have access to the credit institutions because of their poor assets base. Third, price of land has historically been increasing at a much higher rate than interest rate or rent. In other words, the rate of return on investment in land has become much lower than the interest rates of the credit institutions, which has made credit institutions difficult to issue loan for land purchase and also made it difficult for those who do not have sufficient initial capital to participate in land market. Hired labour households are in this category. Whether land redistribution should treat hired labour households as one of the direct beneficiaries or not is an open question. No government, however, has ever made this point clear. If this point is left ambiguous, the policy directed towards hired labour households would remain ambiguous as well.

**TABLE 1.1**  
**Extent of Poverty and Inequality in Rural Asia**

	Percentage of Rural Population Living under Poverty	Concentration Coefficients (Gini)	
		Landholding	Income
Bangladesh	68.2 (1976/77)	0.66 (1977)	0.44 (1976/77)
India	48.0 (1973/74)		0.38 (1970/71)
Indonesia	58.6 (1976)	0.53 (1973)	0.42 (1981)
Malaysia		0.47 (1970)	0.47 (1970)
Nepal	66.6 (1976/77)	0.69 (1971/72)	0.59 (1976/77)
Pakistan (1971/72)	39.8 (1979/80)	0.61 (1980)	0.31
Philippines	77.0 (1971)		0.46 (1970/71)
Sri Lanka	25.6 (1980/81)	0.40 (1970)	0.49 (1978/79)
Thailand	32.0 (1975/76)	0.46	

*Sources:* (1) ILO, *Poverty and Landlessness in Rural Asia*, Geneva, 1977.

(2) A.R. Khan and E. Lee (eds.), *Poverty in Rural Asia*, ILO/ARTEP Bangkok, 1984.

(3) J.G. Rosenberg and D.A. Rosenberg, *Landless Peasants and Rural Poverty in Indonesia and the Philippines*, Cornell University.

(4) ILO/GOB, *Bangladesh Food Strategy Review Exercise*, Geneva, 1984.

(5) M.G. Chaudhry, *Green Revolution and Redistribution of Rural Income: Pakistan's Experience*, *Pakistan Development Review*, Autumn 1982.

(6) S. Stavenuiter, *Adjusting Indonesia's 1981 Income Distribution Data for Sampling Biases*, (mimeo.), 1984.



**TABLE 12**  
**Per Capita Land, the Percentage of Landless Population and**  
**Hired Labour in Asian Agriculture**

	Average Per Capita Land (Arable) in Agricultural Sector (hectares)	Landless Population as a Percentage of Rural Population	Percentage of Hired Labour in Total Rural Labour Force
Bangaldesh	0.12	36.8 (1977)	30.3
India	0.4	46.0 (1971)	—
Indonesia	0.2	65.5 (1971)	71.0
Nepal	0.2	23.0 (1974)	66.0
Pakistan	0.4	52.0	69.0
Philippines	0.2	47.8 (1971)	66.0
Sri Lanka	0.2	59.0 (1973)	65.0
Thailand	0.5	13.2 (1978)	—

*Sources:* (1) ILO, *Poverty and Landlessness in Rural Asia*, Geneva, 1977.

(2) A.R. Khan and E. Lee (eds.), *Poverty in Rural Asia*, ILO/ARTEP Bangkok, 1984.

(3) J.G. Rosenberg and D.A. Rosenberg, *Landless Peasants and Rural Poverty in Indonesia and the Philippines*, Cornell University.

(4) ILO/GOB, *Bangladesh Food Strategy Review Exercise*, Geneva, 1984.

(5) M.G. Chaudhry, Green Revolution and Redistribution of Rural Income: Pakistan's Experience, *Pakistan Development Review*, Autumn 1982.

(6) S. Stavenuiter, *Adjusting Indonesia's 1981 Income Distribution Data for Sampling Biases*, (mimeo.), 1984.

# Hired Labour and Rural Labour Market in Bangladesh

*M. Muqtada & M. Mustafa Alam*

## 2.1 Introduction

### 2.1.1 Objective of the Study

In the burgeoning literature on rural labour markets in South Asia, a study on hired labour features quite prominently for a number of reasons. Firstly, many of the countries here are characterised as low-income agrarian economies, and the bulk of the population happens to live in the rural sector. Secondly, the rate of growth of population, and hence of the workforce, is considerably high; in the absence of any reasonable expansion of industrial employment opportunities, the rural sector has to bear the brunt of rising unemployment.<sup>1</sup> Thirdly, with the development of agricultural activities, it is alleged that diversification and changes of some form have been imparted to the rural employment structure.

Within the above milieu, Bangladesh — which has a population growth rate of about 2.52 per cent, population density of 1,371 persons per square mile, labour force participation of around 35 per cent, and approximately 77 per cent of labour force engaged in agriculture<sup>2</sup> — provides an eminent case study. Worse still, with respect to agricultural innovations, Bangladesh has met with only limited success<sup>3</sup> despite attempts at 'forced' capitalisation of agriculture through recent country-wide Integrated Rural Development Programme (IRDP) initiatives. One may note here that the Bangladesh Population Census 1974 has registered a

1. One must note that rural 'open' unemployment in low-income agrarian economies is often very low, although the extent of surplus labour may be very high. Cf. Myrdal, G., *Asian Drama*, Part V, Pantheon, N.Y. 1968.
2. See *Statistical Yearbook of Bangladesh*. 1979, Bangladesh Bureau of Statistics; *Bangladesh Population Census*. 1974 (National Volume).
3. See, *Agricultural Census 1977*, Ministry of Agriculture, Bangladesh.

rural unemployment rate of only 0.6 per cent. This is a rather misleading figure in view of the fact that about 36.8 per cent of the total cultivators are landless<sup>1</sup>, and about 40 per cent of the agricultural labour force are *underemployed*, i.e. a large extent of work-sharing exists in agriculture.<sup>2</sup> Further, there is considerable evidence to suggest that recently there has been increasing concentration in land-holdings and growing impoverishment among the rural poor, which strongly influence the hired labour market.

Although there have been a few studies on hired labour and the rural labour markets, the analyses have been fragmentary and partial in nature. One must note here that there hardly exists any study which has focussed *exclusively* on the issue of hired labour in Bangladesh within the overall context of rural labour markets. The objective of the present study would be to analyse the following issues with the help of farm-level data, so as to provide a clearer understanding of the character of hired labour in Bangladesh. The major issues of the study are: (i) the nature of rural labour markets in Bangladesh: problems of definition and identification; (ii) fundamental characteristics of hired labour, non-farm and farm labour; (iii) the nature and magnitudes of demand for and supply of labour; (iv) the growth of agricultural technology, institutions and commercialisation — their impact on hired labour; (v) the proportions of hired and family labour, attempts at explaining their coexistence across all size classes, and factors affecting substitution between the two categories of labour; (vi) productivity, wage-labour employment; (vii) the labour market and its interaction with other factor markets; (viii) market and non-market (personalised) relations — their impact on the existing structure of the labour market; (ix) diversification in employment structure; non-crop and non-agricultural activities; etc.

### **2.1.2 Selection of Sample Area**

The purpose of the present study has been to analyse the hired labour market within the rural labour market of Bangladesh under different sets of conditions. To this end three areas were selected on the basis of the following criteria:

Area 1: An area of low agricultural growth.

Area 2: An area of relatively high agricultural growth.

Area 3: An area near to an industrial centre.

It should be mentioned here that agricultural growth in the present context has been considered to be directly related to the yield of paddy per unit of land. Thus the adoption rate of HYVs can be expected to play a significant role in determining the level of agricultural growth of an area. A study of the first two areas indicated above would provide one with expectedly important information on how the hired labour market is affected by the level of agricultural growth.

1. See, Muqtada, M, "Inequality and Poverty in Rural Bangladesh: Alternative Measurements and Evidence", (mimeo), 1980.

2. See Section 2.5 for further reflection in this issue.

The third area to be studied, which would be in close proximity to an industrial centre, would throw light on the ways in which the hired labour market is affected by a relatively greater prospect of obtaining employment outside these areas. It was assumed that the industrial centre would enhance the prospects of employment for the labour force living in the adjacent rural areas.

The districts of Faridpur and Mymensingh were selected to be the districts from which the sample areas were to be chosen to represent the low agricultural growth area and the relatively high agricultural growth area respectively. The selection of these districts was done in conformity with the criterion set earlier. Average yield of paddy per acre has been much higher in Mymensingh, compared to Faridpur. One important reason for this difference in yield may lie in the difference in the rates of adoption of HYVs. The village in Faridpur, with a low adoption rate of HYVs, represented the area of low agricultural growth. The village chosen in Mymensingh had a much higher rate of adoption of HYVs and it represented the area of relatively high agricultural growth.

As an area enjoying nearness to an industrial centre a third village was chosen from the outskirts of the city of Dhaka. It could be reasonably assumed that people from this village would have relatively greater prospects of obtaining employment in the city.

For the sake of simplicity, the village selected from Faridpur will be called *LAG* (low agricultural growth). Likewise the village chosen from Mymensingh will be called *HAG* (relatively high agricultural growth) and the village from Dhaka will be called *NIC* (near an industrial centre).

One point that should be made here about how *NIC* relates to the nature of employment that the people from there were found to obtain in and around the city of Dhaka. The respondents from *NIC* reported that they were unable to get jobs at various nearby industries since they lacked the necessary skills. Besides, it was also reported that the owners of industries were commonly found to offer employment to those who originated from their own home districts. And the owners of most of the nearby industries being originally from other districts, the possibility of *NIC* people getting preference for jobs at those industries was further reduced. However, they were found to obtain contract jobs for digging earth relating mainly to different kinds of construction work in the city of Dhaka. This source of employment was found to be quite extensively used, particularly during the winter season. Truck-loads of labourers would leave for the city very early in the morning through previous arrangements made by contractors. After the day's work they would come back to their own village. Although this was different from our expectation that the people from *NIC* would obtain regular jobs at the nearby industries, the fact that they had the option of getting *some* job outside of their own village qualified *NIC* to be quite suitable for the purpose of our analysis.

### **2.1.3 Selection of the Sample Households**

A comprehensive study of the hired labour market would necessitate the gathering of information not only from those who would be willing to sell their labour in the wage labour market, but also from those who would be interested in buying such labour. In other words, information on both employees and employers would be necessary. Therefore it was decided that in each village, out of 100 households or more to be surveyed through questionnaires, about 50 per cent should be households who would be involved in net hiring-out of labour. These would be the "employee households" where more than 50 per cent of households income would come from wages received by members of the household through the hiring out of their labour.<sup>1</sup> The other 50 per cent or so of the households were to be chosen from those households whose income from any hiring-out of labour would be less than half of total income. In this way the sample households would, it was believed, cover a wide range of households with different degrees and nature of involvement and interest in the hired labour market.

The total number of households surveyed in the three areas were 118 in LAG, 115 in HAG and 102 in NIC, with a total population of 757, 546 and 629 in the three respective study areas.

### **2.1.4 Plan of the Study**

The study has been designed in the following way. In Section 2.2, the salient characteristics of the labour force, occupation and employment in the three study areas are laid down, with specific reference to various size classes of landholdings. Section 2.3 deals with the various categories of hired labour that exist in the rural labour markets, and an analysis is provided on what really constitutes a labour market. Section 2.4 analyses the utilisation of various types of labour holding size as well as by crops; apart from the issues on farm size and labour use, etc., the section further analyses the impact of technology use, seasonality on labour use and labour substitutability. The character and significance of non-agricultural employment are dealt in Section 2.5; the complementarity between agricultural and non-agricultural employment is also examined. Section 2.6 discusses briefly the nature of the rural institutions and their possible impact on the utilisation of hired labour. The study concludes with a brief reflection on the above findings.

## **2.2 Labour Force and Employment Structure: Preliminary Considerations**

With the wider context of the ever imposing problem of hired labour in the rural sector of Bangladesh, we propose to study and analyse in this and the fol-

1. A preliminary complete enumeration survey was undertaken by the field enumerators during the phase of questionnaire-testing. This contained information on the broad occupational and land-hierarchy categories from which the employer and employee households were randomly chosen.

lowing chapters, a few selected issues specifically with farm-level data. In this chapter, the broad contours are shown on the patterns of employment and extent and characteristics of the labour force in our study areas. Wherever considered relevant, data are compiled aggregatively as well as according to landholdings sizes so as to reveal the magnitude of the problems confronting the various classes of population in the rural areas.

### 2.2.1 Characteristics of the Sample Households

The total sample of our study consists of 335 households, with 118 households from the low agricultural growth area (LAG), 115 from the relatively high agricultural growth area (HAG) and 102 from the area near an industrial centre (NIC). The total population of these sample households is 1,932. Apart from HAG which returns a family size of 4.75, the family sizes of LAG and NIC are pretty large and are on the higher side of the national average.<sup>1</sup> According to the definition of households considered here, only the family members have been taken into account; domestic servants, permanent workers and other non-relatives, who are at times included in a definition of household, have not been considered on the contention that their attachment to the family may be relatively "less permanent".<sup>2</sup>

The dependency ratio is rather high in LAG while for HAG and NIC, it is closer to the national average. The dependency ratio obviously conceals a lot of the true burden of the working population since it does not show the character of female labour participation, and the extent of underemployment among male workers in the respective areas. The male-female ratio is quite high in NIC where the dependency ratio is relatively small. In the three survey areas, the two ratios, however, do not show any definite relationship. The literacy rate, defined as ability to read and/or write, is moderately high for HAG and NIC in comparison to the average for Bangladesh as a whole.<sup>3</sup>

The average family size varies considerably with landholding sizes. This is amply borne out in tables 2.2, 2.3 and 2.4. It is conventionally held that the family and landholding sizes are positively related, which is firmly true for the study areas. It can be seen from the above-mentioned tables that with higher sizes of landholdings there is a distinct increase in the family size in all the three areas. The reasons for this are largely speculative and are often traced to socio-anthropological factors.<sup>4</sup> Additionally, one may note that the average number of male adults, which is a reasonably good proxy for the extent of potential work-

1. See, BBS, *Statistical Yearbook of Bangladesh, 1980*.
2. Sometimes, "chula" (clay-oven) is taken as the criterion by which a household is defined, i.e. the number of persons (including family members, relatives, etc.) who are supported by the household "chula".
3. One may cautiously note that the literacy rates in the country-side are, in all probability, going up owing to some concerted efforts by various voluntary associations, local groups and enthusiasts.
- 4.. For example, there is the well-known contention that fertility rates have a positive relationship with the general levels of living and "prosperity" of a household.

force in each group, is also positively related to landholding group. Assuming that female and child labour participation within respective groups is randomly distributed, this would imply that, in absolute terms, the larger landholding groups possess a larger workforce. This, however, need not mean that the larger size holdings can better "manage" their land resources, the adult-workers/land-ownership ratio need not be positively related to landholdings. The point to note here is simply that there are more workers relative to land among the smaller landholdings than in the larger farms.

**TABLE 2.1**  
**The Sample Households: Basic Features**

	LAG	HAG	NIC
Number of Households	118	115	102
Total Population	757	546	629
Male-female ratio (Males per 100 Females)	107	103	111
Dependency Ratio	110	105	106
Literacy Rate	23.2	29.6	28.2
Average Family Size	6.42	4.75	6.17

Notes: <sup>a</sup> The dependency ratio has been defined here as population below 12 years and above 55 year of age divided by the working population between 12 to 55 years, multiplied by 100.

" 'Literacy' applied to those who are able either to read and/or- write.

Furthermore, the total population relative to land is quite high, and the average per capita land-ownership is barely above half of an acre. The average household ownership is 3.62, 2.65 and 3.16 acres in LAG, HAG and NIC respectively, which is often alleged to be a viable size in the context of Bangladesh. The mean holding, however, conceals the skewness of the distribution of land, which ranges from zero to more than 16 acres of land-ownership. In point of fact, even per capita landownership is higher as household ownership increases, although the latter and family size are positively related. There is very little comfort to be drawn from a notion that a higher family size among large farms may effect some form of "built-in" equality among the highly differentiated landholding categories. Thus, we may conclude that in relation to the large farms, the small farms not only have a smaller family size but also a smaller household as well as per capita landownership. Given this relationship between land and worker, the broad implications are that the smaller farms would tend to rent-in land and hire-out labour, while the larger farms would tend to rent-out land and hire-in labour. This is, however, a rather simplistic generalisation since other complicating typologies are involved. For instance, as we shall observe presently, both the large and small farms tend to hire-in labour, albeit in varying degrees.

**TABLE 2.2**  
**Average Family Size and Other Characteristics**  
**by Landholding Groups LAG**

	Landless	Small Farmers	Medium Farmers	Large Farmers	All Farmers
Number of Households	19	47	43	9	118
Total Population	85	292	263	117	757
Average Family Size	4.47	6.21	6.11	13.0	6.42
Average Number of Male Adults	1.32	1.89	1.81	5.0	2.01
Average Land Owned per Household (acre)	0.03	0.89	4.04	11.73	3.62
Average Land Owned per Capita (acre)	0.00	0.14	0.66	0.90	0.56

*Note:* The farm size categories have been devised on the basis of land *ownership* and on the following criterion: landless own upto 0.10 acre or no land at all; small farmers own from 0.11 acre upto 2.50 acres; medium farmers own 2.51 to 7.50 acres; large farmers own more than 7.50 acres. This criterion applies to all the three study areas.

**TABLE 2.3**  
**Average Family Size and Other Characteristics**  
**by Landholding Groups HAG**

	Landless	Small Farmers	Medium Farmers	Large Farmers	All Farmers
Number of Households	47	28	28	12	115
Total Population	174	141	150	81	546
Average Family Size	3.70	5.03	5.35	6.75	4.75
Average Number of Male Adults	1.23	1.61	1.86	1.83	1.51
Average Land Owned per Household (acre)	0.03	1.17	4.64	11.73	2.65
Average Land Owned per Capita (acre)	0.00	0.23	0.87	1.74	0.56

### 2.2.2 The Occupational Structure

The patterns of occupation in the rural sector can be depicted in a number of ways. A conventional way is to distribute the workforce into various sectors, according to the principal occupation of either the head of household, or the entire labour force. The most common dichotomy is the breakdown of the work-



ing population into agricultural and non-agricultural labour force, although the former sector is further subdivided according, to crop and non-crop activities.

A particular difficulty with this dichotomy is that the workers may be engaged in more than one activity and sometimes, in several activities. These may easily cut across such a simplified division. Although the respondents are asked to name their principal occupation, the response is given according to their subjective evaluation which may carry an implicit bias. For instance, a member of the labour force may own a small plot of land and declare farming as his principal occupation, whereas, in fact, this may not yield the dominant part of his total income. Land may provide security, prestige and a sense of permanence, whereas, although non-agricultural work may provide a higher total income, the worker's involvement in the latter may be arbitrary; he may not be able to tell beforehand how much employment and income may be realised from this sector.

**TABLE 2.4**  
Average Family Size and Other Characteristics  
by Landholding Groups NIC

	Landless	Small Farmers	Medium Farmers	Large Farmers	All Farmers
Number of Households	34	37	18	13	102
Total Population	158	209	149	113	629
Average Family Size	4.65	5.64	8.27	8.63	6.17
Average Number of Male Adults	1.29	1.68	3.22	3.15	2.01
Average Land Owned per Household (acre)	0.04	0.74	4.75	16.04	3.16
Average Land Owned per Capita (acre)	0.00	0.13	0.57	1.85	0.51

The above difficulty has been faced quite tangibly in the study areas. Although the respondents were asked to name their principal occupation, this was not fully borne out by either the amount of income of that occupation or the number of mandays expended on the activity. Since the dominant theme of the present study is on the labour market, we have used the mandays of employment as the criterion for the sectoral division. The results are given in table 2.5.

The sectoral division of the households shows considerable variation in agricultural and non-agricultural employment in the three areas. The agricultural sector accounted for 70 per cent of employment in LAG and only 47 per cent in NIC. In the same table, figures in parentheses show the sectoral division of the entire working population. This, however, does not affect the overall household distribution. The percentage contribution of employment in the agricultural sector

of all the three study zones are, in fact, on the lower side of the national average. In the area near the industrial centre (NIC), it is understandable that non-agriculture would have a considerable influence on the occupational pattern. On a closer scrutiny, however, it has been found that although a good number of industrial concerns have grown in the vicinity, the participation of the study area's labour force in these is surprisingly low. Apart from the import of skilled workers from other areas into these industries, even unskilled labour is not hired from NIC.<sup>1</sup> The better part of non-agricultural employment in this area is, in fact, accounted for by a fairly long-established and seasonally-routined system of hiring-out labour for earth-digging outside the village. This is organised by a set of intermediary contractors, wherein the workforce in NIC is hired in large numbers during various periods of the year (especially in the winter) to perform earth-digging and petty construction work.

It is well-known, indeed a curious feature, that in the rural sector of Bangladesh, open unemployment is rather low. The unemployed labour force (expressed in terms of persons who are not working at all — but are looking for work) in Bangladesh was reported as 0.5% in the 1961 Census and 0.6% in the 1974 Census. The CSO Population and Labour Force Survey showed rural unemployment at less than 1 per cent of the labour force in 1965. Obviously, such figures do not quite reveal the considerable extent of under-employment that exists in the agricultural sector.<sup>2</sup> Whether because of tradition or custom or for prestige reasons, workers in the agricultural sector would not consider themselves as unemployed if their families have land and/or they are supported by the general activity of the household. According to the figures reported by the Bangladesh Bureau of Statistics, the proportion of such self-employed and unpaid family workers was about 55% of the total labour force in 1979. Hence, one must note that high under-employment may be consistent with low returns of unemployment in Bangladesh agriculture. The unemployment figures for the study areas, considering the entire working population, are 3.3, 1.9 and 4.9 per cent in LAG, HAG and NIC respectively. These account for 14 persons reporting out of work in the total workforce of 619 in the three areas. These open unemployment figures are still very small although, percentagewise, they are higher than the figures reported in national sample surveys. The figures would have been slightly higher if we had included the beggars since one may consider begging as entailing income-yielding work-effort, without contributing to production.<sup>3</sup>

It has already been noted that the workers in the rural sector usually expend their labour in more than one activity such that they have a principal as well as one or more subsidiary occupations. In the context of a low-income agrarian sector, this often implies that the principal (or a single) occupation does not ensure

1. See, Section 2.1.2.

2. Cf. Muqtada M., "The Seed Fertilizer Technology and Surplus Labour in Bangladesh Agriculture", Bangladesh Development Studies, October, 1975.

3. For a discussion of the 'recognition', 'income' and 'productivity' aspects of employment, see Sen A., *Employment, Technology and Development*, Clarendon Press, Oxford, 1975.

either full employment or a sustained level of income for the majority of the population. In table 2.6, we present the percentage of the workforce reporting employment in subsidiary occupation in various activities. Here, again, agriculture which sustains a high percentage of employment in terms of principal occupation of the respondents, also returns even a higher percentage as a source of subsidiary occupation. Within the activities in the agricultural sector are included day labourers as well as workers on non-crop agricultural activities, viz. fishing, forestry, poultry farming etc. Apart from these, earth-digging in NIC, self-employed activities in LAG and HAG, business and petty trading, petty employment activities, salaried jobs etc. are the notable sources offering subsidiary occupation. An important feature to note, in this regard, is the extent of self-employment, especially in LAG and HAG. This together with the self-employment in crop and non-crop-agriculture, business and petty trading gives a broad order of magnitude of the extent of self-employment in the three areas, and is consistent with the national figures quoted above.<sup>1</sup> The coexistence of a high degree of self-employment with wage-employment in a wide range of occupational activities in the rural sector carry important implications for an understanding of the nature of hired labour market. This will be examined in some detail in the next section.

Table 2.7 presents the percentage distribution of the workforce according to the number of occupations that it is engaged in. That is to say, all the working members of a household were asked to name the number of subsidiary occupations. The average distribution shows that more than 50 per cent of the working members have reported being engaged in at least two or three subsidiary occupations. This underlines our earlier stance on the relative nature of the principal occupation, and provides a rough index of the extent of desperation among the rural workforce toward attainment of higher employment and income levels.

Although specific figures have not been produced on every aspect of the structure of occupations our analysis so far suggests the following features which are not too dissimilar in other areas and regions of rural Bangladesh. First, exclusively labour-hiring households need not represent a large percentage of the total rural households. Wage-employment not only exist within a household, but may coexist within an individual. Secondly, the mobility between agricultural and non-agricultural activities is pretty high especially considered in terms of principal and subsidiary occupations, without denying that each job may require some extent of skill. Thirdly, a single household with all its workforce may reflect more than one activity. Although this is understandable, the more important feature is that a single individual worker may engage in multiple roles. As such, dividing the workforce in such dichotomies as agricultural-non-agricultural, wage employed-self employed etc. may posit formidable difficulties and obscure a proper understanding of the functioning of the rural labour" markets.

I. Also see Khan, A.R., Islam, R. and Huq, M. *Employment, Income and the Mobilisation of Local Resources: A Study of Two Bangladesh Villages*. Asian Employment Programme. ARTEP, ILO. 1981.

Table 1.1  
Hired and Rural Labour Market in Bangladesh

	Labour		Employment		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
1. Agriculture	100	100%	100	100%	100	100%
2. Non-agriculture	100	100%	100	100%	100	100%
3. Total	200	100%	200	100%	200	100%

TABLE 2.6

Percentage of Workforce Reporting Employment In Subsidiary Occupation  
In Various Activities

	LAG	HAG	NIC
Agriculture <sup>1</sup>	76.0	70.1	61.5
Business & petty trading	13.9	27.1	26.3
Salaried jobs	7.2	17.5	19.0
Other self-employed activities	29.1	31.6	13.2
Others <sup>3</sup>	27.8	22.6	53.2
None	3.3	2.3	4.9
Total sample (No. of workers)	237	177	205

Notes: <sup>1</sup> Includes day labour in agriculture as well as *fishing* and poultry farming.

<sup>2</sup> For instance, weavers, carpenters, blacksmiths etc.

<sup>3</sup> Others include petty employment activities, earth-digging, rickshawpulling, begging etc.

TABLE 2.7

Percentage of Distribution of the Workforce According to  
Involvement in Subsidiary Occupation

	Number of Subsidiary Occupations					
	None	One	Two	Three	Four	Five & Above
LAG	3.3	24.5	31.6	20.3	14.8	5.5
HAG	2.3	27.1	29.4	27.7	8.5	5.0
NIC	4.9	32.7	24.9	28.3	8.3	0.9

TABLE 2.8

The Extent of Labour Force

	LAG	HAG	NIC
Average Family Size (1)	6.42	4.75	6.17
Total Population (2)	757	546	629
Reported Number of Labour Force <sup>1</sup> (3)	237	177	205
Labour Force Participation <sup>2</sup> [ $((3)-(2)) \times 100$ ]	31.3	32.4	32.6

Notes: <sup>1</sup> For a definition of the labour force see text.

<sup>2</sup> Includes all members of households who have been reported as either fully or partly employed in farm and non-farm activities.

### 2.2.3 Labour Force and Employment

The percentage of the rural population that represents the labour force is an elusive figure. In an earlier section of this chapter it was noted that the average number of male adult workers reflected a proxy of the labour force strength within various categories of population in the three areas. In this case, the labour force participation would be shown by the number of male adults *actually* employed. The reason for emphasizing this particular criterion is that in all the three survey areas, female labour participation is almost negligible, except for that expended on post-harvest crop operations. Further, although child labour utilisation is a common phenomenon, the criterion used here to denote a person 12 years of age and above as a male adult worker takes care of the problem to a large extent. These two factors — female and child labour utilisation — may cause the labour force participation rates to vary considerably within and across regions. The potential labour force is expected to capture both of these factors. But whether either female or child workers are in fact "looking for work", as would be required in a definition of rural employment, posits a formidable conceptual and empirical problem. Conventionally, the female population is by and large shown as a dependent category, engaged in domestic and other so-called non-productive activities. The fact that they could be regarded as "unemployed" is, by the above token, conveniently ignored.<sup>1</sup> As such, open unemployment figures in most studies are not surprisingly shown to be rather low. On the other hand, child workers who may not at all be looking for work but are guided by the production decisions of a household to participate in an income-yielding activity, are forced into the concept of the labour force. Child labour may indeed be necessary, and often crucial for certain work but to regard a child worker as a member of the labour force in the conventional sense of the term would appear rather tenuous. In any event, child labour is more often categorised under unpaid family labour and do not usually enter into the formal hired labour market.

The actual labour force participation rates in the three zones — LAG, HAG, NIC — are roughly similar. This is shown in table 2.8. The participation rates are indeed very low — even lower than the average for Bangladesh, although the latter uses '10 years and above' as the age base for estimating the labour force.<sup>2</sup>

It may be noted that the participation rates may vary quite significantly across various size classes. This is amply demonstrated by the survey data presented in table 2.9. The medium and the large farm households tend to show greater participation rates than the smaller categories of households. This is in fact commensurate with the higher proportion of adult male workers among the former groups of households. The positive relationship between size of holdings

1. For a detailed study, See Khuda, B., "Measurement of Underemployment in Rural Bangladesh — An Alternative Approach", in W. Mahmud (ed) *Development Issues in an Agrarian Economy — Bangladesh*, Dhaka, 1981.
2. See BBS, Statistical Yearbook of Bangladesh, 1980, p. 457.

and the participation rates is, however, no indication of the intensity of work and need not reflect the employment levels of various households.

In our study areas, the average yearly employment of a worker in on-farm activities is approximately half of the total employment in various activities. This is shown in table 2.10. Employment is measured in 'eight-hour' mandays. The average number of mandays that a worker spends on farm activities is strikingly similar in LAG and HAG (141.0 and 141.4 mandays respectively) and slightly lower in NIC.

**TABLE 2.9**  
**Labour Force Ratio and Participation by Landholding Groups**

	Landless	Small Farmers	Medium Farmers	Large Farmers	All Farmers
<b>LAG</b>					
Labour Force (No.)	25	89	78	45	237
Labour Force Participation	29.4	30.5	29.6	38.5	31.3
<b>HAG</b>					
Labour Force (No.)	58	45	52	22	177
Labour Force Participation	33.3	31.9	34.7	27.2	32.4
<b>NIC</b>					
Labour Force (No.)	44	62	58	41	105
Labour Force Participation	27.9	29.7	38.9	36.3	32.6

**TABLE 2.10**  
**Average Yearly Employment of a Worker  
on Farm Activities (Mandays)**

	LAG	HAG	NIC
Landless	101.5 (37.7)	111.6(40.9)	95.8 (31.8)
Small Farmers	136.4 (48.5)	142.2 (48.8)	127.6 (44.1)
Medium Farmers	158.8 (58.3)	163.3 (60.9)	149.5 (54.4)
Large Farmers	141.2 (61.3)	166.7 (59.2)	152.2 (56.1)
All Groups	141.0 (52.7)	141.4 (51.0)	131.9 (46.4)

The important features of on-farm employment appear to be the following.<sup>1</sup> First, although the agricultural sector offers an important source of occupation for the majority of the workforce, the extent of employment in this sector is rela-

1. See Khan A.R., *Employment, Income and the Mobilisation of Local Resources: A Study of Two Bangladesh Villages*, Asian Employment Programme, ARTEP, ILO, 1981.

tively inadequate, particularly for the landless and small farm households. Second, there is by and large an inverse relationship between average mandays of farm employment and farm size. In our survey areas, the larger farm households appear to spend 40 per cent or more mandays in farm activities than the landless workers. Third, there is a great deal of seasonal variation around the mean employment, for all classes. Seasonality of crop operations and seasonal employment structure are examined in some details in a later chapter.<sup>1</sup>

It is evident that, since on-farm employment varies positively with farm size, the amount of land that a household possesses would, among other factors, influence the extent of employment. The average land-ownership, household and per capita, have already been reported in an earlier Table (see Table. 2.2) for all sizes holding. In Table 2.11 we present a general scenario of the land-distribution in the *three* areas by estimating the concentration coefficients of *owned* and *operational* land. The skewness of distribution is quite evident, *being the highest for NIC*. Although the gini-coefficients for operational landholding are lower than those for ownership holding, inequality is still very high. Higher concentration of landholdings may carry implications for both supply of and demand for hired labour. Increasing concentration of land may entail an increase in the supply of hired labour through a rising swell in the ranks of landless, and also an increase in the demand for hired labour. Landlessness is relatively higher in HAG and NIC than in LAG.

**TABLE 2.11**  
**Concentration Coefficients of Owned and Operational Land**

	Land Ownership	Operational Land	Landless as % of Total Household
LAG	0.47	0.39	16.1
HAG	0.48	0.38	40.1
NIC	0.61	0.53	33.3

*Note:* The Gini-coefficients are estimated by taking the entire sample population, including the landless.

Non-agricultural employment plays a significant role towards supplementing incomes of the rural households. It must, however, be noted that non-agricultural sector need not offer an assumed round-the-year employment. The character of such employment is often fragmentary, whether in self or wage-employed activity. The significance of employment in this sector lies more in the extent of additional incomes afforded to a rural family.

The average annual employment of a worker in non-agricultural activities is presented according to various size holdings in table 2.12. All groups of house-

I. Cf. Muqtada (1975), op. ril



holds considered together, the weighted average mandays of employment in this sector is almost fifty per cent of total yearly employment of a worker. The relationship between non-agricultural employment and size of holdings is, by and large, observed to be inverse in all the three study areas.<sup>1</sup> In NIC, as much as 68 per cent of total employment of a landless worker is offered by the non-agricultural sector. A large proportion of the non-agricultural employment in this area is accounted for by the seasonal scheme of hiring out labour in earth-digging outside the village. In the other two areas as well, non-agricultural employment accounts for 60 per cent or more of the total employment of a landless worker. Hence, for the landless and small farmer households, this sector is a crucial source of employment. The larger land-owning households expend less of their time on non-agricultural activities. Whatever their involvement in this sector, they are often confined to self-employed activities or other salaried jobs especially in the service sectors.

Non-agricultural employment is not only significant in terms of affording additional incomes to the rural population but also acts broadly as *counter-seasonal* to the traditional crop cycles. We shall examine this issue in a later chapter.

**TABLE 2.12**  
**Average Yearly Employment of a Worker**  
**on Non-Farm Activities (Mandays)**

	LAG	HAG	NIC
Landless	168.1 (62.3)	161.2 (59.1)	205.9 (68.2)
Small Farmers	145.0 (51.5)	148.9 (51.2)	161.8 (55.9)
Medium Farmers	113.6(41.7)	105.0 (39.1)	125.1 (45.6)
Large Farmers	89.1 (38.7)	114.7(40.8)	119.1 (43.9)
All Groups	126.5 (47.3)	135.8 (49.0)	152.3 (53.6)

*Notes:* Figures in parentheses indicate percentage of non-farm employment to total employment. Also see Table 2.10

#### 2.2.4 Wages

It has been noted in our study areas, as well as in other parts of rural Bangladesh, that agricultural employment is rather inadequate, especially so for the agricultural labourers. Further, although non-agricultural sector is a significant source of employment, it is not developed enough so as to ensure relatively permanent and prolonged attachment to a particular activity. In both these sectors, self-employment is a major component especially for those households who have access to land and other material resources. As such, employment for wages covers only a spectrum of the labour market scenario. The issue of wages and wage rates, whether in the agricultural or non-agricultural sector, must be seen in the above context.

1. See, for example Khan et al., *op. cit*

The percentage of households reporting wage incomes as the dominant income, for all the landholding groups, are shown in table 2.13 — the dominant income referring to 50 per cent or more of total income of the households. Wage income as the major source of income, is highest within the landless households. This is rather expected, since these landless households do not have enough means to self-employ themselves, earn a rent or the like. They earn their livelihood by hiring out labour in various activities in the agricultural, non-agricultural and the service sectors. Large households, having access to various material resources, do not usually hire out labour except in service sector jobs. This can be seen quite clearly from the above-mentioned table, and is true for all the three areas. For all groups together considered, about 50 per cent of the households in LAG and NIC and 44 per cent households in HAG have reported wage income as the dominant income. Those classes of population, for whom wage incomes are crucial, have indeed a stake in the level of wage rates that prevail.

**TABLE 2.13**  
**Percentage of Households Reporting Wage Incomes**  
**as the Dominant Income**

	LAG	HAG	NIC
Landless	84.2 (19)	74.5 (47)	76.5 (34)
Small Farmers	59.6 (47)	21.4 (28)	40.5 (37)
Medium Farmers	30.2 (43)	28.6 (28)	44.4 (18)
Large Farmers	11.1 (9)	16.7 (12)	11.1 (13)
All Groups	50.8 (118)	44.3 (115)	50.0 (102)

*Notes:* The figures in parentheses show the total number of households in the respective groups.  
Wage incomes, here, include salaried jobs.

**TABLE 2.14**  
**Wage Rates of Hired Labour**

(Taka, per day)

	LAG	HAG	NIC
Average Daily Wage Rates of Hired Labour in Crop Activities	12.6	16.3	16.9
Average Daily Wage Rates of Hired Labour in Non-crop Activities	13.5	17.1	18.2

*Notes:* Wage rates include both the cash and kind components (converted into cash equivalent according to current market prices).

Wages in rural Bangladesh, as mentioned earlier, are paid in cash and/or in kind. Apart from the cash component, which is now almost a universal feature, the kind component, where prevalent, is usually given in the form of one or two meals a day, depending on whether the worker work for a full day or part of the day. Wage rates are conventionally estimated by converting the kind payment into its cash equivalent and then adding it to the cash component. The average wage rates for the survey zones are shown in table 2.14. The wage rates, which are relatively higher in HAG and NIC than in LAG, are generally quite low in rural Bangladesh.

## 2.3 Labour Categories and the Agricultural Labour Market

It has been observed in the previous chapter that with respect to the patterns of employment and occupational structure, it is difficult to establish clear dichotomies. Not only a single household but also a single individual worker may be involved in more than one sector and in more than one activity, entailing wage employment and/or self employment. These are reasonably universal features in rural Bangladesh, and are important considerations toward an understanding of the problem of hired labour and rural labour markets. In this chapter an attempt is made to define, in a rather eclectic manner, the proper dimensions of hired labour market. Toward this end, the various categories of hired labour have been defined and their relative importance examined, aggregatively as well as by size classes of landholdings.

### 2.3.1 Categories of Labour

An analysis of rural labour market posits formidable problems as there are no clearly defined 'markets' for labour, and no definitive indications that the labour 'market' is cleared competitively through demand and supply. Hence there exists a high degree of uncertainty both for the employers as well as the workers in the labour market. A primary consideration in this regard is the nature of disaggregation in the agricultural labour force, and the factors that contribute to such disaggregation.

Categorisation of *labour* may be a possible, and indeed a useful, exercise; for instance, a family worker need not be a 'pure' family worker and a hired worker need not be a 'pure' hired worker. A family worker who is otherwise known to be an unpaid worker may easily be engaged in a subsidiary occupation drawing wages although his wage income is not so significant in terms of the total labour days expended (on family farm and elsewhere). Similarly a hired worker may have a small piece of land or other assets with which he may 'self-employ' himself and his family members, although wage income may constitute his dominant income. Thus a categorisation of workers may easily cut across a categorisation of labour. This is an important and quite a pervasive feature of the labour market, and one that complicates the planning of hired labour by the employers and employees alike.

The three broad important categories of farm workers are family, hired, casual and hired permanent (or attached) workers. The first two categories of workers, as we have contended, may interchange categories depending on the individual resource position. Only the attached workers, who are usually contracted for a year, constitute a firm category who have to follow the dictates of that farm's decision which employs such workers. To overcome this problem of categorisation, categories are estimated according to labour utilisation, i.e. by the extent of the types of mandays used by the various farm holdings.

Apart from the three broad categories of farm labour there also exist certain other types of labour arrangements: exchange labour and contract labour. The significance of these two types alongwith the other types of labour are shown, in aggregate terms, for the survey areas in table 2.15. There is no doubt, and as clearly brought out in the table, that family labour constitutes the highest proportion of total labour used — about 60, 58 and 53 per cent in LAG, HAG and NIC respectively. It is not surprising that various studies often dub Bangladesh agriculture as family-based peasant agriculture.<sup>1</sup> Hired labour constitutes approximately two-fifths of all labour, of which casual labour is distinctly more important than permanent labour — ranging from one-fourth in LAG to more than one-third of all labour in NIC. Although exchange and contract labour are, at times, extremely important, especially for specific operations covering small periods, their over-all significance in the above categorisation is not seen to be as much. Of these two types, exchange labour is a more common phenomenon and it is distinct from the rest in that, although there is a hiring arrangement of labour, there is usually no wage payment involved. In our study zones, use of contract labour is either absent or quite negligible.

**TABLE 2.15**  
Percentage Distribution of Types of Labour-use  
in Rural Labour Market

Categories	LAG	HAG	NIC
Family Labour	60.3	57.8	52.5
Hired Labour:			
Permanent	11.4	6.3	4.8
Casual	26.9	30.5	36.2
Exchange Labour	1.4	4.1	4.4
Contract Labour		1.3	2.1
Total	100.0	100.0	100.0

*Notes:* This table is based on the information collected about all types of labour expended on various crop and non-crop agricultural activities.

1. Cf. Muqtada, M. and M. Mustafa Alam, "Hired Labour and Technology in Bangladesh Agriculture: Issues and Perspectives", paper presented at the ILO-ARTEP Conference, Chiang Mai, 1983.

TABLE 2.16  
**Relative Importance of Various Categories of Labour  
 Used by Farm Size  
 (% of total labour used)**

Landholding	No. of Family Households Labour	Permanent Labour	Casual Labour
<b>LAG</b>			
Small	78.5	—	21.5
Medium	73.4	9.9	24.7
Large	45.7	18.1	36.2
All Farms	60.8	11.8	27.4
<b>HAG</b>			
Small	78.7	—	21.3
Medium	69.4	3.2	27.4
Large	48.9	10.2	40.9
All Farms	58.2	6.8	35.0
<b>NIC</b>			
Small	67.3	—	32.7
Medium	62.5	2.6	34.9
Large	44.8	9.7	45.5
All Farms	54.3	5.6	40.1

Various classes of farms utilise the above categories of labour differently from one another. This is shown in Table 2.16. The following considerations emerge from this table. First, there is the distinct importance of family labour across all farm sizes in all the areas. Second, casual labour comes next to family labour in importance, and is used by *all* categories of farms, albeit in varying degrees. Third, in none of the areas, permanent labour is used by the small holding category. Fourth, as is well known, the smaller farms use more of family labour than the larger farms, and this inverse relationship is distinctly borne out by the data pertaining to the three areas. Fifth, the opposite is true for casual and permanent labour utilisation which are positively related to farm size. These characteristics are quite typical of Bangladesh agricultural labour market.<sup>1</sup> The various types of hired labour utilisation are examined in some details in the next sections.

### 2.3.2 Casual Labour: The Basis of Labour Market?

Casual Labour is that type of hired labour which is usually hired on a day-to-day basis, sometimes for less than a day — although the casual worker may have to work for a continuous number of days for various crop operations. The wages of casual labour are also paid on a daily basis, including a cash and a kind (especially meals) component.

1. *Ibid.*

Casual labour constitutes the most pervasive form of hired labour. Such labour not only represents a very high proportion of hired labour utilised, it is also used by almost all size classes of landholdings. Even the landless households, who can rent-in some portion of land for cultivation, may engage some amount of casual labour, let alone the landowning households. The pervasive character of casual labour utilisation is given in Table 2.17 which shows the percentage of households within each landholding group *hiring-in* and *hiring-out* such labour.

**TABLE 217**  
**Percentage of Households within Each Landholding**  
**Group Hiring-in and Hiring-out Casual Labour**

	Small	Medium	Large	Landless
LAG				
Hiring-in	29.7	72.1	100.0	5.3
Hiring-out	61.7	39.5	—	89.5
HAG				
Hiring-in	35.7	89.2	100.0	10.6
Hiring-out	46.4	32.1	—	95.6
NIC				
Hiring-in	32.5	75.7	100.0	—
Hiring-out	78.4	48.6	—	97.0

The above mentioned table shows that all the large farm households engage casual labour in crop agriculture, to whatever extent. Further, none of the households in this category hire-out labour. This is quite evident, since for various social and economic reasons, large farmers do not engage in such manual work except on their own farms, often in supervisory activity.<sup>1</sup> The medium farm households, on the other hand, do hire-out labour although to a limited extent. That is to say, they hire-in more casual labour than hire-out labour. The opposite is true for the small farms which hire-in labour to some extent, but they often hire themselves out for wages which constitutes a tangible proportion of the household income. A small proportion of the landless households in LAG and HAG is seen to have hired-in casual labour; this is, however, absent in NIC and not a very common feature. Landless households are overwhelmingly engaged in hiring-out labour, and wage income is their dominant source of livelihood. In the three study areas, about 90 per cent or more of the landless households hire-out labour.

Casual labour, thus, is widely utilised in crop-agriculture. On the other hand, one must note that although casual labour constitutes the bulk of all *hired* labour,

it is only about one-fourth to one-third of *total* labour utilised, since family labour captures the dominant quantum. Curious enough, casual labour forms the basis for a proper market relationship to exist. A proper market place for casual labour is physically non-existent although it is known that such labour is usually supplied by the landless as well as the small (and sometimes the medium) peasants. Since even the landless may take to cultivation by leasing-in some land and the small peasant families may not be able to release their workers during heavy seasons, casual labour may indeed provide a risky market.<sup>1</sup>

The mode of employment of casual workers is an important consideration in this regard. This spells out not only the nature of the market for casual labour, but also, to an extent, the degree of risk involved both on the part of the employers and the employees. In the survey, the workers were asked to name the various modes by which they received employment. Although they sometimes named more than one mode, the most important mode was identified. Table 2.18 provides a view of the percentage of casual workers reporting their mode of employment. The majority of the workers in all the survey areas reported that they received employment through the existing personal contacts with their employers, mostly landowners. The response was more pronounced in LAG and HAG than in NIC, where a sizeable proportion of workers received employment in some non-agricultural activities through contractors and other individuals. Next in importance to personal contacts, was the method of approaching the landlords and rich cultivators. In the latter, a degree of anonymity is involved between the employer and the employee; this also defines the state of risk involved among the two parties.

The peculiarities of the casual labour market underline our earlier stance that it is a relatively risky market and both the employer and the employee have to plan hired labour according to the operations involved. To circumvent this problem, and minimise risks, it is not surprising that the existing 'personal contact' should play an important role. Because of the multiplex roles of an individual *worker* it is difficult to make a reflection on the supply-demand balance within the casual *labour* market.

Apart from the widely-diffused character of casual labour utilisation, the risk element is further exacerbated by the seasonal structure of crop production. Table 2.19 provides an account of the extent of mandays of involvement by a casual worker in the busy and slack season. It appears that in all the three areas, a casual worker is almost fully employed (given the eight-hour day norm) during the peak months. There is a high degree of labour utilisation such that excess demand is not altogether uncommon, in many parts of rural Bangladesh, for specific crop operations especially in weeding and harvesting. Such a situation coexists with a very high degree of agricultural unemployment during the slack sea-

1. See Section 2.1.2.

son. As such personal contact may work to the advantage of both, since at times the employers may be able to engage the worker in other non-agricultural activity during a slack period, and get an assured supply of labour during own peak period.

Although some form of personalised relations exist in the casual labour market<sup>1</sup> the casual worker is paid the 'proper' wage rate, i.e. the rate that prevails in the region during the relevant period. The wages include a cash element and one or two meals depending on whether the worker is engaged for a full day or part of the day. There are other variations in the mode of payment that differs from region to region, and employer to employer.

**TABLE 2.18**  
**Mode of Employment of Casual Workers**  
**(Percentage of all casual workers)**

	LAG	HAG	NIC
Approaching Landlords/owners	21.8	28.5	25.5
Through Some Medium (individuals/markets)	4.3	5.2	22.6
Existing personal contacts	72.5	62.8	45.5
Others	14	3.5	6.4

*Note:* This table is based on the information furnished by the workers themselves, and hence does not reflect the employer' viewpoint. Although many have reported more than one mode, only the more important mode has been reported here.

**TABLE 2.19**  
**Average Monthly Employment of Hired Casual Worker in**  
**the Busy and Lean Seasons (Mandays) in crop Agriculture**

	LAG	HAG	NIC
Busy Season	27.5	30.3	28.2
Slack Season	4.2	6.7	2.8

*Now:* 'Mandays' have been estimated on the conventional '8-hours' work norm. The months corresponding to the busy and lean seasons of all the crops grown in the year in the respective study areas have been taken into account.

1. The issue of personalised relation and its impact on labour market is examined in some details in section 2.7.



The wage rates are different also for seasons and corresponding character of crop operations. This is shown in Table 2.20 which provides the daily wage rates prevalent in the survey areas during the time of the survey. Although different, the wage rates do not vary greatly for the different operations, even if it can be seen from the table that harvesting and post-harvest operations account for a higher wage rate in all the three zones compared to that during other phases of production. Weeding is also a busy season, and has become more so because of the introduction of high-yielding variety of rice (HYV) which requires intensive weeding care. As such the wage rates are also relatively quite high. It may be pointed out that the wage rates are estimated by converting the kind component into cash equivalent according to the respective market prices.

**TABLE 2.20**  
**Wage Rates of Casual Workers in Various**  
**Phases of Crop Production**

(Taka per day)

	LAG	HAG	NIC
Land preparation/Transplantation	11.3	14.8	15.5
Sowing/Weeding	12.2	15.9	16.3
Harvesting/Post Harvest Operations	13.0	16.8	17.5

*Now:* Wage rates include money wages plus all other payments in kind (usually one or two meals provided to the workers).

Thus one observes that the casual labour market is at once a formal as well as an informal labour market. Although its significance in terms of *total* utilisation of labour input is not very high, casual labour constitutes the bulk of labour-on-wage-payment. Moreover the riskiness of this labour market has resulted in some degree of personalised contacts between the employer and the employee, thus acting as an insurance against risks. The mode of payment is formal in character and is paid on daily-employment and daily-wage basis. One must note the paradox that while the concept of "casual" labour, almost by definition, cannot capture the notion of a formal labour market (casual labour implies a worker can *potentially* work elsewhere *at any time*), yet for reasons argued above, constitutes the real hired labour category.

### 2.3.3. Permanent Labour

Permanent workers are usually hired on a yearly contract, renewable at the end of the contract. They may, however, be contracted for specific seasons and less-than-one year contracts which are not uncommon. The practice of hiring-in permanent workers, especially by the large landowners is alleged to be a hedge against risk of not finding an assured supply of labour during the seasonal peaks

of agricultural production. This is a mutual feature in the employer-employee relationship, since the worker, especially when he is landless, would be assured of a year's employment and earnings.

Permanent labour is often hired through the inter-personal nexus, and the worker is commonly known to his employer. The worker, also known as attached worker, is attached to the employer household, usually stays there and is provided with meals by the land-owner. He is also paid in cash, in a mutually agreed manner, as his total yearly earnings.

The proportion of permanent labour used in crop agriculture is, however, very small (see Table 2.15). A plausible reason for this is that the employers of such labour tend to seek a trade-off between insuring against risk of not finding assured labour during the critical operations in crop seasons and minimisation of total costs of labour by striking a proper balance between employment of permanent and casual labour over the entire crop cycle. Thus, the use of permanent labour is closely linked to the problems found in the casual labour market. If casual labour was available freely throughout the year, the use of permanent labour would have had a reduced status. The seasonality structure in agriculture is a crucial factor in defining the dimensions of the casual and permanent labour markets.

The extent of involvement in the permanent labour market in our study areas is brought out in Table 2.21 which shows the percentage of households reporting hiring-in and hiring-out permanent labour. This is shown according to various sizes of landholdings including the landless. None of the households in landless or the small farm categories hire in any permanent labour. This is self-evident since they would not be able to afford to do so; moreover, the small farmers, who would otherwise stretch the use of their family labour as far as possible, may in fact hire themselves out in support of the family income. The small farmers, who are also owners of land, would, however, prefer to hire-out in the form of casual labour rather than as permanent labour. As such, in one observes very few households reporting hiring-out permanent labour. Among the middle peasants, a tangible proportion (more than one-third) of households have hired in permanent labour. The proportion is, however, much higher for the larger landowners who are most frequently confronted with the labour-shortage problem. On the other extreme it is the landless households who are the suppliers of the bulk of permanent labour.

The growth or non-growth of the proportion of permanent labour in the agricultural sector has been linked to the controversy around the development of a formal labour market in the sector.<sup>1</sup> There are proponents who contend that the growth in the permanent hired labour force is an approximate indicator of

1. Bhardwaj K., *Production Conditions in Indian Agriculture*, Cambridge University Press, 1974. Also see Bardhan, P. "Inter-linked Factor Markets and Agrarian Development: A Review Analysis", *Oxford Economic Papers*, March, 1980, for a dissenting view.

the erosion of personal ties and the development of proper labour contracts.<sup>1</sup> It is argued that the 'attached labour', on yearly contracts, provides a case of a *market relationship* where the trade-off is between the employer's need for assured supply of labour and employee's need for job security. In the context of Bangladesh, it is difficult to subscribe to the above view for a number of reasons. First, from the survey experience it has been gathered that the casual worker enjoys a relatively better social status than the permanent worker who is often termed as 'bonded' labourer; in a truly market relationship this is not the case. Second, the entire permanent workforce in the three areas have reported that there is no *formal job contract*, and that employment is mostly contracted on personal or such other contact. Third, there is no formal unionization and hence the degree of freedom associated with market, relationship is almost non-existent. Further, a worker's choice of a permanent status is more dictated by his initial level of living, and the lack of a variety of alternative employment opportunities which would exist in a situation of developed market relationship. Thus, in our view, the extent of permanent labour force, which in itself is still very low, does not quite define a true formal labour market.

TABLE 2.21  
Percentage of Households within Each Landholding Group  
Hiring-in and Hiring-out Permanent Labour

	Small Farms	Medium Farms	Large Farms	Landless
LAG				
Hiring-in	—	37.2	66.7	—
Hiring-out	5.2	1.1	—	52.6
HAG				
Hiring-in	—	35.7	75.0	—
Hiring-out	3.5	—	—	31.9
NIC				
Hiring-in	—	33.3	69.2	—
Hiring-out	5.4	5.5	—	44.1

The average yearly income of a permanent worker is shown in Table 2.22. Again, the cash and kind components are 'summed up' to estimate the annual earnings. The permanent worker in RAG and NIC appears to be earning substantially higher than the worker in LAG. Using a full-employment norm (288 days in a year), the 'notional' daily wage rate of a permanent worker has been estimated. This is shown in the same table above. The wage rates in all the three areas turn out to be substantially lower than the daily wage rate of a casual worker in the respective zones. This is not unexpected since the difference represents the risk premium.

1. See, Bardhan (1980), *op. tit*

**TABLE 2.22**  
**Average Yearly Income of a Permanent Worker**

	Annual Income (in Taka)	Notional Daily Wage Rate of a Permanent Worker (Taka)
LAG	2,764.5	9.6
HAG	3,512.6	12.2
NIC	3,591.4	12.5

*Note:* Annual Income is computed by adding all salary income plus all payments in kind made to the permanent worker over the year. The daily wage rate has been notionally worked out on the basis of 288-days full employment norm.

### 2.3.4 Exchange and Contract Labour

It has been noted in an earlier section that contract labour and exchange labour are not very significant categories of labour. In fact, contract labour is almost negligible or absent in the surveyed villages. As such we abandon a discussion of this category, with the remark that in certain periods of the year and in certain regions contract labour may play a complementary role.

The average use of exchange labour (mandays per acre) appears rather nominal in LAG, HAG and NIC. However, a tangible proportion of the households have reported some use of exchange labour. In particular, during heavy seasons, as in *aman* and *boro* and heavy crop operations, as in weeding and harvesting, a substantial number of households have used exchange labour.

Exchange labour, locally known as 'bodlee', may be used by various categories of landholdings. It is essentially a labour hiring arrangement where two or more households mutually agree to provide labour services to each other. This is a traditional system of mutual labour hiring which has developed owing to the various structural problems pertaining to the labour market in agriculture. This is indeed a form of labour hiring, but one which does not usually entail payment of wages. This category is therefore unrelated to the wage labour category.

Exchange labour need not be any specific handicap to the development of wage labour; it is rather to be seen in the context of labour market complexity — more as a consequence of circumventing the problem than as a cause of the complex structure of the labour market.

In this chapter, in the search for a proper labour market in agriculture, we have come up with the following broad observations and propositions. First, the dichotomy between family and hired *workers* is difficult to establish since a worker may be a supplier of family and hired *labour* over a given period. Second, family labour constitutes the highest quantum of the input utilised. Third,

hired labour, which is about one-third of the total labour used, is mostly in the category of casual labour which is used across all sizes of landholdings and hence is the most pervasive form of hired labour. Fourth, casual labour market combines elements of formal and informal labour markets, and in our view, constitutes the real basis of whatever market relationships exist in the agricultural labour market. Fifth, permanent labour, which is a small percentage of labour-use, is used mostly by large landowners and represents a hedge against risk. But this does not represent a formal market as often alleged. Sixth, other categories of labour, viz. exchange and contract labour, are a rather small category but may be significant for certain groups during certain critical crop operations. Exchange labour involves hiring, but not wages.

## 2.4 Land Productivity and Labour Utilisation

This section deals with the extent of use of labour, especially hired labour, by various farm sizes and also by crops. While in the earlier chapter the distinction between worker and labour was essential, in the present context, we deal exclusively with labour in terms of mandays expended. This chapter further probes into the seasonality issue in crop-agriculture and its impact on labour arrangements, and also the extent of technology adoption and how it affects labour demand.

### 2.4.1 Farm-Size and Labour-Use

The theme on variation of labour utilisation according to size of farms is quite well known.<sup>1</sup> The subject, however, is seldom pursued *per se* and is actually linked to the controversy in the relationship between farm size and productivity.<sup>2</sup> It is often argued that the small farms return higher productivity in crop cultivation than the larger farms ostensibly because the small farms being endowed with a higher proportion of family workers (relative to operational land), are able to use more labour in their farms, take better care of the land, introduce more labour-intensive crops, increase the intensity of cropping etc. Although in a later section of the chapter, relevant data are presented on some of the above issues, no attempt is, however, made to provide any in-depth analysis of the inverse relationship between farm size and land productivity. The focus is rather on how these affect the agricultural labour market and the use of hired labour.

Table 2.23 presents the use of labour by various categories of farms in LAG, HAG and NIC. Labour-use is measured in mandays and standardized according to use per acre as well as use per *cropped* acre so as to capture the intensity of land use. It can be seen from the data that in all the three areas there is a distinct inverse relationship between farm size and labour-use. The negative relationship is most pronounced in LAG where the use of labour per acre by smaller

1. See, for instance, Iqbal Ahmed, "Farm Size and Labour Use; Some Alternative Explanations", *Oxford Bulletin of Economics and Statistics*, Special Issue, 1981.
2. Hossain, Mahabub, "Farm Size, Tenancy and Land Productivity. An Analysis of Farm Level Data in Bangladesh Agriculture", *The Bangladesh Development Studies*, Vol. V, No. 3, July 1977.

farms is higher than that of the large farms by more than 25 per cent. The average labour-use per acre is also the highest in LAG. The negative relationship is also borne out by the figures on mandays of labour-use per cropped acre. Thus; in our survey areas, there is very little doubt that the smaller farms tend to utilise more labour per acre than the large farms.

TABLE 2.23  
Farm-Size **and** Labour-Use

Farm Size	Mandays of Labour Use Per Acre	Mandays of Labour Used per Cropped Acre
<b>LAG</b>		
Small	82.5	66.9
Medium	73.6	61.4
Large	65.6	58.3
All Groups	77.1	66.7
<b>HAG</b>		
Small	78.8	61.2
Medium	69.3	53.5
Large	67/8	53.2
All Groups	72.9	56.6
<b>NIC</b>		
Small	71.9	60.3
Medium	68.8	52.0
Large	61.2	47.5
All Groups	69.0	55.6

*Note:* Mandays have been estimated on the basis of 8-hour-day norm; the table shows the average use of the labour input in various crops.

In an attempt to find out how farm size (FSZ) *explains* average labour-use per acre 'L), a regression exercise with (FSZ) as the explanatory variable was done for the three areas. The following linear relationships were found:

**LAG:**

$$L = 78.9 - 3.04 \text{ FSZ}$$

(7.62)

$$R^2 = 0.24; N = 99$$

**HAG:**

$$L = 73.9 - 1.59 \text{ FSZ}$$

(3.35)

$$R^2 = 0.24; N = 68$$

**NIC:**

$$L = 68.8 - 0.89 \text{ FSZ}$$

(2.27)

$$R^2 = 0.14; N = 68.$$

The figures in parentheses represents t-ratios. It can be seen that the inverse relationship in all the three areas is well established. The explanatory variable is significant at 1 per cent probability error in LAG and HAG and at 5 per cent probability error in NIC, in a two-tailed test. Farm size explains 24 per cent of the variation in labour-use in LAG, 39 per cent in HAG and 14 per cent in NIC.

The phenomenon of this negative relationship is not only true for our survey areas but also widely reported by various other studies. The explanation for this is also not too far to seek. The smaller farms who are endowed with a higher proportion of family labour are able to use more labour than the larger farms, who have to depend highly on hired labour. It must be noted that larger farms, in our study areas, have a higher average male adult working population (Chapter II) and that the workers within the large holdings have higher employment (mandays) than those in the small farms, in agriculture. Yet the large land owners have to look to the hired labour market to supplement the necessary labour in crop cultivation. While in the regression analysis above, average labour (all types) per acre was taken as the dependent variable, a further exercise was done to find out how farm size explains the use of hired labour (HL) only, again as used per acre. The regression run yielded the following results:

**LAG:**

$$\text{HL} = 25.8 + 0.06 \text{ FSZ} \\ (0.58)$$

$$R^2 = 0.05; N = 99$$

**HAG:**

$$\text{HL} = 26.6 + 1.35 \text{ FSZ} \\ (4.12)$$

$$R^2 = 0.18; N = 68$$

**NIC:**

$$\text{HL} = 25.1 + 0.83 \text{ FSZ} \\ (1.69)$$

$$R^2 = 0.09; N = 68$$

The t-ratios are presented in parentheses. For LAG, no definite relationship is found between farm size and the use of hired labour, although the sign of the explanatory variable is positive — neither the  $R^2$  nor the t-ratio bear out the significance. In HAG and NIC, however, the relationship is stronger and the explanatory variable is significant at 1 per cent and 5 per cent probability error respectively. Thus, by and large, use of hired labour is positively related to farm size although the overall labour-use per acre shows a distinctly inverse relationship to farm size.

The results above are further corroborated by the data presented in Table 2.24 which shows the percentage of households employing hired casual labour

and the percentage of hired casual labour to total labour-use, for all farm sizes (also see Section 2.3). Not only the large farms use more hired labour per acre, but also the proportion of increases. The implication is clear: the larger the farm size, more is the dependence on the hired labour market.

**TABLE 2.24**  
**Farm-Size and Use of Hired Casual Labour**

Farm Size	Percentage of Households Hiring Casual Labour	Percentage of Hired Casual to Total Labour Use
<b>LAG</b>		
Small	29.7	13.7
Medium	72.1	28.2
Large	100.0	35.6
<b>HAG</b>		
Small	35.7	22.8
Medium	89.3	38.1
Large	100.0	47.0
<b>NIC</b>		
Small	32.5	18.6
Medium	75.7	33.2
Large	100.0	39.6

*Note:* Also see Table 2.17.

## 2.4.2 Crops and Labour Demand

While in the above section, an analysis was offered on the farm size and labour-use, in this section, we shall discuss the nature of utilisation of labour input according to the major crops and crop operations.

There are three crop seasons in Bangladesh agriculture corresponding to the cultivation period of the three crops: Aus, Aman and Boro. In addition to the three crops, jute is grown in overlapping seasons and winter crops are grown in the Boro season. We, however, deal mainly with the three rice crops in their local and high-yielding varieties.<sup>1</sup>

The average use of labour (mandays per acre) in the various rice crops are shown in Table 2.25. Although the crops have to undergo almost similar operations, the variation in labour demand is quite tangible. The Boro crop, in particular, uses substantially more labour than Aus and Aman; this is true for both the local and high-yielding varieties (HYVs) in the respective groups. The Boro is a

1. Rice acreage accounts for about 80 per cent of cropped acreage in Bangladesh.



labour-intensive crop, and requires more labour at various stages of production especially in weeding. The Boro HYVs which accounts for the bulk of the output in this season, requires even more intensive weeding and care. In terms of *total* rice output, however, Aman crop is the most significant; it accounts for the bulk of the cropped acreage as well as total mandays of employment in rice agriculture. In NIC and LAG we have found the practice by some farms of growing Aus and Aman in the same piece of land. This reflects, to some degree, crop insurance against the risky weather in Bangladesh. In particular, in LAG, the Aus crop was severely damaged by drought but, since Aman of the shorter maturation variety was grown alongside on the same land, the farmers' loss of income was to some extent reduced.

**TABLE 2.25**  
Average Use of Labour in Various Rice Crops

Crops	Mandays of Labour Used per Acre		
	LAG	HAG	NIC
Aus (Local)	54.6	62.2	53.1
Aus (HYV)	63.6	69.5	53.5
T. Aman (Local)	59.8	65.0	62.4
T. Aman (HYV)	66.9	72.3	68.3
Boro (Local)	75.5	70.2	64.8
Boro (HYV)	82.3	92.8	86.6

The use of labour is closely linked to land productivity. The average land productivity for the different groups of farms are shown in Table 2.26. The alleged inverse relationship between farm size and productivity seems to be borne out by the figures for all the three areas, although it is less pronounced in HAG than in LAG and NIC. The average productivity, measured by the gross value of output per acre, is the highest in HAG. Thus, we find that as farm size increases, labour-use as well as land productivity falls.

One of the proximate explanations for the inverse relationship is the intensity of cropping, measured by the gross cropped acreage as a percentage of the net cultivated area. The small farms are not only able to 'manage' their land well but also can grow more crops within a year than the large farms, subject to the physical and environmental constraints. The larger farms on the other hand fail to cope with the cropping intensity of the small farms especially because of labour and "management" problems. The major input in rice cultivation in Bangladesh, given the low levels of technology use, is labour. As such, the small farms by resorting to labour-intensive crops and higher cropping intensity return higher productivity.

**TABLE 2.26**  
**Average Land Productivity of Various Farm Sizes**

	Gross Value of Output (Take per Acre)	Cropping Intensity	Percentage of land Under Irrigation
<b>LAG</b>			
Small Farms	5,562	133	21.1
Medium Farms	4,753	128	23.5
Large Farms	4,344	121	19.6
All Groups	5,099	130	22.0
<b>HAG</b>			
Small Farms	5,811	153	37.6
Medium Farms	5,269	148	28.9
Large Farms	5,325	133	22.7
All Groups	5,502	147	31.3
<b>NIC</b>			
Small Farms	4,970	131	30.0
Medium Farms'	4,688	129	26.7
Large Farms	4,012	117	20.3
All Groups	4,712	128	27.3

*Note:* The gross value of output has been estimated on the basis of the major crops only, and at current market prices.

The cropping intensity in LAG, HAG and NIC are shown in the above-mentioned table along with figures on the percentage of Land under irrigation. It is quite evident that the cropping intensity is inversely related to farm-size. The higher productivity in HAG, it may be noted, is associated with higher degree of cropping intensity than elsewhere.

The small farms also appear to have a higher proportion of cultivated land under irrigation facilities than the larger farms although, in effect, the latter may have a higher absolute amount of irrigated land.<sup>1</sup> The size class difference is less marked in LAG where the average irrigated land is also low compared to the other two areas.

It has been already noted that the proportion of hired labour to total labour use assumes greater significance as the farm size increase. The extent to which hired labour is required in different stages of production within a single crop cycle also varies considerably. Table 2.27 shows the average requirements of hired labour per acre for the main crop-operations. In LAG, HAG and NIC sowing and weeding operations call for a substantially higher use of hired labour

1. Although the small farms may *potentially* have a greater access to irrigation, their *actual* use may be much less because of their resource constraint.

than in the early phases of crop production. The requirements are also quite high for harvest and post-harvest operations. These are in fact the seasonal peaks of the year and the larger farmers in particular face the problem of labour shortages.

**TABLE 2.27**  
**Use of Hired Labour in Various Crop Operations**  
*(Average Mondays of Hired Labour/acre)*

Operations	LAG	HAG	NIC
Land preparation/transplanting	5.8	7.5	6.2
Sowing/Weeding	12.6	13.3	10.9
Harvest/Post harvest operations	9.3	11.8	11.2
Total	27.2	32.6	28.3

### 2.4.3 Seasonality in Labour-Use

In as much as there is variation in labour use in crop operations, employment of hired labour also varies according to crop seasons. The total employment as well as the hired labour component in different crop seasons are shown in Table 2.28. The coefficient of variation, highest in LAG, reflects the extent of the differences in crop-employment. The coefficients are estimated on the basis of monthly figures for employment in the three areas. It must be noted that there may be considerable overlaps in the estimation of seasonal employment from monthly employment figures, since different operations of two crops may coincide in a month.

**TABLE 2.28**  
**Seasonal Variation in Crop Employment**  
*(Mandays of Employment/acre)*

Crop Season						
Aus	46.6	16.7	52.7	23.7	49.8	11.2
Aman	67.3	33.1	64.5	32.4		
Boro	63.5	38.3	66.7	43.9	62.2	42.4
Coefficient of variation <sup>a</sup>	0.38		0.29		0.267	

*Note:* Coefficient of variation of total employment has been estimated by taking *monthly* employment figures for each of the areas.

Hired labour-use as a percentage of total labour reaches to the extent of 38,44 and 42 per cent in LAG, HAG and NIC in the Boro season. It is no

wonder that the familiar problem of labour shortage is reported during this period.

The seasonal structure of crop production and labour use and the problems associated with planning employment, are widely reported in various studies.<sup>1</sup> The peaks and the troughs quite clearly define the sharp switches in excess demand and excess supply in the labour market. The risks of the employer as well as the worker are seen highly contingent on the structure of seasonality in Bangladesh agriculture.

It has been observed in the previous chapter that the casual labour provides a risky market, and that the busy month for a casual labour means almost more than full employment. This was established for the three study areas on the basis of eight-hour day and 25-day month norm of full employment, and the figures estimated on the basis of actual utilisation of the labour input. Our survey, question further probed into the issue of seasonal labour shortages by asking the employer-households about the extent of difficulty they face in finding hired labour in various seasons and crop operations. The percentage of the employer farms reporting such difficulty is shown in Table 2.29. As expected, and in conformity with our previous observations, it is seen that about 18 to 22 per cent of these households stated that they faced difficulty in finding hired labour at the appropriate time during the Boro season. The Aus season does not seem to affect them as much as the other two seasons.

In terms of crop operations, sowing/weeding in HAG and NIC, and harvest operations, also in these two villages, are the periods when the problem of hired labour arises most. One must be careful in the interpretation of these figures since they represent a subjective evaluation of the labour scarcity by the employers only. Nonetheless, the problem is a familiar one and the degree varies from region to region. There is a traditional phenomenon in Bangladesh agriculture of large scale labour migration from one region to another, particularly to a rich rice growing area, during the harvest season.<sup>2</sup>

In as much as there is variation in seasonal employment, there is also some variation in the wage rates. The degree of variation in the wage rates. The degree of variation in the latter is, however, much smaller as shown by the coefficients of variation in the three villages in Table 2.30. Again, wage rates commensurate with high labour demand are the highest during Boro season, and almost similar during the Aman season. The high wage rates in NIC during the Boro season may be rationalised by the fact that the wage rates have to be sufficiently raised to attract day labourers away from earth-digging activity outside the village during this season. The latter practice competes with the high labour demand in crop operations during the harvest operations in NIC.

1. Also see, Sen (1975), op. n't

2. The Sylhet district, for example, attracts a lot of workers from neighbouring areas and districts during the harvest period.

**TABLE 2.29**  
**Percentage of Employer Farm Households Reporting**  
**Difficulty in Finding Hired Labour**

	LAG	HAG	NIC
<b>Seasons:</b>			
Aus	5.1	11.8	5.9
Aman	15.2	22.1	17.6
Boro	18.2	22.1	20.6
<b>Operations:</b>			
Land preparation/Transplanting	2.0	8.8	<b>4.4</b>
Sowing/weeding	<b>14.1</b>	19.1	20.6
Harvesting/post-harvest Operations	9.1	14.7	16.2

*Note:* The above information is based on the employers' responses only.

**TABLE 2.30**  
**Seasonal Variation in Wages**

(*Taka per day*)

Seasons	LAG	HAG	NIC
Aus	10.5	14.2	15.7
Aman	12.6	16.0	16.5
Boro	<b>13.1</b>	16.9	18.3
Coefficient of Variation <sup>3</sup>	0.13	0.16	0.16

Coefficient of variation refers to *monthly* variation of wages (cash + kind) in the three areas.

Although it appears that the high wage rates and high employment seasons go together, the determination of agricultural wage rates through the supply-demand interaction is more apparent than real. The extent to which this is true for the high seasonal peaks is not quite matched by figures during the lean seasons. Employment in agriculture falls drastically, although the wage rates would not. Although demand-supply interaction tends to assert to a certain degree during some critical periods, the institutional forces (historical rice price, etc.) still play the vital role in the wage rate determination.<sup>1</sup>

#### **2.4.4 The Impact of Technology**

Technology in Bangladesh agriculture till today is restricted to the use of the plough-and-bullock, the traditional yoke and the leveller. There has been intro-

1. See, Rodgers, G.B., "Nutritionally Based Wage-Determination in the Low-income Labour Market", *Oxford Economic Papers*, Series 27, 1975.

duced in recent years the so-called 'new technology' which consists of new seeds and an attendant 'input' package. This package comprises the use of fertiliser, pesticides and controlled water. The latter has appeared to be of foremost importance in the growth of the new seeds, or the HYVs. Toward the provision of controlled water, and with the help of public support, shallow and deep tube-wells, power pumps etc. have come to some degree of use. The use of such equipment as harvesters, threshers, mechanical weeders/sprayers, tractors etc., embodied in the notion of modern-day agricultural technology, is non-existent in Bangladesh agriculture, though some are being used in a limited way in experimental farms.

The HYVs were first introduced in Bangladesh in the mid-1960s. At present about a quarter of the total cultivated land is under HYV. On the productivity side, however, a relatively better performance is accounted for by the HYVs. But since the percentage change in total production over the entire period in question is very small, while the total acreage under all crops has remained roughly constant, one naturally tends to be sceptic over the performance of the HYVs. Furthermore, the production of the local crops has, by and large, been declining throughout the period. This leads to the explanation that HYV has been growing at the expenses of the local varieties, and *not in addition* to it. A further manifestation of the limited expansion lies in the decline in yield rate for the HYV. The new technology as it has been adopted in Bangladesh is fortunately almost infinitely divisible. This throws open the scope for a wide horizontal diffusion of the technology across all producers, irrespective of the landholding/wealth hierarchy. For any new technology to prove attractive, a fundamental criterion must be its overall 'relative profitability'. The rate of net returns (after controlling for the differential costs) from the innovation must be higher than with the 'traditional technology'. The rate of return may vary according to the various farm sizes, depending on, among other factors, the differential use of inputs. It is widely accepted that despite the high cost ratio, the new technology does promise a high relative profitability per acre. While the new technology requires more capital-investments (in material inputs), it does not displace labour in the process. Hence, in addition to offering increased productivity, the new agricultural technology also serves to provide incomes to the poor through the creation of employment opportunities.

In view of the above, an attempt was made to collect detailed information of the use of labour input in all the operations of a particular crop, local and HYV.<sup>1</sup> The crop chosen was Boro for all the three areas because Boro HYVs have spread most. The average use of labour in the two varieties are shown in mandays per acre in Table 2.31. In aggregate terms, the percentage change in labour-use for the adoption of HYVs has been positive and quite pronounced, especially in HAG and NIC. If one looks into the detailed operation-wise labour use, one finds that weeding and interculture is not only among the most labour-

1. Also see, Khan, A.R., "Increasing Productive Employment in Bangladesh Agriculture: Problems and Policies", in ILO/ARTEP, *Employment Expansion in Asian Agriculture*, 1980.

using activities but also the percentage increase for HYV is also about the highest. The weeding problem is closely associated with the growth of HYVs, hence the large shift in labour demand.

**TABLE 2.31**  
**Average Use of Labour in Local and HYV Boro Rice Cultivation**  
*(Mondays/A ere)*

Operations	LAG		HAG		NIC	
	Local	HYV	Local	HYV	Local	HYV
Land Preparation	9.8	9.7	10.2	13.3	7.5	12.8
Sowing	15.7	14.8	15.0	17.2	13.3	18.1
Fertilization	2.8	3.3	1.8	3.5	0.9	2.5
Irrigation	2.4	2.8	0.8	3.5	0.8	4.1
Weeding Interculture	16.7	22.1	16.3	21.6	14.3	20.0
Spraying		2.8		3.9		
Harvesting	20.5	18.6	16.4	17.0	15.7	17.2
Threshing/winnowing	7.6	8.2	9.7	12.8	12.3	11.9
TOTAL	75.53	82.3	70.2	92.8	64.8	86.6

The difference in labour use in local and HYV production can be seen in most other operations, albeit in varying degrees. Though labour in irrigation has not increased much in absolute terms, the percentage increase in HAG and NIC is substantial. This is also true for labour use in fertilization which is mostly used for the HYV crops. So far as our survey areas are concerned, spraying appears to be an HYV affair.

Thus we find that the change in labour-use consequent upon the adoption of HYVs is by and large positive at all stages of production. Prior to the adoption of HYV, the traditional crops consisted of the Aus, Aman and Boro grown in the three different seasons. Since the HYV technology, as such, has not added to the existing crop-mix but rather has evolved varieties of rice corresponding to the seasonal crops, this has meant the retention and accentuation of the structure of seasonality within the crop calendar.<sup>1</sup> This feature together with our observation that increase in labour use is highest in Boro HYV and during harvesting and weeding periods (which already have high labour demand), the introduction of the 'new technology', at its present level, has enhanced the problem of labour scarcity during seasonal peaks.

1. One must note that . . . "seasonality in the economic sense is as much a reflection of prevailing technical knowledge as of basic climatic factors," Cf. Sen (1975), *op. cit.*, p. 77.

One may, however, note that the rate of HYV adoption in Bangladesh is still quite low. In our survey areas, this figure varies enormously (9.1 per cent in the low agricultural growth area, 31.6 per cent in the relatively high agricultural growth area and 17.5 per cent in the area near the industrial centre). These figures come from Table 2.32. The rate of participation, measured as the percentage of households adopting HYVs (also known as the adopter ratio), is however much higher than the adoption rate . . . ranging from 14.1 per cent in LAG to 60.3 per cent in HAG. The adoption rates in HAG and NIC are on the higher side of the national average.<sup>1</sup>

**TABLE 2.32**  
**Adoption of HYV-Technology and Use of Labour**  
**in Local and HYV Rice Cultivation**

	LAG	HAG	NIC
HYV adopter	14.2	60.3	32.4
HYV adoption rates	9.1	31.6	17.5
<b>Use of Labour (Local)</b> (Mandays/acre)			
Family	47.6	47.7	46.6
Hired	27.9	22.5	18.2
Total	75.5	70.2	64.8
<b>Use of Labour (HYV)</b> (Mandays/acre)			
Family	50.2	56.6	53.7
Hired	32.1	36.2	32.9
Total	82.3	92.8	86.6
<b>Percentage Increase in</b> <b>Use of Labour</b>			
Family	5.5	18.7	15.2
Hired	15.1	60.9	80.8
Total	9.0	32.2	33.6

*Note:* Adopter ratio provides the percentage of farms engaged in HYV cultivation, while adoption rate denotes the percentage of gross cropped land devoted to HYV. Labour-use refers only to *boro* cultivation.

The above-mentioned table provides a further breakdown of the information on labour-use in the local and HYV varieties. The total labour-use has been divided into the family and hired labour categories, so as to show the impact of the technology on the use of hired labour. This is done for the local and HYVs separately, and percentage change in each category is also estimated. The total

1. For a general assessment of HYV-rice technology and the reasons behind the sluggish rates of adoption, see Mahmud, W. and M. Muqtada, "Institutional Factors and Technological Innovations: The Case of HYV Rice in Bangladesh", *ILO Working Paper*, Geneva. 1983.



percentage increase in labour-use is more than 30 per cent in both HAG and NIC, underlining the significance of the impact of the technology. In LAG, however, the change is rather small, less than 10 per cent, and obviously the spread of the technology is also seen to be limited.

Family labour-use increases quite tangibly with the new varieties. This is also evident because with the greater demand placed by the HYVs on labour use, the family workers would, expectedly, stretch their work efforts. But the category of labour which registers the highest increase is the hired labour category. In HAG the increase has been more than 60 per cent while in NIC, the increase has been more than 80 per cent. This high degree of enhanced labour-use indeed provides prospects for employment in crop agriculture. But this feature has to be weighed against the adoption rates that are prevalent, and also the seasonality issue.

In order to test the impact of the technology on labour, the following regressions were run : (i) proportion of hired labour to total labour (PHL) as the dependent variable and HYV adoption rate (HYV) as the independent variable; (ii) hired labour (HL) in mandays/acre as the dependent variable and farm-size of the *participant* farms (FSZ') as the independent variable. The exercise returned the following equations:

*LAG:*

$$\text{PHL} = 0.09 + 0.04 \text{ HYV} \\ (0.60)$$

$$R^2 = 0.05; N = 99$$

$$\text{HL} = 29.7 + 0.26 \text{ FSZ}' \\ (0.81)$$

$$R^2 = 0.03; N = 14$$

*HAG:*

$$\text{PHL} = 0.18 + 0.17 \text{ HYV} \\ (5.31)$$

$$R^2 = 0.12; N = 68$$

$$\text{HL} = 37.6 + 2.40 \text{ FSZ}'^3 \\ (6.01)$$

$$R^2 = 0.22; N = 41$$

*NIC:*

$$\text{PHL} = 0.12 + 0.07 \text{ HYV} \\ (3.11)$$

$$R^2 = 0.11; N = 68$$

$$\text{HL} = 40.3 + 1.15 \text{ FSZ}' \\ (2.01)$$

$$R^2 = 0.16; N = 22$$

The derived equations strongly suggest that the proportion of hired labour to total labour increases with farm size, and that among the *participant* farms the farm size and hired labour-use are positively related.<sup>1</sup> The relations are relatively weak for LAG, but the signs of explanatory variables are positive.

## 2.5 Employment in Non-agricultural Activities

This section begins with an analysis of the role and significance of non-agricultural employment for the rural labour force. Next, a discussion is undertaken on the nature and pattern of non-agricultural employment. This is followed by an exposition of the "counter-seasonality" hypothesis where levels of concentration of non-agricultural activities during different seasons of agricultural activities are identified and analyzed. The concluding part of the section provides a summary of the findings relevant to the given context.

### 2.5.1 Non-Agricultural Employment: Role and Significance

The proportion of labour force obtaining employment in the agricultural sector has been on the increase in all the three areas considered in the study. This is not simply because agricultural employment opportunities have been expanding over time. In fact, the increasing labour force in the rural areas have crowded the agricultural sector for employment mainly because prospects of full-time employment in the non-agricultural sector within the rural area or in the urban area have become rather limited. It has become increasingly difficult for migrant labour from rural areas to get absorbed in the formal sector of the urban economy. Most of the job-seekers have been found to associate themselves with the urban informal-sector.<sup>2</sup> This has not been able to give them a source of assured income round the year. Therefore, to many of the poor families within the rural areas, migrating to the urban sector has not been a lucrative alternative.<sup>3</sup>

The consequent pressure exerted on the agricultural sector has been appreciably high and, as a result, the income generated from agricultural occupations has been too meagre for meeting the subsistence needs of most rural households. This has necessitated exploration of income-generating opportunities in various non-agricultural activities. In short, maximisation of household income over the year being the objective, agricultural income has been supplemented by non-agricultural income wherever the possibility existed. The extent of income afforded by different non-agricultural activities (construction and earth digging work, weaving, carpentry, masonry, handicrafts, etc.) for different consideration has been presented in Table 2.33.

1. The coefficients for FSZ' is statistically significant at 1 per cent and 5 per cent probability errors in HAG and NIC.
2. For an excellent study of the significance of non-agricultural activities, see Hirashima, S. (ed.), *Hired Labour in Rural Asia*. I.D.E., Tokyo, 1977.
3. A poor rural household usually enjoys some insurance against risks and uncertainties through the patronisation of relatively well-off kins, neighbours or employers. Such insurance is not easily available in the urban sector.

**TABLE 2.33**  
**Per Capita Income from Non-agricultural Activities**

(Monthly income in Taka)

	Per Capita Total Income	Non-agricultural Income	
		Per Capita	Percent of Total
<b>LAG:</b>			
Landless	93.2	33.2	35.6
Small Farms	108.7	43.7	40.2
Medium Farms	233.0	110.2	47.3
Large Farms	307.4	146.6	47.7
All Groups	180.9	81.5	45.1
<b>HAG:</b>			
Landless	108.6	61.1	56.3
Small Farms	134.5	56.1	41.9
Medium Farms	329.6	140.8	42.8
Large Farms	612.3	248.6	40.6
All Groups	250.7	109.5	43.7
<b>NIC:</b>			
Landless	122.6	79.9	65.2
Small Farms	129.3	67.8	52.4
Medium Farms	289.5	134.9	46.6
Large Farms	511.3	210.1	41.1
All Groups	234.2	112.3	48.0

Percentage of per capita income generated from non-agricultural activities has been very high for all three regions (45.1 per cent in LAG, 43.7 per cent in HAG and 48 per cent in NIC). This shows how important non-agricultural income has been in supplementing rest of the income of a household. Comparing the per capita total income figures of different land-owning groups within a region with the corresponding figures on per capita non-agricultural income, one can see that there exists a direct relationship between the two. With the expected increase in per capita total income as one moves from the landless to the higher land-owning groups, per capita income from non-agricultural activities also increases. The variation in the percentage of income from non-agricultural activities among different land-owning groups within a region has not been very pronounced<sup>1</sup> except for NIC where the landless group has been found to earn 65.2 per cent of the per capita income from non-agricultural activities whereas the corresponding figures for the other groups in this region have been much lower. This is not surprising since the landless in NIC have been fortunate in getting frequent employment in the non-agricultural sector in the way of earth-digging.

1. This would suggest that non-agricultural income has been of almost equal importance in households under different land-owning categories.

The significance of non-agricultural income in alleviating the poverty of the rural populace can be easily appreciated by considering the information provided in Table 2.35. There, one can see that had there been no income from non-agricultural activities, the percentage of population below the poverty line would have been much higher than what the percentage is found to be with the possibility of generating extra income from non-agricultural activities. Sen's P. Index for all the three regions reported in Table 2.34 would also confirm the above contention.

**TABLE 2.34**  
**Levels of Poverty with or without Non'-Agricultural Income**

	LAG	HAG	NIC
Poverty line (Taka per capita per month)	114.2	126.7	133.3
Percent of Population below Poverty (considering total income)	55.5	50.7	53.5
Percent of Population below Poverty (without considering non-agricultural income)	76.6	67.2	74.6
Sen's P-Index	0.41	0.33	0.38

*Note:* The poverty line has been estimated on the basis of a minimum consumption bundle that would provide 2,150 calories per capita; (2) and (3) are derived by the 'head count' approach,  $H = q/n$  where  $q$  is the population below poverty and  $n$  is the total population. Sen's P-Index is given  $P = H [I + (1-I)G]$ ,  $I$  is income-gap ratio, and  $G$  represents the Gini of the poor.

### 2.5.2 Nature and Patterns of Non-Agricultural Employment

Involvement of rural households (and individual members thereof) in non-agricultural activities has been quite disparate in nature. An individual member has often been found to be involved in more than one activity. He may have worked as a weaver and, at the same time, managed to devote some extra time to the production of some handicraft items. Also a member engaged in non-agricultural activity may be simultaneously involved in self-employment and wage employment. Some of them may also obtain employment in the services sector. However, systematic year-round opportunity of employment in non-agricultural activities hardly exists for the rural population of Bangladesh. Table 2.35 where average yearly mandays expended on selected non-agricultural activities have been reported, shows the inadequacy of non-agricultural activities as a year-round involvement. Although we have indicated the practice of holding a number of non-agricultural pre-occupations by an individual member, it should, nevertheless, be mentioned here that some degree of mutual exclusiveness might exist among some of these occupations.<sup>1</sup> For example, a salaried job may

1. Self employment in non-agricultural activities has been more widespread among the relatively large farmers. The small farmers have been more frequently found to engage in wage employment within the rural sector. However, in the services sector the large farmers have outnumbered the smaller ones.

leave one with little time for carpentry. This would further reduce the average yearly mandays (reported in Table 2.35) that an individual could expect to spend on non-agricultural activities. From all this one can argue that non-agricultural activities still play only a complementary role in providing employment opportunities to the rural population. The non-agricultural sector in rural Bangladesh is yet to be developed into a self-sustaining sector.

**TABLE 2.35**  
**Average Yearly Mandays Expended on Selected**  
**Non-Agricultural Activities**

*(Mandays per worker)*

	LAG	HAG	NIC
Business, Petty Trading etc.	21.6	27.7	40.2
Salaried Jobs	7.9	11.3	18.3
Construction & Earth-digging	7.1	13.6	35.6
Weaving, Carpentry, Masonry etc.	28.6	32.4	17.4
Handicrafts etc.	31.2	38.2	10.7
Others	28.5	12.6	27.9

One may note that non-agricultural income is positively related to farm size. This is understandable because the larger groups have greater access to material resources and assets as well as to education which offers them good employment in the services and other sectors. Nonetheless, non-agriculture is no less significant for the smaller groups in terms of income (Table 2.33) and employment (Table 2.12). In point of fact, we have already seen that non-agricultural employment is highest among the small groups and is inversely related to farm size. The OLS method was used to test the relationship between farm size (FSZ) and non-agricultural labour expended per worker per year (NFL). The results are the following:

**LAG:**

$$\text{NFL} = 82.87 - 7.02 \text{ FSZ} \\ (11.36)$$

$$R^2 = 0.11$$

**HAG:**

$$\text{NFL} = 108.35 - 3.13 \text{ FSZ} \\ (4.45)$$

$$R^2 = 0.19$$

**NIC:**

$$\text{NFL} = 116.67 - 2.16 \text{ FSZ} \\ (1.66)$$

$$R^2 = 0.17$$

In all the three study areas, the relationship was found to be inverse, and the independent variable significant at 1 per cent • probability error in LAG and HAG, and at 10 per cent probability error in NIC in a two-tailed test.

### 2.5.3 The Counter-Seasonality Hypothesis

The seasonal structure of agricultural crop production in Bangladesh is a well known phenomenon. This is especially pronounced in specific crop operations. Labour requirements vary widely between peak and slack seasons in agriculture so that planning for continuous non-agricultural re-employment often proves to be quite difficult. Non-agricultural activities of most households are concentrated in off-peak seasons. During the peak seasons agricultural labour otherwise found in the non-agricultural sector are brought within the agricultural sector to cope up with the increased requirements of labour. When the slack season sets in they are again found to seek employment in non-agricultural activities. Thus a counter-seasonality effect is introduced through the involvement of a portion of the labour force in non-agricultural activities.

Table 2.36 provides us with some information on the variation of non-crop and non-agricultural employment during different times of the year. By and large, the months during which non-agricultural employment has been found to be the highest in the three different regions happen to be the months when agricultural activities in these regions are found to be at a low ebb. Likewise, the months during which non-agricultural employment has been reported to be the lowest constitute, in general, the peak period of agricultural activities.<sup>1</sup> What this table suggests is that although there are some overlaps, the peak season in agriculture usually corresponds with low non-agricultural activities and the slack season in agriculture corresponds with high non-agricultural activities. Thus, one can find reasons to accept the counter-seasonality hypothesis for at least the areas covered in this study. Table 2.37 also reports the coefficients of variation for LAG, HAG and NIC. These coefficients show a good deal of variation in month to month employment obtained in the non-agricultural sector.

To summarise, the above discussion would suggest that although agricultural activities continue to be the predominant source of income for the rural population, it has increasingly become necessary for them to seek other employment opportunities to supplement income from agricultural occupations. An individual has been found to be involved in multiplex roles in maximising the mandays for which he would be employed in income-generating activities. It is not only a multiplicity involving just one agricultural and one non-agricultural activity. Within each of these two categories of activities he would be expected to involve himself in more than one occupation, often simultaneously. The finding of the present study in the context of non-agricultural activities has been that there is

1. The harvest seasons of Aman, Aus and Boro usually represent the highest peaks in the crop cycle. The peaks may vary somewhat from region to region but they correspond, by and large, to the months of November/December, June, April/May respectively.

hardly any exclusively non-agricultural labour force. Rather, the agricultural worker, after having looked after his agriculture, has found time to involve himself in non-agricultural activities. This has meant high non-agricultural activities during slack agricultural seasons. The reason for such counter-seasonality lies to a great extent in the fact that non-agricultural employment expansion has been rather slow and that, despite falling per capita income, agriculture still offers a more secure source of income around the year.

**TABLE 2.36**  
**Variation in Non-crop and Non-agricultural Employment**  
*(Mondays of Employment Per Worker)*

	LAG	HAG	NIC
Month of Highest Non-agricultural Employment	June/Nov	June/July	Feb/March
Mandays/Month per worker	10.4	16.3	19.8
Month of Lowest Non-agricultural Employment	Dec/Jan	Dec/Jan	Dec/April
Mandays/Month per worker	5.4	6.7	8.8
Coefficient of Variation	0.18	0.26	0.29

## 2.6 Rural Institutions and Labour Markets

The concepts of 'rural institutions', 'institutional framework', 'institution-building' are quite generously used in the economic literature. Very often, these are used to examine the nature and role of various institutions, which may directly or indirectly affect growth, equity and such other variables. An art of production, technology, employment-generation etc. are sustained within the complex of rural institutions.<sup>1</sup> In the context of the present study we shall analyse<sup>7</sup> the context in which rural institutions may affect the labour market, either through employment-augmentation or employment-inhibition.

### 2.6.1 Employment Augmentation

There are various institutions and agencies, national and international, which have shown concern over the low rates of employment expansion in rural sector, and as such have taken specific interest and action toward generation of

1. It must also be borne in mind that while the rural institutions may sustain technology and employment, the latter in turn may unleash forces that could modify and reshape the character of the institutions.

employment in the recent years. These have been done through single or multi-purpose projects in the countryside. Employment has been directly augmented, albeit in a limited degree, through infra-structure development activities under various sponsorship, including the food-for-work programme. Indirect employment has come about through expansion in irrigated zones, higher land productivity, service sector, and other related non-agricultural activities.

The bulk of the employment appears to have been in road construction in LAG and HAG. Canal digging has also been an important activity in HAG where there has been a reasonable expansion of irrigated zones. This, together with other factors, has contributed to the relatively rapid growth in agriculture in the recent years. In contrast, LAG has had a very low share of irrigation facilities, and hence expansion of HYV cultivation and land productivity has remained quite low. Other activities in which employment has expanded are construction of embankments and bridges, sinking of tubewells, earth-digging etc.

It has to be noted that employment in the above-mentioned activities has often been for short periods over the year, although this may be arranged during the slack agricultural seasons so that the peak labour arrangement is not affected. That is to say, such institutional employment may be short-lived once the phase of construction etc. is completed. There is also a degree of uncertainty involved about a labour-hiring household's planning of employment in such activities as these may not be available at a time when they are relatively less active.

The degree of permanence in employment generated by these institutions would obviously lie in the indirect increase in employment through increase in cropped acreage, irrigation and land productivity. There are other agencies, e.g. the Grameen Bank Project, which focuses specifically on the landless and marginal-farm households, which receive loans from the above agencies to procure some form of assets that could provide them some *sustained* levels of employment.

### 2.6.2 Employment Inhibition

Does an institution inhibit employment? Obviously, such an institution does not belong to the category discussed above. There is a set of rural institutions which have evolved over time mainly through customs and practices. We are, thus, told of the institution of share tenancy, personalised relations, inter-linked factor markets etc., inhibiting agrarian development. We shall briefly touch upon how far these features affect labour hiring in our study areas.

On the question of the share tenancy institution, the conventional theory states that so long as share tenancy persists, there would be an under-utilisation of inputs, especially labour.<sup>1</sup> In a low-income economy like Bangladesh, with a large surplus labour, under-utilisation of labour as alleged by the conventional

1. For a careful account of the performance of the share tenancy institution, see Hossain (1977), *op. cit.*



theory would prove rather intriguing, when share tenancy is greatly affected by non-market availability of inputs (especially excess family labour). Whereas in the neo-classical framework, the under-utilisation result is derived from a constant wage rate (labour cost being invariant of owner and tenant cultivation), we have observed in an earlier chapter that opportunity cost of labour may differ significantly among various groups of cultivators. Hence, if anything, one would expect an 'over-utilisation' of labour input.

Table 2.37 provides data to show broadly the relationship between farm size, tenancy and labour use in the three areas. Both the small owner cultivators as well as the small tenants appear to use a large amount of labour per acre than their larger counterpart farms. That is to say, it is the relative smallness of the size-holding (owned or operational) that dictates higher labour-use. This becomes evident if we compare labour-use figures between small and large sized farms. Among the large holdings, however, the large tenants appear to use less of labour than large owner-cultivators. This is distinctly true for all our surveyed villages.

**TABLE 2.37**  
**Relationship Between Farm Size, Tenancy and Labour Use**

	Average Labour Use (Mandays/Acre)	Average Use of Hired Labour (Mandays/Acre)
<b>LAG:</b>		
Small Tenants	79.6	13.1
Small Owner Cultivators	74.5	18.4
Large Tenants	61.3	18.7
Large Owner Cultivators	66.7	29.0
<b>HAG:</b>		
Small Tenants	72.9	15.7
Small Owner Cultivators	73.6	19.6
Large Tenants	62.1	22.8
Large Owner Cultivators	70.2	36.1
<b>NIC:</b>		
Small Tenants	67.8	10.3
Small Owner Cultivators	68.5	12.5
Large Tenants	58.4	21.0
Large Owner Cultivators	63.9	30.2

*Note:* Tenants include pure tenants as well as those owner-cum-tenants for whom rented-in land exceeds owned land. 'Small' & 'large' refer to holdings less than and greater than 2.50 acres respectively.

On the use of *hired* labour only, however, the tenants appear to use less labour than owner-cultivators, irrespective of size of holding. The difference in the

use of hired labour is even more pronounced in the case of large owner cultivators and large tenants.

The following regressions were run to test the significance of the above observations. The dependent variables are average total labour (L) and hired labour (HL) — both in per acre terms, and the explanatory variable is the extent of rented holding in acres (TNC). The results are the following:

**LAG:**

$$L = 67.3 + 8.24 \text{ TNC} \\ (3.52)$$

$$R^2 = 0.07; N = 62$$

$$HL = 26.3 - 0.76 \text{ TNC} \\ (0.83)$$

$$R^2 = 0.08; N = 53$$

**HAG:**

$$L = 62.8 + 1.06 \text{ TNC} \\ (1.27)$$

$$R^2 = 0.03; N = 38$$

$$HL = 21.1 - 3.18 \text{ TNC} \\ (2.08)$$

$$R^2 = 0.01; N = 29$$

**NIC:**

$$L = 59.0 - 0.37 \text{ TNC} \\ (0.93)$$

$$R^2 = 0.01; N = 26$$

$$HL = 17.9 - 2.23 \text{ TNC} \\ (2.67)$$

$$R^2 = 0.03; N = 18$$

The equations, more or less, confirm that tenancy may or may not affect the *total* labour-use depending on the size class of tenants. The sign of the explanatory variable is positive and the coefficient significant at 1 per cent probability error in LAG: whereas in NIC, the sign is not only negative but the coefficient is also statistically insignificant. On the question of hired labour, it is found inversely related to tenancy in all the three areas.

Thus, in static terms, share tenancy need not be seen as inhibiting employment so far as *total* labour-use per acre is concerned. Small tenants are seen to use comparatively large doses of labour input. Share tenancy, however, tends to return quite consistently a reduced level of use of *hired* labour. To this extent, share tenancy may inhibit the development of wage labour in the agricultural labour market.

On the issue of personalised relations and inter-linkages of factor markets the study has not conducted any detailed investigation, i.e. whether wage/labour contracts have been linked, through the personal nexus, with land-lease or credit con-

tracts. The survey questionnaire, however, included a few queries regarding the nature of terms of employment and the reasons cited by the workers themselves in choosing to sell labour to a particular employer. The relevant information is presented in Table 2.38 and 2.39.

In Table 2.38 one can observe that a high percentage of the workers have reported selling of labour to more than one employer, about 60, 46 and 64 per cent in LAG, HAG and NIC respectively. This indicates that although the rural work force faces considerable constraints in finding alternative employment opportunities, they are nonetheless *relatively* mobile across employers. One must note that this observation need not conflict with the finding in an earlier chapter (see section 2.3) that a high degree of personal contacts existed among the employer and employee groups toward minimising risks in the labour market.

**TABLE 2.38**  
**Nature of Terms of Employment**

	LAG	HAG	NIC
Percentage of Workers Reporting More than One employer	59.7	46.2	63.5
Percentage of Workers Providing Compulsory Labour Services.	17.1	12.3	0.9
Percentage of Workers <i>not</i> Receiving Market Wage Rate	3.8	1.9	0.0
Percentage of Permanent Workers Reporting Involvement in Non-productive Domestic Duties	42.5	14.4	3.6

**TABLE 2.39**  
**Percentage of Workers Reporting Reason's for Selling Labour to a Particular Employer**

	LAG	HAG	NIC
Normal Offer of Employment	79.4	75.6	83.5
Employment Related to a Loan-contract	3.5	2.9	0.0
Employment as Part of Landlease Contract	12.6	11.3	11.8
Others	4.5	10.2	11.8
Total	100.0	100.0	100.0

The above contention is borne out by the fact that in certain instances workers may provide 'compulsory' labour services (in certain regions, e.g. LAG but not in others, e.g. HAG), but this phenomenon need not entail any 'bondage'

as is conventionally understood. For instance, most of the workers have reported that they received the prevalent market wage rate, even though they may have had to engage in 'compulsory' labour services.

Permanent or attached workers who are employed on longer terms were, however, at times subjected to work in certain domestic duties quite unrelated to the job for which they were initially hired. This has been true especially for LAG. How far this connotes some form of 'bondage' is open to question, and needs further empirical research before taking a definitive stance. This finding, however, has to be weighed against the fact that permanent workers constitute a rather small proportion of the total labour expended.

Again, in Table 2.39 one observes that in all the areas more than three-quarters of the workers have reported "normal offer" being the chief reason for selling labour to a particular employer. That is to say, the inter-linkage between an employment contract and other contracts was very low. Of the inter-linked contracts, the majority was recorded with the land-lease contracts, especially in LAG and HAG.

In the light of the above discussion, one would imagine that the concept of employment inhibition is related mainly to the processes which adversely affect agrarian development. It is to the growth in productivity levels that the issue of employment generation is anchored. Since the productivity in Bangladesh agriculture has been quite low for a long period, and the non-agricultural sector has also not kept pace with the growing labour force in the rural sector, workers have often searched for an escape in migration, i.e. migrating mostly to the urban centres. The extent of migration has been very low in our survey areas. However, to the extent that migration has taken place, the remittances of the migrants have reasonably improved the migrant family's income. The reason why the survey areas have returned low figures for migration within a milieu of high surplus labour is largely speculative, but such speculations are beyond the scope of the present study.

## 2.7 Concluding Observations

The observations, findings, and the arguments forwarded in the present study should be treated as tentative, and with a good deal of caution. First, there are very few studies which deal exclusively with the issue of hired labour and rural labour markets in Bangladesh, although fragmentary evidence exists on a number of relevant aspects. As such, the study faced various conceptual and empirical difficulties since a tentative stance had to be adopted on a few important issues for which no definitive explanations were found. Second, the study is based on farm-level data analysis which restricts generalisations. The extent to which some of the observations may be regarded as universal has been indicated in several relevant places.

Regarding the micro-level household survey that was conducted specifically to study the issues, more than 100 households were chosen from each of three ran-

domly chosen villages from three districts of Bangladesh. The villages were selected from three different places so as to reflect an area of high agricultural growth (Mymensingh), an area of low agricultural growth (Faridpur) and an area near an industrial centre (Dhaka). This was done in order to make a comparative assessment of how far growth in agricultural and non-agricultural activities affects the hired labour market. •

The study was conducted not only to show the comparative aggregate levels in the three villages, but also according to size classes of landholdings, a conventional criterion to establish the degree of differentiation of the rural households. In this regard, one may note that whatever the variable concerned, there exists a great deal of variation across the size-holdings. For instance, family size which is quite high on average is even higher as one goes up the landholding hierarchy. One must not, however, read a "built-in equality" in this observation since *per capita* landholding is also higher among higher size-holdings.

There are innumerable difficulties involved towards a proper understanding of the rural labour markets in Bangladesh. There is a tendency in the existing studies to ignore many of these issues for which sweeping generalisations have ensued:

First, the participation rates of the rural work force is alleged to be rather low. It is clear that in such estimation, rates are found by taking the actually working population as a proportion of the total population. Female labour participation is almost totally ignored (even a female worker engaged in household activities may contribute to production), and hence the low over-all participation rates. On the other hand, child labour (persons over 10/12 years are included in the labour force) which is usually regarded as unpaid family labour is, nonetheless, taken as an important part of the work population, although a child 'labourer' may not be voluntarily 'looking for work'.

Second, the structure of occupation is a complex phenomenon. Almost every household has a principal and a number of subsidiary occupations; even a single worker may combine more than one activity. Further, the principal occupation appears to "vary" as one moves from a subjective evaluation of the respondents to the relatively more objective standards of 'mandays expended' or 'income generated' from a particular activity. The multiplicity of roles together with the coexistence of wage and self-employed occupation within a household *and* an individual make an assessment of the labour markets very difficult. One must thus be careful in using such dichotomies as wage-worker/self-employed worker; family worker/hired labourer, household/individual occupation etc.

Third, what constitutes the labour market or the hired labour market? Since the bulk of the farms are small farms and since the bulk of small farms use family labour, the proportion of family labour to total labour is obviously very high. This restricts the size of a labour market as conventionally understood. Further, within the category of hired labour, permanent workers who usually have a year's contract have sometimes been taken to constitute the 'formal' labour

market. The present study, however, takes a different view and argues that in fact, the casual workers from a proper basis of market relationship. One must, however, note that the casual labour market combines characteristics of the 'formal' and 'informal' markets.

Fourth, there is the curious phenomenon that large as well as small farms tend to hire-in labour. The landless, the small and sometimes the medium farm households are the chief sources of labour supply. The dictates of the agricultural cycle, the nature of crop operations, the difficulty in synchronizing these operations, the non-availability of non-agricultural jobs in off-peak seasons are some proximate reasons that explain family labourer working for wages, and farms of various sizes hiring-in and hiring-out labour. The complementarity and substitutability between hired and family labour across size holdings, the seasonal underemployment, the use of hired labour as against wage labour (e.g. exchange labour) are to be seen as joint consequences of behavioural and technological characteristics of labour arrangements .

Apart from the issues above, the study tends to assert the following. First, levels of employment are inherently linked to the levels of productivity. This is seen not only region-wise, but also according to various size-specific productivity and labour-use. Second, the level of technology is low and restricted to the adoption of HYVs. The present nature of technology is seen to have augmented labour-use, family as well as hired, across all farm-sizes. For a different set of factors, however, HYV-technology has had a very sluggish adoption. Third, given the low prospects of employment in the agricultural sector, non-agricultural employment assumes paramount importance. At present, it is not only counter-seasonal in character but is also affording incomes to the seasonally underemployed. In fact, within the present context, it is difficult to imagine how hired labour can be "planned" without planning a systematic and organised development of non-crop and non-agricultural activities. Fourth, various institutions are actively participating in a scheme of employment generation, especially through the food-for-work programme. But such employment is rather small, often short-lived and may not be available when employment is most acutely needed.

# Rural Labour Market with Special Reference to Hired Labour in Pakistan's Punjab

*Mahboob Elahi & M. Jameel Khan*

## 3.1 Introduction

### 3.1.1 Issues and Study Objectives

Rural population as a percentage of total population of Pakistan declined from about 82 per cent in 1951 to 72 per cent in 1981. Almost a similar observation was registered for the proportion of labour force in rural areas. Rural population grew at an average compound rate of 2.6 per cent per annum as against 3.1 per cent experienced by total population. Crude activity rates observed for rural population (28 to 33 per cent) were comparatively higher than those for the urban population (25 to 30 per cent) over the period from 1951 to 1981. Annual compound growth rate of rural population may be attributed partly to rural-urban migration taking place over the period of last 30 years.

The share of agricultural sector in total employment of the economy declined from 65.3 per cent in 1951 to 52.6 per cent in 1981. Further, it may be pointed out that total agricultural employment grew at about 1.75 per cent per annum between the years 1951 to 1981. On the other hand, the sectors which experienced prominent increase in their respective shares of total employment during the said period, included construction and public utilities, transport, commerce and services. The industrial manufacturing also showed a considerable growth in the share of employment till the beginning of 1970s. These observations indicate that the rate of employment generation in agriculture as a result of technological innovation was unable to cope with the rate of increase in labour force. However, hired labourers in agriculture, both as a percentage of total rural workforce and in absolute numbers showed substantial increase. The former increased from about 7.7 to 9.6 per cent and the latter increased at a rate of about 4 per cent per annum between 1961 to 1973.

The introduction of a new technological package, generally known as green revolution technology, led to various structural changes in the agrarian economy of Pakistan. This, in turn, attracted the attention of researchers to study the process of agricultural transformation, from a stagnant situation to a dynamic sector of the economy and ability of this sector to absorb the growing workforce. These studies were carried out using a general framework of productivity growth and employment generation with the advent of new technology in the rural economy of Pakistan.<sup>1</sup> It was generally argued that changing conditions in resource endowment, particularly irrigation, and crop intensification over the last two decades have made encouraging contributions for improving the rural employment situation. These studies have undoubtedly made an appreciable contribution to the subject but certain other policy questions still remain to be analysed. An important policy question is whether or not agriculture will continue to absorb the ever growing labour force of the country. This requires a careful consideration, particularly in view of limited scope for extensive agriculture and deteriorating land-man ratio in the country.

Another important dimension of rural labour market that requires empirical analysis is to ascertain the implications of a new technological package for hired labour. The earlier expectations of increased demand for hired labour with the introduction of high yielding technology are now being questioned.<sup>2</sup> Furthermore, demand for hired labour employed in various farm operations is not expected to be uniform within and across different crop regions of the country. The inter-regional variations in labour demand may be related to differences in cropping pattern, infrastructural development and resource endowment. The intra-regional variations may be an outcome of the type of technology used, the distribution of operational holding and various institutional factors. The seasonal nature of farm production also has an important bearing on the quantity of hired labour demanded in different seasons of a crop year. These factors also influence the wage rates, both seasonal and long term, for hired labour.

From the structural view point, the agrarian economy is composed of two major classes viz. land-operating and landless households. Most of the previous studies focussed their attention on the former households, while the latter component which consists of 40 to 50 per cent of rural population in Pakistan and

1 Khan M.J. (1975), *Economics of Farm Mechanization and Water Development Policies in Pakistan: A Case Study*. Ph.D. Dissertation, Colorado State University, U.S.A.

Khan D.A. (1978), "Employment and Occupational Change in the Rural Punjab: Consequences of Green Revolution". A paper presented at the National Conference on Employment Planning and Basic Needs.

Naseem S.M. (1978), "Regional Variation and Structural Changes: Their Effects on Labour Absorption in Pakistan's Agriculture", in *Employment Expansion in Asian Agriculture*, ARTEP, ILO, Bangkok.

2. Kalirajan, K. and R.T. Shand (1982), "Labour Absorption in Tamil Nadu Agriculture: A Micro Analysis", *The Developing Economies*, 20 (3): 333-343, Institute of Developing Economies, Tokyo, Japan.



constitutes a substantial proportion of "labour supplied to perform various agricultural operations, remained neglected. The landless households consist of a variety of artisans, locally known as *kammees*, providing professional services to the village community under a traditional system called *seyp*. These households also supply hired labour for agricultural activities. The introduction of high yielding technology has greatly influenced the structure of rural community, demand for *seyp* services, and traditional institutions governing relationships between artisans and land operators. As a result, a considerable degree of change in the traditional occupations has occurred and in turn new occupations have emerged. Further, landless household members are presently seen employed in a variety of occupations both within and outside the village economy.

These and other related issues on hired labour within the overall context of rural labour markets in Pakistan are examined in some details in the sections that follow. This study is essentially divided into two broad sections. The first section (section 3.2) is devoted to a description and analysis of (i) the structure of farm families and patterns of their income; (ii) detailed occupational and income patterns of landless workers; (iii) the traditional labour arrangements (e.g. *seyp*) within a changing agrarian system; (iv) the comparative significance and role of permanent and casual hired labour, including a caste-wise breakdown, (v) the rural wage structure and nature of wage contracts. The following section (Section 3.3) attempts to analyse the essential factors that explain variations in use of hired labour with particular reference to permanent labour, and operation-wise and crop-wise labour-use. Various other factors are also brought in to seek the explanatory power of the econometric model adopted in this section. The conclusions of the study are provided in Section 3.4.

### 3.1.2 Selection of Regions

The study is based exclusively on primary level data, gathered from the authors' survey of sample households drawn from three zones in the Punjab province. The Punjab province is characterized by differences in agroclimatic conditions, which lead to considerable variations in cropping pattern, irrigation technology, labour employment and wage rates across various regions of the province. Keeping in view these regional variations, it was decided to have relatively more homogeneous groups of districts differentiated by resource endowment and the rate of agricultural growth. According to the regional pattern of growth, the province can be divided into two major areas i.e. the regions represented by rainfed agriculture (zone A) showing low agricultural growth and those having artificial irrigation facilities being representative of high agricultural growth rates. The latter areas can be further classed as the regions closer to the industrial activities (Zone B) and those having a progressively high agricultural growth (Zone C).

For this study, we selected Attock, Gujaranwala and Faisalabad district from the zones A, B and C, respectively. Attock district is obviously an area of low agricultural growth owing to the non-existence of controlled irrigation. Gujaran-

wala is an area closer to the emerging local industries and commercial activities. Faisalabad district located in the central irrigated zone of Punjab is representative of high agricultural growth in the province. Further, the University of Agriculture and Ayub Agriculture Research Institute are located in Faisalabad. Hence, farmers of this district have relatively easy access to information on latest developments in agricultural research.

### 3.1.3 Selection of Sample Villages

Having selected the districts, a sample of nine villages, i.e. two, four and three from zones A, B and C respectively was selected. The sample villages were picked up from different geographical locations within the selected districts in order to ensure the reflection of variations in the relevant parameters. A brief census of each sample village was carried out for stratifying the rural households. In the first stage, the entire village community was divided into four broader categories, identified as land operating (owner operators, part owners and tenants) and non-land-operating landless households. In the second stage, land operators were further classed as small, medium and large, according to the scale of operation, while, landless labour households were categorized according to the source of income (e.g., agricultural labourers, non-agricultural labourers and artisans etc.). Finally, a 30 per cent sample from the various strata of farming households and, 15 per cent sample of landless households were drawn. The number of sample respondents under different categories are shown in Tables 3.1 and 3.2.

TABLE 3.1  
Sample Farm Households Classified by  
Size and Tenure in Three Regions of Punjab

	A	B	C	Total
<i>Tenure Status</i>				
Owner	36 (46.2)	77 (65.3)	50 (52.6)	163 (56.0)
Part-owner	28 (35.9)	27 (22.9)	38 (40.0)	93 (32.0)
Tenant	14 (17.9)	14 (11.9)	7 (7.4)	35 (12.0)
Total	78 (100)	118 (100)	95 (100)	291 (100)
<i>Size Status*</i> (all tenure)				
Small	35 (44.9)	39 (33.1)	60 (63.2)	134 (46.1)
Medium	33 (42.3)	44 (37.3)	27 (28.4)	104 (35.9)
Large	10 (12.8)	35 (29.7)	8 (8.4)	53 (18.2)
	78 (100)	118 (100)	95 (100)	291 (100)

Note: Small = less than 125 acres  
Medium = 125 — 250 acres  
Large = more than 250 acres

**TABLE 3.2**  
Sample of Landless Households Classified by Traditional  
Caste Categories in Different Regions of Punjab

Caste Categories	Region			
	A	B	C	Total
1. Lohar (Blacksmith)	3	2	1	6
2. Tarkhan (Carpenter)	6	3	1	10
3. Lohar/Tarkhan (Blacksmith/ carpenter)	2	3	3	8
4. Kumhar (Potter)	—	11	15	26
5. Nai (Barber)	4	2	6	12
6. Mochi (Cobbler)	4	6	1	11
7. Machhi (Baker)	—	2	—	2
8. Darzi (Tailor)	1	1	2	4
9. Qasab (Butcher)	—	2	—	2
10. Sonar (Goldsmith)	—	—	3	3
11. Mashki (Water Carrier)	—	—	1	1
12. Dhobi (Washerman)	—	—	1	1
13. Taili (Oil Extractor)	—	2	—	2
14. Jolaha (Weaver)	—	4	1	5
15. Untouchables (converted Christians)	—	9	6	15
16. Untouchables (converted Muslims)	—	8	3	11
17. . Changer (General Labourer)	—	5	—	5
18. Mirasi (Musicians)	—	3	—	3
19. Others (Unclassified)	9	24	5	37
Total	29	87	49	165

### 3.2 Employment and Occupational Composition of Farm Families and Landless Labourers

A review of the family size and composition is important for analysing the general pattern of employment and income generation in farm and non-farm sectors. Also, the literacy rate and level of education attained by household members is important from the view point of their participation in various income and

employment generating activities. In this chapter an attempt is made to provide a zone-wise description of the above variables. Furthermore, the implications of these factors for employment of land operating household members in various activities are given due consideration.

### 3.2.1 Family Size and Composition

A study of the composition of farm families is important from the view point of measuring the quantity of total labour available per farm household in different regions of the province selected for investigation. The detailed survey results with regard to family composition by the size of operational holding and crop zone are given in Table 3.3, which reveals that zones B and A are characterized by the largest and the smallest overall family size, respectively. Almost each component of the household exhibited a pattern similar to that of overall family in terms of size across different regions of the province. The proportion of male sub-adults and children and that of other females, being the greatest in zone B, points towards a comparatively higher fertility rate in the mentioned region. The percentage of adult household members, both males and females, turned out to be relatively higher in zones A and C.

TABLE 3.3

**Average Family Composition of Farm Households in Different Regions of Punjab.**

Region	Male			Female		Total Members	Total Labour
	Adult 15 & above	Sub-adult (10 to under 15)	Children below 10	Adult 15 & above	All other (below 15)		
A	2.24 (33.8) <sup>a</sup>	0.47 (7.1)	0.83 (12.5)	1.90 (28.7)	1.18 (17.8)	6.62 (100)	2.73
B	2.71 (32.8)	0.75 (9.1)	1.26 (15.3)	1.94 (23.5)	1.59 (19.3)	8.25 (100)	3.37
C	2.67 (34.4)	0.60 (7.7)	0.94 (12.1)	2.18 (28.1)	1.38 (17.8)	7.77 (100)	3.27

Figures in parentheses are the members in a given category as a percentage of total household members.

### 3.2.2 Pattern of Employment

The farm household members participate in either of the two activities, i.e. on farm agricultural work or they find job opportunities in off-farm activities. The latter includes a wide range of employment options in the farm sector or various sub-sectors of the non-farm economy. A brief account of the survey results are given in Table 3.4.

Table 3.4 exhibits that the per cent of total numbers employed on the farm was the highest in zone B dominated by a progressive rice-based agriculture,

while the proportion of total employed working off the farm was the greatest in zone A, having a poor resource endowment in its farm sector. This phenomena may be related to relatively higher literacy rates for zones A and C.<sup>1</sup> Hence, it may be argued that the job undertaking by farm household members in different sectors of the economy may have a close relationship with the level of education.

**TABLE 34**  
**Average Pattern of Employment of Sample Farm Households in**  
**Different Regions of Punjab**

Region	Male Labour Equivalent Employed			
	Available	Total	On-Farm	Off-Farm
A	2.73	2.46 (90.1) <sup>a</sup>	1.76 (71.5) <sup>b</sup>	0.70 (28.5) <sup>b</sup>
B	3.37	2.47 (73.3)	2.02 (81.8)	0.45 (18.2)
C	3.27	2.60 (79.5)	1.93 (74.2)	0.67 (25.6)

Figures in parentheses indicate labour units employed as a percentage of total labour units.

Figures in these parentheses indicate units employed as a percentage of total units employed.

### *Participation in On-Farm Agricultural Activities*

The measurement of labour force participation and the number of hours spent in farm related activities is fairly complicated due to the involvement of a number of factors. These factors included the seasonality in farm production and existence of inter-farm variations in labour requirements. We, however, attempted to measure the individual member's participation in farm work on the basis of average time disposition revealed by the respondents.

Table 3.5 reveals that it is only the male adult members of a farm household who participate in farm work on full-time basis to an appreciable extent in all the regions, while females exhibited a part-time participation in agricultural work in various regions of the province. Further, their participation in farm activities seems quite negligible except in zone A. In this region, most of the male adult members are engaged in non-farm wage jobs and regular services. Hence, female participation in the farm work, particularly for feeding of livestock, becomes a necessity. The sub-adult males participating either on a full-time or part-time basis, were also found engaged in the activities like feeding, grazing and providing drinking water to livestock.

1. About 51 per cent of the male adult household members were literate in region B compared with 63 and 66 per cent in A and C regions respectively.

**TABLE 3.5**  
Participation of Sample Farm Household Members in Agricultural Activities in  
Different Regions of Punjab.

Region	Full-time Workers		Part-time Workers				Total Labour Input
	Male		Male		Female		
	Adult	Sub-adult	Adult	Sub-adult	Adult	All qther	
A	1.33	0.05	0.05	0.08	0.49	0.04	1.76
B	2.77	0.08	0.12	0.06	0.07	0.01	2.02
C	1.80	0.05	0.04	0.01	0.09	0.01	1.93

Finally, the total number of household members participating in farm work shows an increasing trend with an increase in operational holding in most of the regions studied. However, this relationship is not expected to hold for numbers working per acre of operational holding or farm size commanded.

#### *Income and Employment in Non-Farm Activities*

It has been argued that the rate of increase in job opportunities in farm sector has been outweighed by rate of growth in labour force. This has, in turn, led to a considerable reduction in the share of agriculture in Pakistan's total employment. Hence, rural work force attempts to find wage jobs in various sub-sectors of the non-farm economy. A region-wise information on income and employment availed by members of farm households is presented in Table 3.6.

Table 3.6 shows that the greatest number of persons per household employed off the farm were found in zones A and C. Among various activities, the largest number of persons of zone A were employed in regular services like armed forces and different public offices. Similarly, the share of income earned from services turned out to be the highest in zone A. A relatively greater number of persons in zones A and C employed per household in non-farm wage jobs and services may be related to the greater literacy rate and higher level of educational attainment in these zones. Farm jobs accounted for a negligible share of total off-farm employment in all the regions. Overseas employment accounted for a negligible share of total employment, but provided a substantial share of household income in zone C. The discussion leads to the inference that the regions characterized by relatively higher literacy rate and educational attainment exhibited relatively greater off-farm employment, and thus higher income generation from this source.

%

11

Socio	Household					Total
	g	u	o	o	o	
a	1	1	1	1	1	5585
	1	1	1	1	1	4228
a	1	1	1	1	1	12827
	1	1	1	1	1	12827

### 3.2.3 The Landless Labourers

The significance and indispensability of landless households in the functioning of Pakistan's village economy is well recognized. These households are generally identified on the basis of their inherited occupations, like blacksmith, carpenter and potter etc. This does not imply that all the household members are necessarily engaged in their traditionally defined professions. Rather, they are employed in a variety of occupations and income generating activities.

This section of the village community accounts for a substantial proportion of labour supplied to Pakistan's agriculture sector. In broad terms, demand for their labour in farm sector, is generated under the traditional *seyp* system and the market demand for hiring permanent and casual labour in various farm operations. They also find jobs in different types of non-farm activities, on temporary or permanent basis, within and outside the village economy. In addition, self-operated business or activities to meet the local demand for different types of goods and services, employ a considerable proportion of landless household members.

#### *The Traditional Occupational Pattern and Change*

To begin with, an overall comparison of work pattern adopted by landless households in three regions is provided in Table 3.7 below:

**TABLE 3.7**  
**The Distribution of Sample Landless Households by General Work Pattern in**  
**Different Regions of Punjab.**

(Percentages)

Region	Total Landless Households	Percent of Households Working for			
		Seyp only	Cash only	Seyp + Cash	Other Traders
A	29	41	35	24	
B	87	5	52	19	24
C	49	10	47	14	29

It is evident from the table that the highest proportion of the landless households working solely under the traditional *seyp* system belongs to zone A, while the lowest proportion of these households engaged in the activities generating cash income was also found in this region. Both these observations may be related to the fact that zone A characteristically represents the low growth regions of Punjab with respect to the development of rural infrastructure, labour market, local industries and commercial activities. On the other hand, in zone B, which basically represents the high growth areas having an access to the industrial and commercial activities and well-developed market towns, the lowest proportion i.e.



only 5 per cent of the landless households were found engaged in the *seyp* work, while the proportion of landless households primarily employed in cash yielding commercial activities turned out to be the highest. The behaviour of landless households of zone C, with respect to the market oriented employment, was comparatively better than that of zone A and relatively closer to that observed in zone B.

The last two columns of Table 3.7 provide information on the extent of occupational change from traditional to traditionally-based or non-traditional occupations. In this regard, the landless households, particularly the skilled artisans like blacksmith, carpenter, mixed blacksmith and cobbler of zone A exhibited an appreciable tendency of switching over to the traditionally-based jobs, combining both *seyp* and commercial activities. However, none of them in zone A revealed a complete change to the non-traditional jobs. The lack of absolute change in profession may probably be related to a lower level of regional development indicated above. The process of professional change in the remaining two regions seems moving at a fairly high rate. The proportion of households engaged in traditionally based jobs — *seyp* and cash work — was found to be 19 per cent in zone B as compared to 14 per cent in zone C, while, the proportion of non-traditional workers (column 6, Table 3.7) in zone B was lower as compared to that in zone C.

### *The Existing Occupational Composition*

The description of the landless section of the village community presented in the preceding section was mainly based on the traditionally identified caste groups. These caste groups, provide a relevant basis for the classification of the rural landless households, but do not necessarily imply that the concerned households are affiliated with the same occupation as revealed by the respective caste group. Rather this may be viewed as pointed out by Hirashima in the context of status hierarchies in the social system of rural Punjab.

"The son of lohar (blacksmith) becomes a lohar not because he is more efficient than others in the profession, but simply because he was born as a son of lohar. The occupational horizon has been limited and even under British rule an effort was made to discourage occupational mobility. Although there has been a gradual transformation of the kammies from traditional to non-traditional or more precisely, the extension of traditionally-based occupations, only recently has the occupational mobility of the kammies becomes visible because of the development of the non-agricultural sectors and with the spread of education.<sup>1</sup>

1. Hirashima, S. (1977a), *Hired Labour in Rural Asia: Problems and Issues*, IDE, Tokyo.

Hirashima, S. (1977b), "Zamindars and Kamees in the Punjab — An Economic Analysis of Non-Farm Households in Pakistan, Punjab". *Hired Labour in Rural Asia*, IDE, Tokyo.

The occupational transformation experienced by the landless households has been, influenced by many other factors in addition to those pointed out above. Within the farm sector, these factors may include the emergence of new professional jobs as a result of agricultural transformation from a stagnant position to a market-oriented and dynamic sector of production in the economy of Pakistan. Further, the inter-sectoral linkages led to the development of non-farm sectors upon which the farm sector is dependent for the supply of modern farm inputs, like fertilizer and plant protection materials etc. On the other hand, rural-based local industries, processing the farm products, received a new impetus with the agricultural development initiated during the mid-sixties. In brief the factors like the modernization of farm sector, the development of non-agricultural sector and rural-based small and large scale industries, employment generating institutional programmes, various types of developments in urban areas and the spread of education have played an important role in the occupational mobility and emergence of new occupations for the rural workforce.

Keeping in view the implications of various changes on the traditional occupational structure mentioned above, it seems more logical from the view point of economic reasoning to base the classification of landless households' on the current occupational affiliation of these households. Information on the number of households included in these occupation groups is provided in Table 3.8. Since this classification is based on the actual occupation/profession adopted, the number of households included in various groups may not coincide with those given in Table 3.2. Further, it may be pointed out that these numbers do not vary much for different groups of zone A. However, a considerable variation in this regard was observed for various groups of the remaining regions. These observations, indeed stand consistent with the regional description on occupational change.

### *Family Composition*

The family structure and the level of educational attainment by the household members are generally expected to have important influence on the labour supply behaviour and the choice of occupation to be adopted. The minimum age limit for an individual to be included in labour force adopted in the *Population and Agricultural Censuses of Pakistan* is ten years or above. In this study, we adopted the classification of household male members as adult (aged 15 years and above), sub-adult (aged between 10 and under 15 years), and children (below 10 years). In view of an extremely low participation of females in the economic activity of Pakistan, they were categorized as adult (aged 15 years and above) and others (below 15 years). Table 3.9 provides some consolidated information on the general pattern of family size existing in the three regions.

The table clearly shows that the total family size in zone A is the smallest and zone C is characterized by the largest family size, while, total house-

hold members in zone B fall in between the two extremes. Various components of the family structure also behave in a similar fashion, except for female adults being the lowest in zone B, i.e. they increase consistently from zone A through zone C.

**TABLE 3.8**  
The Occupation Composition of Landless Households  
in Different Regions of Punjab

Occupational Groups	Regions		
	A	B	C
Blacksmith	3	—	1
Carpenter	6	4	2
Blacksmith-carpenter	2	3	2
Potter	—	4	4
Barber	4	5	5
Cobbler	4	3	2
Tailor	1	1	2
Butcher	—	2	—
Shopkeeper	4	6	3
Mason	—	1	—
Weaver	—	5	—
Oil Extractor	—	2	—
Washerman	—	—	1
Agricultural labour	—	16	8
Non-agricultural labour	—	26	14
Others	5	9	5
<b>TOTAL</b>	<b>29</b>	<b>87</b>	<b>49</b> >

The proportion of male sub-adults and children and that of all other females also showed a tendency to increase from zone A to zone C. However, the proportion of male and female adults was found to be the highest in zone A. These tendencies point towards later marriages in zone A. Also due to the limited availability of productive jobs in the farm and non-farm sectors of the rainfed areas, the male household members, particularly adults, have to move off the village in search of non-agricultural jobs in various sectors of the economy, while the village economies of the remaining regions offer considerable number of job opportunities either in the farm related or non-farm activities. This probably explains the relatively smaller proportion of the members aged below 15 (children) in the landless households of zone A and the converse holds true for the other two regions included in this study.

*The General Pattern of Income and Employment of Landless Labourers*

As mentioned earlier, the occupational horizon covering the rural landless households has extended greatly beyond the boundaries marked by the tradition-oriented professions. This, however, does not imply that the traditional work arrangements are completely gone out of the system. Rather, the influence of market economy on the rural life has led the members of landless households to get engaged in a variety of income and employment generating activities both within and outside the village economy. The emergence of new work pattern, which is a combination of traditional and commercial activities, has important income and employment implications for landless section of the rural community.

**TABLE 3.9**  
**Overall Family Composition of Sample Landless Households**  
**in Different Regions of Punjab.**

Region	Male			Female		Total Members
	Adult (15 and above)	Sub-Adult (10 to under 15)	Children (Below 10)	Adult (15 and above)	All other (Below 15)	
A	1.83 (32.7) <sup>a</sup>	0.38 (6.8)	0.86 (15.4)	1.55 (27.7)	0.97 (17.4)	5.59 (100)
B	1.90 (30.0)	0.53 (8.4)	1.10 (17.4)	1.45 (22.9)	1.36 (21.4)	6.34 (100)
C	2.16 (29.0)	0.82 (11.0)	1.10 (14.8)	1.65 (22.2)	1.71 (23.0)	7.44 (100)

Figures in parentheses are percentage of total household members.

From Table 3.10, it is evident that the traditional *seyp* work accounted for about one-third of total employment in zone A as compared with merely 9 per cent in the commercially dominated region (zone B) of the province. On the other hand, more than 32 per cent of total employment in the latter region, which is the highest of all the regions, originated in the self-operated business based on the production and marketing of traditionally-based household goods. This activity provided a remarkable proportion of total employment in the remaining regions as well. By virtue of having an intensified and labour-absorptive crop business, zone B ranked the highest in the proportion of employment provided to the landless labour through permanent and temporary jobs in its farm sector. While, comparatively less resource endowed region (zone A) touched the bottom in this regard, the share of non-farm jobs, both temporary and casual, in the total employment showed a relatively less variation across various regions. However, zone C stood at the top in this connection, which seems consistent with the expectations about this region mentioned earlier. Indeed a relatively smaller contribution of *seyp* work and other farm related activities

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towards total employment in zone C motivated the landless household members to seek jobs in the non-farm sector. Finally, livestock activity also provided a considerable amount of employment opportunities. This was found to be the highest in zone A, where a greater deal of barren land is available for livestock grazing, and lowest in zone B offering less natural facilities for livestock enterprise.

Apparently, the sum of man units employed in different employment generating activities seemed highest in zone C and the lowest in zone B. A comparison of these employment estimates with the available labour supply may provide an approximation to the rate of employment prevailing in the different regions of the province. Here an important task is to convert the household members, given in Table 3.10, into adult male labour equivalent using appropriate conversion factors. Eckert (1972) worked out a set of coefficients to estimate the male adult equivalent on the basis of his survey data.<sup>1</sup> We borrow the above coefficients to estimate the quantity of labour available at the household level, which turned out to be 2.23 for zone A, 2.39 for zone B and 2.83 for zone C. Comparing the employment estimates with the available labour supply leads to the following rates of employment estimates, i.e. 97, 82 and 88 per cent in respective regions.

The sum of total household income from different activities was found to be highest in zone C and the lowest in zone A. Regarding the income generated from different activities zone B had a leading position with regard to farm related and livestock activities and also prominently visible in self-operated activities. The share of *seyp* work and non-farm jobs in total income of households in zone A was highest amongst the three regions. The magnitude of total income earned per household as seen from the last column of Table 3.11 seemed highest in zone C.

The measurement of income and employment on a household level is a good indicator of the welfare and prosperity of the given household. However, due to the variation in family size, as pointed out earlier, this approach is likely to conceal certain measures like the labour efficiency and income earned per man unit employed. To avoid these problems, we have also calculated income earned per man unit from different activities and the relevant statistics are presented in Table 3.11. It is evident from the table that income per man unit from *seyp* work in various regions is lower than that for various farm-based and non-farm activities. This probably explains the declining share of *seyp* work in the employment composition relating to the landless household members. Income per man unit employed in zone B turned out to be the highest for the *seyp* work and other farm-related activities. This is quite in line with the expectations about wage rates in a commercially dominated region. Indeed, the existence of well-paid commercial activities has important influence on the wage rates in farm sector. Another important observation relates to farm wage rates in zone A, i.e. the income per man unit in casual farm jobs unexpectedly turned out to be lower than that for

1. Eckert, J.B., (1972), *Rural Labour in Punjab*, Govt. of the Punjab.

permanent jobs in agriculture. It may be pointed out that casual work in zone A is mainly required for groundnut digging and this is generally performed by the low-paid female labour. The per unit income from self-operated business and non-farm jobs was found to be the highest among all the regions.

Finally, the total household income per man unit employed in zone B stood at the top, despite a relatively lower rate of employment in this region compared to that in other regions. Further, a comparison between household income per man unit and the rate of employment given above for different regions revealed another interesting point, i.e. the former increased in the order from zone A, C and B and the latter showed an increasing trend from zone B to C to A. Although, this observation apparently pointed to the existence of inverse relationship between wage rates and labour supply, a more detailed analysis is required to prove the presence of a backward bending supply of labour in the crop regions studied.

### *Seyp Work*

The demand for landless labour, created under the traditional *seyp* arrangements, varies across different regions of the province. There are several socio-economic and institutional factors influencing the customary demand for their labour.

We observed that the services of blacksmith and carpenter are invariably hired by farmers in all the regions of the province. The services of social functionaries like barber, cobbler, priest and watchman are generally required by both the farm and non-farm households. The potters are employed in zone B (rice-wheat area) for the transportation of commercial farm inputs, farm yard manure and that of produce from the field to home and from home to the market town. The potters' services are getting less indispensable due to the use of tractor for haulage purposes. Hence, they are shifting to non-farm wage jobs. Finally, the traditional hiring of tailor and washerman is not a very common practice in rural Punjab. These two artisans were found to exist in zone B and zone C, respectively for a few of the sample villages. A region-wise information concerning the income and extent of employment of artisans in the *seyp* work is presented in Table 3.11.

From Table 3.11 it appears that blacksmiths have an appreciable demand for their services in all the regions. This is particularly true for those who combine both the jobs of a blacksmith and carpenter. This newly emerged group of artisans appears very prominent in terms of total income and employment. The nature of their jobs is such that they have relatively less chances of losing their clientele even after the introduction of farm mechanization. On the other hand, carpenters are reported to have experienced a reduction in the demand for their services partly due to farm mechanization in agriculture and partly to a decline in the demand for the commercial household goods, manufactured by them as a result of shift in consumers' demand to urban furniture. This is notably obvious

in zones B and C. The potters' income, per farm household served, ranked the highest among the artisans in zone B, but their total income and employment appears very low.

**TABLE 3.11**  
Income and Employment Pattern of Artisans  
in Different Regions of Punjab

Artisans	Households Served	Man Units Employed	Total Income (Rs.)	Income Per Household Served (Rs.)	Income Per Man Unit (Rs.)
1	2	3	4	5	6
<b>ZONE-A</b>					
Blacksmith	27	0.77	3027	112.1	3931
Carpenter	28	0.80	2444	87.3	3055
Blacksmith-Carpenter	30	1.25	3958	131.9	3166
Potter	—	—	—	—	—
Barber	30	1.50	2274	75.8	1516
Cobbler	31	1.00	2749	88.7	2749
Tailor	—	—	—	—	—
Washerman	—	—	—	—	—
<b>ZONE-B</b>					
Blacksmith	—	—	—	—	—
Carpenter	11	0.75	1883	171.2	2511
Blacksmith-Carpenter	22	1.16	5290	240.5	4560
Potter	3	0.50	943	314.3	1886
Barber	18	0.62	2698	149.9	4352
Cobbler	8	0.60	1051	131.4	1752
Tailor	13	1.0	1680	129.2	1680
Washerman	—	—	—	—	—
<b>ZONE-C</b>					
Blacksmith	30	2.0	3150	105.0	1575
Carpenter	5	0.5	753	150.6	1506
Blacksmith-Carpenter	26	2.0	4067	156.4	2034
Potter	—	—	—	—	—
Barber	41	1.40	3388	82.6	2420
Cobbler	—	—	—	—	—
Tailor	—	—	—	—	—
Washerman	40	1.0	4000	100.0	4000



Among the social *kammeees*, barbers' *seyp* services remain reasonable with regard to income and employment. This is expected to be such, as their haircutting job primarily depends on the village population. A relatively lower level of barbers' employment in zone B do not necessarily imply under-employment, as they supplement their *seyp* income by engaging themselves in commercial haircutting activity. The cobblers are maintaining their income and employment in the less commercial barani region (zone A), while in the remaining regions studied, they are getting out of the *seyp* system. Finally, tailor and washerman, existing as *seypies* in zone B and C respectively, are not the regular *seyp* workers in all the regions.

### *Self-Employment*

Apart from the traditional *seyp* work, the landless household members are engaged in a wide range of traditional, non-traditional and traditionally based *non-seyp* activities generating cash income. For instance, the blacksmiths and carpenters reported their involvement in the furniture manufacturing, masonry work and related activities within the same village or in the neighbouring small towns etc. The potters were found involved in transportation of construction materials like bricks, cement etc. The cobblers and barbers reported commercially-oriented shoe making and hair cutting functions, respectively.

In zone A the self-employment of blacksmiths and carpenters seems negligible. This may be partly due to their greater involvement in *seyp* and partly to a relatively less developed commercial demand for their goods in the mentioned zone. Cobblers of this zone are self-employed better ;than all other artisans of the region and earn reasonable income by producing the typical shoes commanding markets for quite a long distance all around the region. In zones B and C, carpenters are self-employed for a reasonable amount of time and earning substantial income therefrom. They, indeed, compensate their loss of income and employment, pointed out earlier, from the *seyp* activities. These jobs are relatively more commercial and well paid in zone B as compared with those in zone C.

The occupational group defined as blacksmith-carpenter is reasonably self-employed in zone B. The other occupational groups more prominent in self-employment are potters, cobblers and tailors. The cobblers' self-employment was more pronounced in zone C, where none of them was employed on *seyp* basis. The other categories like butcher, shopkeeper, mason, weaver and oil extractor are not employed on *seyp* basis but only engaged in their self operated business.

Finally, it seems worthwhile to mention that a negative relationship between *seyp* and self-employment may be depicted. The artisans who are serving a relatively greater number of households and become sufficiently employed with a reasonable income, are characterized by a low level of self-employment and vice versa.

### *Permanent Employment*

Permanent employment in this study implies a relatively longer term contract — about three months to one year — between an employee and the

employer. The respondents were enquired to indicate their permanent job affiliations both in the farm-related activities and non-farm occupations.

The relevant data relating to permanent employment appears appreciably only for the groups identified as agricultural and non-agricultural labour. These two groups are composed of Christian labour, Muslim Sheikh, Changar and certain other castes. A brief description of the caste composition of these two groups are given in Table 3.12.

**TABLE 3.12**  
Caste Distribution of Labouring Households  
in Different Regions of Punjab

Region	Occupational Group	Castes				Total
		Isai	Muslim Sheikh	Changar	Others	
A	Agri. Labour					
	Non-agri. Labour					
B	Agri. Labour	4	3	3	6	16
	Non-agri. Labour	4	4	2	16	26
C	Agri. Labour	3			5	8
	Non-agri. Labour	3	3		8	14

The employment of permanent labour in agriculture is generally associated with the area operated by a farm and the availability of irrigation water. As indicated elsewhere, zone B has a greater proportion of large farmers and well served by irrigation, while zone A only depends on the rainfall and zone C is mainly dominated by small sized holdings. The variations across different regions with regard to the resource endowment and institutional factors, in turn, explain a relatively lower level of farm employment in zones A and C as compared to zone B.

There is a wide range of jobs in the non-farm sector employing rural labour force. In the present study, these jobs are broadly categorized as industrial and other wage jobs, services in the country and abroad.

The occupational groups prominently employed in the non-farm jobs are tailor and shopkeeper in zone A, carpenter, potter, cobbler and weaver in zone B, and potter, cobbler and various others in zone C. This is quite consistent with the discussion presented earlier that the *seyp* work of the mentioned groups in different regions is inadequate both in terms of income generation and employment in their traditional professions.

#### *Casual Employment*

In addition to permanent (longer contract) jobs, the members of certain households are also engaged in the casual jobs either in the farm sector or non-farm sector.

In the farm sector, the landless household members offer their labour for planting and harvesting activities, when the rural wage rates (either in cash or kind) are relatively higher than average normal wage rates in agricultural sector. In zone B, the important activities requiring casual labour include planting of rice and harvesting of wheat and rice crops. In zone A, digging of groundnut is the major employment generating activity, while wheat harvesting and threshing is normally done by the exchange labour. In zone C, wheat harvesting, sugarcane cutting and crushing, and sowing of vegetables are the major activities generating opportunities for casual employment of landless households.

In zone A casual jobs in farm sector do not contribute much to the total employment in the region. This is mainly due to the existence of non-wage institutional arrangement for wheat harvest. As mentioned above, groundnut digging is the only activity offering some low paid casual wage employment. And this is generally done by the female members from carpenter, cobbler and certain other occupational groups. Again this observation seems consistent with that made above about of *seyp* work. In zone B, the casual labour is employed by more than 80 per cent of the farm households. In this region the existence of labour intensive rice crop, claiming a major proportion of the cropped acreage, accounts for a considerable percentage of the casual employment for sowing, weeding, irrigation and harvesting operations. The occupational groups employed in the farm sector of zone B include potter, cobbler, tailor, weaver and oil extractors. Further the agricultural labour groups — consisting of Muslim Sheikh, Isai and Changar — opts to work for better paid casual farm sector jobs. The skilled artisans like blacksmith and carpenter did not report any casual employment in agriculture. In zone C, the occupational groups prominently employed in casual farm jobs are potters (who do not have any *seyp* work), agricultural and non-agricultural labour. The lower level of casual or permanent employment in zone C may be related to the preponderance of small farms and use of more family labour for various operations.

In essence, the total period during a particular year for which casual labour is hired seems to be the highest in zone B (rice-wheat area). This may be due to the fact that labour intensive operations for rice have to be performed within a relatively smaller period of time. While, in zone C, the crops like sugarcane allow the farmers to adjust their family labour resources for various operations. Furthermore, the existence of a greater number of small sized farms in zone C contributes to a lower level of casual labour input.

The casual jobs in non-farm sector done by the classes of landless labour include activities like construction of roads and buildings, jobs in the grain, vegetable and fruit markets, etc.

In zone A, the artisans like blacksmith, carpenter and barber, and unskilled labour from other castes offer their labour for various non-farm casual jobs. This supply of labour in zone A seems more appreciable than that in agriculture sec-

tor of the same. In zone B, non-farm casual employment is remarkable for potter, shopkeeper, oil extractor and non-agricultural labour groups. Finally, in zone C, these activities are more relevant for shopkeeper, blacksmith-carpenter and non-agricultural labourers.

#### *Livestock Enterprise*

Livestock enterprise plays an important role in providing income and employment to various occupational groups of landless households. These people generally keep the milk producing stock and their children provide feed for the animals either by grazing them in the open fields after the crop harvest or by collecting weeds from the crop fields.

Livestock keeping is practised by most of the occupational groups in various regions. However, the number of livestock held by various groups in zone A seems highest of all the regions. This is mainly due to the availability of grazing land in the hilly sites of the region. However, the lack of green fodder and grass results into the lower production of milk and less income earned. Although in zone B free land is not available for the stock grazing, substantial quantities of green forage in the form of fodder and crop weeds are available. Hence, milk production in zone B and thus income from livestock is quite high. To some extent, this is also true for zone C as well.

#### **3.2.4 Rural Wage Structure**

In the preceding sections, we observed that the rural workforce is composed of a number of socio-economic occupational groups. The discussion presented in this section relates to the wage rates received by various occupational groups from different activities performed. Rural wage rates are generally determined by a variety of socio-economic, institutional and seasonal factors.

The village artisans employed under the institution of *seyp* system generally receive kind payments for the traditional/customary services rendered by them. These payments were observed to exhibit considerable variations across the regions studied and among the occupational groups within a particular region. The factors determining such payments within a region may include the number of bullock pairs (zone B), area operated (zone C) and total crop output (zone A). In order to avoid the interpretational problems and with a view to provide zonal comparisons, we estimated the rate of payments on the basis of households served. The field survey results showing average receipts of traditional *kamees* per household served in different regions are arranged in Table 3.13. The common artisans including blacksmith, carpenter and barber received about 1.0 to 1.5 maunds of wheat per annum per household served in different regions of the province. The blacksmith-carpenter, performing the dual jobs of carpenter and blacksmith, earned more than 1.5 maunds of wheat per household. In addition to it, the artisans of zone B earned 0.8 to about 1.4 maunds of paddy rice per household, those of zone C obtained 0.25 to 0.5 maunds of maize corn, and those of zone A received about 4 to 6 kilogrammes of groundnut per household. The other minor payments in the irrigated regions (B & C) included gur (native

sugar) and cotton. Furthermore, they get fodder for their livestock from their clientele for about 4 to 6 times per pair of bullocks in a season. For social *kamees* like watchman, priest and mirasi, although data is not provided in Table 3.13, kind wage rates are about half of those accruing to the above mentioned artisans. Demand for the services of potter, cobbler, tailor and washerman, as mentioned earlier, have become less indispensable due to the penetration of market economy and the availability of their customary services at commercial level. Hence reward for their services are related either to the crop output or the magnitude of work performed. Finally, regional average of per household kind payments reveal that wheat payments in zone B turned out to be the highest among that in all the regions. Further, the artisans of zone B received one maund of paddy (having a value of Rs. 90) as compared with the meagre quantities of groundnut and maize in zone A and C respectively. This is indeed reflection of the influences of the level of commercialization in zone B.

The wage contracts for employing labour in agriculture depends on the productive capability of the employer and the wage rates prevailing in the surrounding farm sector and non-farm activities. Among our study regions, permanent labourers were generally employed in zones B and C. In zone A, only one respondent reported his permanent employment in agriculture. The average wage payments for a permanent employee as reported amounted to about 21 and 28 maunds of wheat in zone B and C, respectively. In addition, about 14 maunds of paddy in zone B and 2 maunds of maize in zone C are given to the permanent farm labourers. Further, these employees receive food, clothing, shoes and bed etc. which value around Rs. 600 to 800 per annum. This observation, in fact, lends support to the argument of increase in the real rural wage rates in response to tightening of labour market. This, in turn, implies a contraction in the supply of, at least, permanent farm labour.<sup>1</sup>

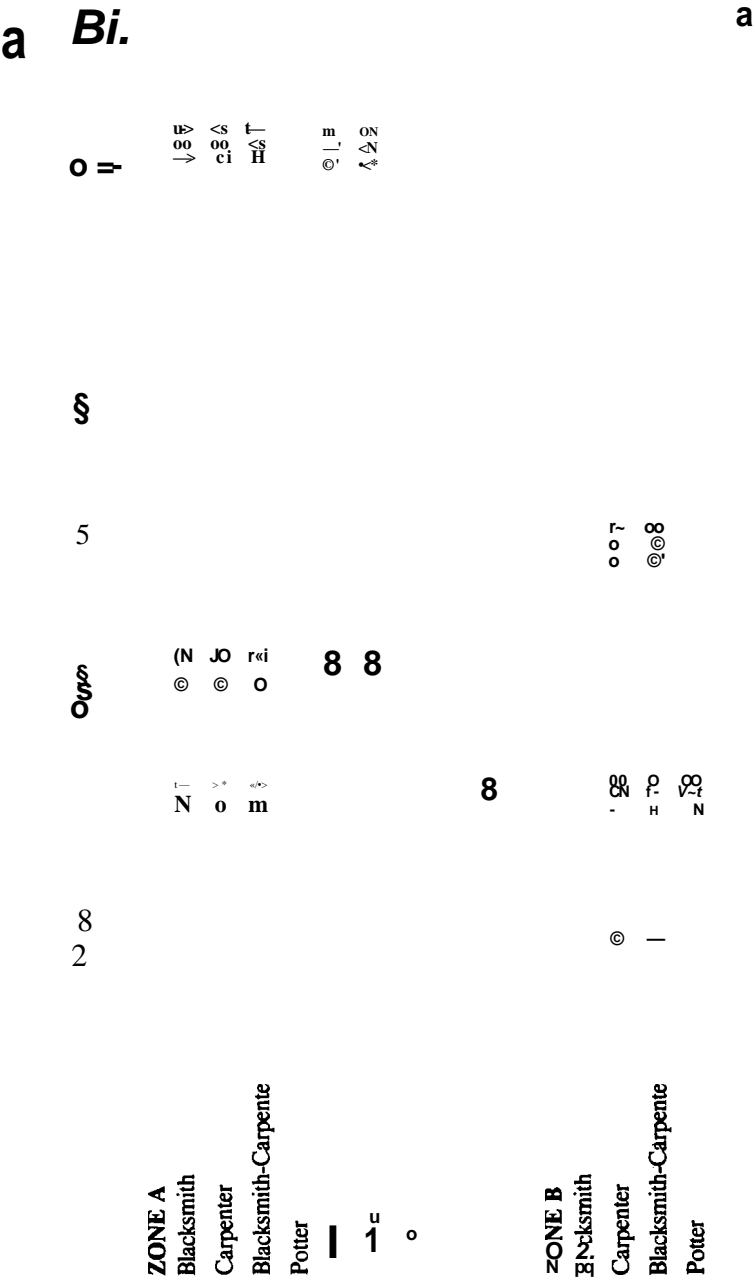
### 3.3 Labour in Crop Production

This section is an attempt to describe the use of hired labour employed for farm-related activities in different crop regions of Punjab. Hired labour is employed either on annual contract basis or temporarily for the seasonal operations, like planting and harvesting of a particular crop. Furthermore, the operation-wise use of family as well as hired labour will be examined. Attention is also given to explain the prevailing wage structure both for the permanent and temporarily hired labour.

#### 3.3.1 Permanent Hired Labour

The sample farm households from different regions revealed the use of labour employed under relatively longer (about one year) contracts. This type of labour, including adults and children, are employed mainly for running the daily crop

1. Chaudhry, M.G. (1981), *Rural Employment in Pakistan: Magnitude and Some Relevant Strategies*, Pakistan Institute of Development Economics, Islamabad.



Region and Occupational Group	Rice	Wheat	Groundnut	Gur	Cotton	Maize	Other (Rs.)	Cash (Rs.)
ZONE B (Contd.)								
Barber	0.72	1.14	1	0.02	1	1	2.22	5.56
Cobbler	0.78	0.83	1		1	1	16.63	
Tailor	0.77	1.00	1		1	1		
Washerman			1		1	1		
—	1.01	1.35	1	0.04	1	1	3.15	3.15
ZONE C								
Blacksmith	1	1.17	1	0.07	0.00	0.00	1	10.00
Carpenter	1	1.80	1	0.00	0.00	0.00	1	10.00
Blacksmith-Carpenter	1	1.63	1	0.08	0.00	0.00	1	9.62
Potter	1		1	0.00	0.00	0.00	1	7.32
Barber	1	0.94	1	0.03	0.00	0.00	1	
Cobbler	1		1	0.00	0.00	0.00	1	
Tailor	1		1	0.00	0.00	0.00	1	
Washerman	1		1	0.00	0.00	0.00	1	
Regional Average	1	0.88 1.09	1	0.06	0.02	0.28	1	7.12

and livestock business. In addition, skilled persons like tractor drivers and tubewell mechanics were reported to have been employed in zone B. Female workers, on part time basis, were also employed to assist the household women in their domestic work like washing and cleaning and disposal of dung from livestock sheds. The survey results are presented in Table 3.14.

The greatest number of farm workers per farm were reported to have been employed in zone B and smallest number of workers employed in zone A. Table 3.14 further reveals that the number of workers employed per farm exhibit an increasing tendency with an increase in the average size of farm. In addition to general farm workers, the large farmers in zone B employed persons for driving tractors. In zone B, mechanics were also employed by the farmers owning tubewell for supplementing their share of canal water. Such mechanics are contracted jointly by a group of farmers generally for rice season (June to November) and are called upon to help when a fault arises with the tubewell machinery.

Wage rates are paid both in cash and kind. Commodity payments, especially to male adults working in crop related activities, exhibit variations across different crop regions studied. In zone A, only 20 maunds (40 kgs.) of wheat are paid per annum to an average worker. On the other hand, about 40 maunds of wheat and 0.4 maunds of *gur* are paid to an adult farm worker in zone C. In zone B, a farm worker is given 22 maunds of wheat and about 17 maunds of rice per annum. In addition to these commodity payments, the farm workers received food, clothing and certain amount of interest-free loan. The values of such commodity payments for different types of farm workers are shown in Table 3.15.

Table 3.15 evidently indicates that the annual wage rates per worker, for all types of workers, were found to be the highest in zone B. These survey results are in line with those presented for sample landless households in section 3.2.3 and support the proposition that wage rates in a commercially dominated region are comparatively higher than those in the remaining regions. Further, it may be pointed out that annual estimated wage rate for a tubewell mechanic was twice that of an average agricultural worker. Similarly, annual wages of a tractor driver was also higher than that of a general worker. These observations imply that the skilled rural labour enjoys considerably higher wage rates as compared to the general farm workers. Furthermore, rice-based agriculture in zone B offers better wage employment in farm work as compared to the remaining regions of Punjab.

### **3.3.2 Operation-wise Labour Use and Wage Rates for Hired Labour**

Labour input used per cropped acre exhibit considerable variation across different regions of Punjab. These regional variations are attributed to differences in resource endowment, like irrigation infrastructure, cropping pattern and cropping intensity practised by farmers. In addition, there exist variations in labour input, especially that of hired labour, used per acre within a particular region. Such variations may primarily be explained by the level of farm mechanization, sea-



Table 10  
Male Adults for

Region	Size	Male Adults for				Female (Domestic)	Children (Groups)
		Crops	Tractor driving	Tubewell Mechanic	Total		
A	Small		1	1		0.02	0.08
	Medium		1	1		0.10	
	Large	0.30	1	1	0.30		
	Average	0.04	1	1	0.04	0.02	0.03
B	Small	0.00		0.03	0.10	0.00	0.00
	Medium	0.00		0.01	0.31	0.00	0.00
	Large	1.11	0.20	0.00	1.33	0.00	0.00
	Average	0.46	0.06	0.01	0.53	0.04	0.05
C	Small	0.00	1	,	0.00	0.00	0.00
	Medium	0.00	1	,	0.00	0.00	0.00
	Large	1.00	1	,	1.00	0.00	0.00
	Average	0.25	1	1	0.23	0.04	0.04

sonality in crop production and certain institutional factors like the pattern of land distribution. Generally, the ownership of farm machinery is associated with the farm size commanded, and the level of farm mechanization, in turn, determines labour input applied per acre of a crop. The above factors are also likely to influence wage rates received by hired workers. The seasonal variations in demand for hired labour have important bearing on rural wage rates. These issues will be discussed in greater detail in the subsequent sections with reference to crops grown in different regions of Punjab.

**TABLE 3.15**  
**Wage Payments Per Labour Unit in Various Farm Activities**  
**in Different Regions of Punjab.**

*(Rs. per labour unit)*

Crop	Male Adults			Female	
	Agriculture	Tractor Driver	Tubewell Mechanic	Adults	Children
				Domestic	Agriculture
A	1883			1573	636
B	4030	5614	8091	2674	2259
C	3471			2030	1734

The commodity payments were converted into their monetary value using the prices; wheat = Rs. 60 per maund, rice = Rs. 90 per maund, gur = Rs. 160 per maund.

Rice is characterized by a very high labour absorptive capacity and is predominantly grown in zone B. The distributions of labour input used by sample farmers for various operations of rice is given in Table 3.16. For tillage as well as seed-bed preparation, the greatest number of labour hours per acre were found on the medium sized farms. The labour input used by small and large farmers appeared to be half of that used by medium farmers. Indeed, such a huge variation in labour input for tilling land may be attributed to the greater use of tractor on small and large sized farms. An important observation noted from the results relates to the use of hired labour. As seen from the table about two-thirds of total labour input (183 man hours) used for rice is contributed by hired labour. It is seen from the table that hired labour is invariably used by all three categories of sample farmers for all the crop operations. This is particularly true for planting and harvesting operations of the crop. For most of the crop operations, the percentage of hired labour in total labour input turned out to be the highest on large sized farms. For planting and harvesting operations, hired labour accounted for nearly all of total labour inputs. For operations like transplanting, weeding and harvesting, labour is generally hired on casual basis. Wages for harvesting and threshing are paid in kind, while wage payments for the remaining operations are given in cash. For the remaining crop operations, like tillage, pul-

ling of seedlings, irrigation and fertilizer application, family and permanent hired labour are engaged. The major operations accounting for a relatively larger proportion of total labour input include nursery transplanting, irrigation and harvesting and threshing. The female participation was generally observed in transplanting and harvesting-threshing operations.

**TABLE 3.16**  
**Labour Use on Sample Farms for Rice in Zone B**

(Hours per acre)

Crop Operation	Small	Medium	Large	All
Tillage and Seedbed Preparations	14.42 <sup>a</sup> (34.5)	29.75 (17.8)	14.80 (37.9)	18.98 (28.9)
Nursery Pulling	12.35 (33.9)	15.95 (31.2)	12.57 (56.1)	13.59 (45.8)
Irrigation	38.20 (9.2)	39.50 (18.0)	42.90 (81.7)	41.50 (47.0)
Application of Fertilizer and FYM	9.2 (56.6)	7.8 (69.2)	5.6 (73.2)	6.4 (70.3)
Weeding	12.61 (9.1)	19.15 (37.3)	8.19 (42.9)	11.6 (37.0)
Harvesting and Threshing	44.72 (68.7)	55.15 (88.5)	55.56 (97.3)	53.53 (92.6)
Transporting	4.13 (51.6)	4.22 (51.9)	3.34 (31.1)	3.64 (40.1)
Total	166.72 (46.3)	194.47 (57.1)	177.0 (76.8)	182.7 (67.1)

Note: <sup>a</sup> Figures in parentheses indicate hired labour hours as a percentage of total labour input.

Per acre labour expenses for various crop operations as incurred by farmers are shown in Table 3.17. Expenses incurred per acre by sample land operators reveal an increasing trend with the size of operational holding for certain crop operations. This, as indicated above, is explained by an increase in the hired labour input from small to a large farm size. The average wage rate per man day is determined by total wages received and number of man days worked. These wage rates exhibited considerable variation across various operations and relatively less variation across different size groups for a particular operation. Transport function is generally performed by potters with their donkeys, hence transport wages also include the donkey's contribution to work. Average daily wage rates vary from Rs. 13 to Rs. 21' per man unit for various operations. Wages for harvesting and threshing are paid in kind (paddy) and rank the highest among those for various operations.

1. Wage for harvesting and threshing was converted into its monetary value @ Rs. 15 per kg. of dry paddy.

**TABLE 3.17**  
**Wages Paid By Sample Farms to Casual Hired Labour for Rice Crop Operations**  
**(Zone B)**

(Rs/Kgs. per acre)

Size Group	Nursery Pulling (Rs.)	Transplanting (Rs.)	Weeding (Rs.)	Harvesting and Threshing (Kgs.)	Transporting (Kgs.)
Small	11.28 (27.60) <sup>a</sup>	40.39 (13.12)	2.35 (20.66)	70.14 (18.27)	11.59 (43.53)
Medium	10.17 (21.00)	47.89 (12.77)	2.71 (17.52)	82.53 (13.52)	10.67 (38.96)
Large	9.84 (66.56)	52.44 (12.64)	3.87 (17.52)	93.09 (13.76)	5.94 (45.68)
All	9.93 (18.16)	50.08 (12.71)	6.21 (17.52)	88.08 (14.24)	7.78 (42.63)

Figures in parentheses indicate wages per day (8 hours) paid to an average agricultural worker for different crop operations.

### *Sugarcane*

Sugarcane is a major cash crop of zone C. This crop remains in the field year around, and thus allows farmers to adjust their time for various operations. As shown in Table 3.18, the number of labour hours used for various operations were found to be the highest on small farms and the lowest on large sized farms. However, the percentage of labour input contributed by hired labour turned out to be the highest on larger farms. Further, it may be pointed out that mostly it is permanent hired labour which is employed for sugarcane operations. The casual hired labour is primarily employed for harvesting or *gur* making operations. Casual labour employed for *gur* making is paid in kind valued at Rs. 10 to 15 per day. On the whole, hired labour accounts for about 36 and 16 per cent of total labour input in zones B and C, respectively.

The total labour input required per acre of sugarcane was found to be more than twice of that used for rice crop. The salient components of labour input in sugarcane are land tillage, weeding, irrigation, harvesting and *gur* making. The largest recipients of labour input are indeed harvesting and *gur* making (see Table 3.18). Finally, labour is also employed on exchange basis for various operations of sugarcane. The important operations involving the use of exchange labour are sowing and harvesting.

### *Wheat*

Wheat is the major foodgrain crop and it is grown throughout the province. The major labour demanding operations for wheat include land tillage, harvesting

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## Hired Labour and Rural Labour Markets

Crop	Zone A -			Zone B			Zone C		
	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large
Operation	1	2	3	4	5	6	7	8	9
Sowing	1	2	3	4	5	6	7	8	9
Irrigation	1	2	3	4	5	6	7	8	9
Harvesting	1	2	3	4	5	6	7	8	9
Threshing	1	2	3	4	5	6	7	8	9
Transportation	1	2	3	4	5	6	7	8	9
Total	1	2	3	4	5	6	7	8	9

and threshing (see Table 3.19). The latter two operations are performed with the help" of hired labour, as harvesting has to be done within two weeks of its maturity in order to avoid the crop damage. The survey results indicate that about 20 to 75 per cent of total labour input used for wheat harvesting in zones A and B comes from hired labour. For zone A, a relatively smaller input of hired labour is explained by the existence of labour exchange system among the farmers for harvesting and threshing of wheat. During the wheat harvest period, which generally falls in late April and May, hired workers on an average receive about 20 kgs. of wheat (amounting to about Rs. 30) per day.

#### *Groundnut Fodder and Maize*

The survey results concerning labour input used for groundnut indicate that digging of groundnut is the major activity requiring a considerable amount of hired labour input. Total labour requirement averages at about 194 hours per acre, of which sixty per cent is contributed by hired labour. Groundnut digging is generally done by women and children who are rewarded at a rate of Rs. 0.5 per kg. of groundnut obtained.

Fodder growing does not require a greater labour input. Land tillage and irrigation are the major operations requiring labour and account for more than 80 per cent of total labour input used. Total labour input for various operations (except harvesting) averaged at 19, 39 and 45 hours per acre on zones A, B and C respectively.

Maize crop serves dual purpose, i.e. for grain production and feeding its green stuff to the livestock. In zone C, maize crop is generally grown for grains production and the remaining green stuff is fed to the livestock.

The survey results regarding labour use for maize show that in zone B, use of labour is not remarkable, (28 hours per acre in which 14 per cent are hired labour) as the crop is grown for fodder purpose and various operations like weeding, cob-picking and threshing are automatically avoided. In zone C, a considerable quantity of labour input is used for manual weeding, cob-picking and threshing for separating grains from cobs (100 hours in which 13 per cent is hired labour). Cob-picking and threshing operations are generally done by female labour and wages are given in kind. Trend in the use of total labour input and the proportion of hired labour used with respect to the farm size operated was similar to that observed for rice and sugarcane crops. Finally, maize being a short duration crop requires a labour input which is considerably lower than that for rice and sugarcane discussed above.

#### **3.3.3 Factors Affecting the Demand for Hired Labour**

There are indeed several factors, many of which are also observed to be inter-related, which influence the demand for hired labour. This study does not intend to go into a description of all these factors, but since information on these have been collected at the primary level, a few details in tabular form are pres-

ented as an appendix to this section. These tables provide a snap-shot look into the patterns of land use, distribution of operational holdings according to irrigation mode, cropping and its intensity, application of fertilizers, HYV cultivation, tractorisation versus use of animal power, etc. (see Table III.1 to III.9). In this section, we attempt to provide a quantitative analysis of the factors influencing demand for hired labour on sample farms in Punjab. The demand functions are estimated for hired labour used in the crop-related activities. The equations estimated are based on actual labour input used during the crop year 1981-82, and not the participation of household members, to perform various crops operations. A total number of 291 observations relating to the farm households included in our study sample were used in the estimation process.

### *The Model*

According to the neoclassical economic theory, a firm's demand for a given input is functionally related to its own price, the prices of other inputs, both substitutes and complements, and certain other variables considered important in explaining the quantity demanded. In the context of rural labour, the important determinants of market demand for hired labour may include the wage rates for the alternative labour categories, prices of purchased inputs like fertilizer, farm mechanization and irrigation water used. Additional explanatory variables which could provide explanation of the quantity demanded may include cropping pattern, cropping intensity, farm size operated and regional variation in resource endowment. Among these variables, chemical fertilizer and irrigation are assumed to have complementary relationship with labour input. The use of labour input, either hired or family, is expected to have a positive relationship with the level of cropping pattern and cropping intensity. The ownership of tubewell, used to supplement the canal water supplies, is expected to be a complement and that of a tractor or the use of its rental services may be a substitute for the quantity of hired labour demanded by a farm operator.

In order to explain the relationship among different labour categories, we start with the general proposition that a farm labour primarily uses his own (family) labour to perform various agricultural operations. He employs labour (on casual or permanent basis) if the total quantity of labour required exceeds the supply of family labour due to the seasonal changes in demand for labour or prevalent resource conditions. Hence, the level of family labour input being used for farm operations determines the quantity of labour to be hired by a farm operator and not vice versa. On the other hand, exchange labour, which is mainly determined by the institutional set up prevalent in a rural community rather than an individual farmer, serves as a substitute for both family and hired labour. This implies that the decision to use various quantities of family and hired labour is made within a system of farm enterprise, while the exchange labour is determined by the conditions outside this system. Hence, the former two types of labour will enter as endogenous and the latter as an exogenous variable into the model on labour demand analysis.



The measurement of variables sorted out above also need due consideration for estimating parameters underlying the demand for labour used in crop-related activities. In this regard, while wage rates for hired labour are expected to vary, the prices of non-labour inputs are generally given and not expected to exhibit sufficient variation in the cross-sectional data for regression analysis. Further, prices for family and exchange labour are not explicitly given. Hence, physical quantities of these inputs, although they are not proper exogenous variables at the farm level, could substitute for the corresponding prices. Keeping in view these reservations, the market demand functions for hired labour may be specified as below:'

$$HL = f(W, FL, EL, CP, CI, FCS, QF, TWI, TRN, TWN, R_i, R_2) \quad (1)$$

- where
- HL = man units of hired labour input demanded;
  - FL = man units of family labour input used;
  - EL = man units of exchange labour input used'
  - W = wage rate for hired labour in rupees per adult male unit;
  - CP = cropping pattern (the percentage of labour intensive cash crops in total cropped area);
  - CI = cropping intensity;
  - FS = farm size operated;
  - QF = quantity of chemical fertilizer in kgs;
  - TWI = dummy variable for users of tubewell irrigation i.e. 1 for users and 0 otherwise;
  - TRN = numbnr of tractor units owned;
  - TWN = number of tractor units owned;
  - R<sub>i</sub> = regional dummy for region B, i.e. 1 for observations relating to region B and 0 otherwise;
  - R<sub>2</sub> = regional dummy for region C, i.e. for observations relating to region C and 0 otherwise; and
  - , + = expected signs.

The basic model given by the above equation is estimated in a linear form, both on per acre and per farm basis. However, the discussion of results presented in the next section is based on the estimates derived from the per acre formulations in order to highlight the significance of farm size in explaining the demand for hired labour.

### *Empirical Results*

A great deal of experimentation was done for picking up the relationship giving a better explanation of variation in the input of hired labour demanded by a farm. The results regarding the two selected equations derived on a per acre basis are given in Table 3.20.

1. The variables like, HL, FL, EL, W, QF, TRN and TWN used in equation (1) measured in their respective units, are expressed on per farm basis, unless indicated otherwise, and relate to the crop year 1981-82.

These results are used, together with the elasticity estimates developed at average quantities of different variable inputs from these equations, in the subsequent discussion on the market demand for hired labour in Punjab agriculture.

In our selected equation for hired labour, estimated coefficients on most of the explanatory variables have expected signs. Wage rate variable bears a negative sign, which is in line with the established assumptions underlying economic theory that quantity of a certain commodity or input demanded is inversely related to its own price. However, magnitude of the concerned coefficient, and its elasticity estimate, being extremely small and statistically insignificant, reveals that the demand for hired labour is inelastic with respect to the prevalent wage rate in the cross-sectional context. Indeed, a substantial proportion of our hired labour variable is comprised,^ casual hired labour employed for the seasonal operations. These operations are strictly time-bound and offer very little flexibility to the farm operators for adjusting their family labour to meet the seasonal demand for labour. Hence, the required quantity of labour have to be hired for performing these operations. The estimated coefficients on family and exchange labour also bear negative signs and are statistically significant at the five per cent level. The existence of negative signs is consistent with a substitution relationship of these variables with hired labour, i.e. a greater use of family and exchange labour leads to a smaller quantity of labour being purchased at the going wage rate. However, magnitudes of the concerned elasticity estimates indicate that a given change in the quantity of these variables leads to a proportionately less change in the quantity of hired labour demanded.

As seen from Table 3.20, coefficient estimates on the explanatory variables representing cropping pattern, cropping intensity, farm size, regional dummies, fertilizer use and farm mechanisation (tubewell and tractor) have positive signs. This indicates that an increase in the magnitude of such variables leads to a greater use of hired labour per acre and vice versa. Quantitatively, the concerned relationships, however, turned out to be inelastic. Coefficient of the variable (TRNA) representing the number of tractor units owned per acre, although insignificant at the ten per cent level, bears a sign inconsistent with the general expectations of inverse relationship between tractorization and demand for labour. The existence of positive and statistically significant co-efficients on QFA and TWNA lends support to the argument that green revolution technology involving the use of chemical fertilizer and irrigation technology, exerts a strong positive influence on the use of hired labour. A highly significant coefficient on cropping pattern implies that quantity of hired labour demanded is directly related to the proportion of labour intensive cash crops, like rice, sugarcane, maize and groundnut, in the total cropped acreage. Similarly, cropping intensity (CI) seems to be an important variable in explaining the variations in demand for hired labour. But its significance could not show up due to the presence of a strongly correlated variable, QFA. This was corrected by the inclusion of fertilizer price (PF)

**TABLE 3.20**  
**Regression Estimates for Hired Labour Per Acre on**  
**Sample Farms in Punjab.**

Variable <sup>a</sup>	Equation Number (1)	Equation Number (2)
W	-0.0000004 (1.36)	-0.0000004 (1.24)
FLA	-0.263 (5.65)**	-0.269 (5.70)***
ELA	-0.224 (2.09)**	-0.217 (2.00)**
CP	0.0432 (6.65)***	0.0509 (4.36)***
CI	0.005 (1.22)	0.0095 (2.56)**
FS	0.0002 (2.39)**	0.0002 (2.45)**
QFA	0.0002 (2.79)***	
PF	—	0.0005 (0.38)
TWI	0.007 (0.H)	0.002 (0.30)
TRNA	0.011 * (0.31)	0.0303 (0.82)
TWNA	0.068 (1.96)**	0.0747 (2.13)**
R.	0.020 (2.44)**	0.0236 (2.83)**
R <sub>2</sub>	0.011 (2.18)**	0.0163 (3.33)**
Constant	0.0006	-0.0056
R <sup>2</sup>	0.519	0.505
R <sup>2</sup> (adjusted)	0.498	0.484

*Note:*

- a. W = Wage rate; FA = Family labour input per acre; ELA = Exchange labour input per acre; CP = Cropping intensity; FS = Farm size operated; QFA = Quantity of fertilizer used per acre; PF = Price of fertilizer; TWI = Tubewell irrigation; TRNA = Number of tractors per acre; TWNA = Number of tubewells per acre; R, and R<sub>2</sub> = Regional dummies.
- b. Figures in parantheses are 't' values  
 \*\*\* Significant at one per cent level  
 \*\* Significant at five per cent level  
 \* Significant at ten per cent level
- c. Demand elasticities are calculated at the simple average of inputs involved.

variable instead of QFA, which is less correlated with CF. The new variable, though itself being statistically insignificant, led to a substantial improvement in the magnitude and significance of coefficient for CI (see equation 2 in Table 3.20).

The size of land holding (FS) being operated by a farmer holds a direct and significant relationship with demand for hired labour. This, indeed, supports the hypothesis that large farmers employ relatively greater quantity of hired labour per acre than the small-sized farms. Finally, the regional dummy variables (Rj and R2), expected to explain the regional variations and other resource endowment, are significant at the five per cent level. The relative magnitudes of the coefficient estimates indicate that labour demand function for zone B served by both canal and groundwater facilities, lies fairly above those for the remaining regions. This supports the argument that expansion in irrigation facilities tend to push up the level of hired labour employment through its effect on both cropping intensity and cropping pattern.

### 3.4 Conclusion

Most of the past village-based studies focussed their attention on land operating households, while the landless households accounting for a considerable proportion of rural population were excluded from the analysis. In this study, landless households along with farm households were included in the respondent sample picked up from different regions of Punjab.

The members of landless households included in the study sample were found engaged in a variety of income and employment *generating* activities both within and outside the village economy. Within a village, their supply of customary services and wages are governed by a traditional system called *seyp*, while wages for permanent and temporary labour hired to help in agricultural enterprise are mutually agreed upon between the worker and employer. This section of the rural community was seen to have undergone considerable changes in their work pattern, i.e. from traditional to (non-traditional and traditionally-based) commercial occupations. This tendency was particularly true for the skilled artisans and observed to be more predominant in a region (zone B) characterized by a well developed market system, and comparatively less prominent in the low growth region, zone A. These changes have led to the emergence of new occupational groups among landless people of the village community.

The emergence of new work pattern, combining both traditional and commercial activities, has important income and employment implications for rural landless households in different regions of Punjab. The traditional *seyp* work accounted for about one-third of total employment in zone A as compared with merely 9 per cent in zone B. The self-operated business based on the production of traditional goods of domestic use, provided about 18, 32 and 31 per cent of total employment in zones A, B and C, respectively. Among various crop regions

studied, zone B ranked the highest in the proportion of wage jobs provided by farm sector. The shares of non-farm jobs and livestock-related activities in total employment were found to be relatively higher in zones A and C. The percentage distribution of household income from different activities followed a pattern almost similar to that of total household employment. Among various activities, income earned per labour unit employed turned out to be the lowest for *seyp* work and the highest in non-farm jobs and self-operated business. This probably explains the declining share of *seyp* work in income and employment of landless households. There exists an appreciable demand for the traditional *seyp* services of skilled artisans like blacksmith, carpetner and barber in all the regions. However, those of cobbler, washerman, tailor, water-carrier, baker and *mirasi* have become comparatively less indispensable. Hence, they have shown an increased tendency to become self-employed or get engaged in commercial selling of their skilled services.

The farm household members were seen employed either in on-farm agricultural work or engaged in non-farm jobs. The number of member working on their own farm as a percentage of total number of household members employed was found to be the highest in zone B, characterized by, a progressive rice-based agriculture, while the proportion of total numbers employed off the farm was the greatest in zone A, having a poor resource endowment in its farm sector.

The greatest number of machinery items and attached implements per farm were reported by farmers in rice-based region, zone B. This was mainly related to the type of cropping pattern and crop rotation adopted. Indeed, rice crop requires a thorough land preparation, both in dry and wet conditions, and necessitates the use of a power driven land tiller. Further, rice is followed by wheat, and rice fields are too hard to be ploughed and prepared by bullocks. Hence, the use of tractor for a quicker land preparation becomes necessary.

The value of main crop output accounted for about 66 to 73 per cent and that of livestock output (mainly milk production) varied from 13 to 28 per cent of total farm income in different regions of Punjab. The level of both gross and net income per cropped acre turned out to be the highest in high growth region, zone C. The highest level of net income per farm was found in zone B. Also, the largest shares of hired labour and machinery (tubewell and tractor) in total cost of production were observed for zone B.

Hired labour employed for agricultural enterprise in Punjab is mainly of two types, i.e. permanent and temporary. The former is generally used for performing cultural operations, irrigating the fields, feeding livestock and certain other operations. The latter is used for peak season operations like planting, weeding, harvesting and threshing of crops. The greatest number of permanent labourers per farm were reported by respondents in zone B and the smallest in zone A. Further, within a crop region, size of operational holding showed a positive relationship with the number of permanent farm employees. Generally, a permanent

labourer received about 22 maunds of wheat and 17 maunds of rice in zone B, and 40 maunds of wheat in zone C. In addition to this, they get free food, clothing and accommodation with a farm family. In value terms, average wage rate was the highest in zone B.

The use of temporary labour was reported for planting, weeding, harvesting and threshing of rice in zone B, digging of groundnut in zone A and for harvesting of sugarcane and 'Gur' making in zone C. Further, harvesting and threshing of wheat was also done by temporary labour. The largest quantity of total labour input, i.e. 514 man hours per cropped acre, was used for sugarcane, while hired labour as a proportion of total labour input (67 per cent) was the highest for rice. Wages for temporary labour were generally paid in kind either on daily basis (harvesting and threshing of wheat) or some fixed proportion of total crop output (gur making in sugarcane and harvesting of rice). For certain operations, like weeding of rice and sugarcane, wages are paid in cash on daily basis. Finally, wages for temporary labour, measured in rupees per day, exhibited considerable variation for various operations of a crop in all the regions studied.

The study also attempted a quantitative analysis of factors determining the demand for the input of hired labour used in crop-related activities. The exercise reveals that the own-price elasticity estimates for hired labour turned out to be extremely small. This implies that the demand for hired labour behaves in an inelastic fashion with respect to change in wage rates. Indeed, a typical character of the crop operations, to be performed within a relatively shorter period of time, leads to the rigidity of demand for agricultural labour and thus necessitates the use of labour in adequate quantities at the prevalent wage rates. The family and exchange labour serve as a substitute for hired labour and tend to depress the demand for hired labour used in various crop operations. On the other hand, ownership of tubewell, tractor and its rental services, and exchange labour exert a negative influence on the demand for family labour. Cropping pattern (the proportion of labour intensive cash crops) and cropping intensity are shown to have strong positive influence on the use of both hired and family labour per acre, while a comparatively higher input of hired labour per acre is employed to work on the large sized farms. Further, ownership or use of supplemental tubewell water pushes up the demand for hired labour. Finally, the variation in resource endowment across different study zones, accounted for by the regional dummies, is an important factor explaining the demand for hired labour.

## Appendix Tables

TABLE 1111

## The Pattern of Land Use in Different Regions of Punjab

Region	Land Area (Acres) Per Household					Land Use Intensity <sup>3</sup> %
	Owned	Cultivated	Rented in	Rented out	Operated	
A	26.23	18.08	5.51	5.05	18.54 (2.5) <sup>b</sup>	68.93
B	13.25	12.69	3.13	1.06	14.76 (14.0)	95.77
C	5.59	5.51	2.11	0.16	7.46 (26.0)	98.57

$$\text{Land Use Intensity} = \frac{\text{Area cultivated}}{\text{Area owned}} \times 100$$

Figures in parentheses indicate the net rented-in area as a percentage of operated area.

TABLE 1112

## The Distribution of Operational Holding in Different Regions of Punjab

(Area in Acres)

Region	Area Commanded by				Total area
	Canal	Tubewell	Canal and	Rainfall	
A				18.53 (100)	18.53 (100)
B	0.93 (6.30)	0.75 (5.08)	13.01 (88.14)	0.07 (0.48)	14.76 (100)
C	3.43 (46.04)		4.02 (53.96)		7.45 (100)

**TABLE III3**  
**Cropping Pattern Adopted by Sample Farm Households in Different Regions of Punjab**  
*(Acres)*

Crop	Region		
	A	B	C
Rice	—	9.08 (37.6)	—
Sugarcane	—	0.24 (1.0)	1.77 (18.8)
Maize	—	0.12 (0.5)	1.25 (13.3)
Groundnut	4.19 (22.6) <sup>a</sup>		
Wheat	9.65 (52.0)	10.24 (42.4)	3.88 (41.2)
Fodder	3.26 (17.6)	4.03 (16.7)	1.96 (20.8)
Others	1.45 (7.8)	0.42 (1.7)	0.54 (5.8)
Total Cropped Average	18.55 (100.0)	24.13 (100.0)	9.41 (100.0)
Cropping Intensity (%)	100.0	163.5	126.3

Figures in parentheses indicate percentages of total cropped acreage.

**TABLE III4**  
**Cropped Area Fertilized in Different Regions of Punjab**  
*(Acres)*

Region	Crops							Total
	Rice	Sugarcane	Maize	Groundnut	Wheat	Fodders	Others	
A				1.52 (36.3)	3.29 (34.1)	0.90 (27.6)		5.71 (30.8)
B	8.76 (96.5) <sup>a</sup>	0.21 (87.5)	0.08 (66.7)		9.69 (94.6)	3.18 (78.9)	0.18 (42.9)	22.10 (91.6)
C		1.68 (95.0)	1.13 (90.4)		3.84 (99.0)	1.49 (76.0)	0.29 (53.7)	8.43 (89.6)

Figures in parentheses indicate the percentage of the cropped area treated by chemical fertilizer.



**TABLE 1115**  
**Chemical Fertilizer Used in Different Regions of Punjab**  
*(Nutrient Kgs./Cropped Acre)*

Region	Crops						Others
	Rice	Sugarcane	Maize	Groundnut	Wheat	Fodders	
A				10.7 (1.28)	6.9 (1.30)		
B	39.0 (2.04) <sup>a</sup>	38.5 (2.06)	24.6 (193)		43.0 (1.67)	19.5 (3.33)	19.9
C		54.2 (2.08)	34.0 (3.20)		48.1 (2.00)	23.4 (4.44)	26.3

Figures in parentheses indicate the ratio of nitrogen to phosphorous in fertilizer mix.

**TABLE 1116**  
**Area Under High Yielding Varieties in various Regions of Punjab**

*(Acres)*

Region	Crops			
	Rice	Sugarcane	Maize	Wheat
A				
B	0.65 (7.2) <sup>a</sup>	0.15 (62.5)	0.10 (83.3)	7.58 (74.0)
C		1.53 (86.4)	0.75 (60.0)	3.36 (86.6)

Figures in parentheses indicate the percentage of total cropped acreage.

**TABLE 1118**  
**Livestock Population on Sample Farms in Different Regions of Punjab**

*(Numbers)*

Region	Bullock		Cow	Buffalo	Cattle (1-3 years)	Goat	Sheep	Donkey	Poultry
	Per farm	Per acre							
A	1.20	0.06	2.19	0.34	2.34	2.19	1.21	0.47	2.74
B	1.40	0.09	0.94	3.66	1.60	0.63	0.32	0.42	2.66
C	2.21	0.29	0.29	2.30	1.14	1.52	0.47	0.15	8.13

On the basis of operational holding.

TABLE 1119  
Average Cost and Returns on Sample Farms in Different Regions of Punjab'  
(Rs. Per Cropped acre)

Items	Zone A	Zone B	Zone C
Gross Income			
Main Crop Output	500.7 (66.1) <sup>a</sup>	1239.3 (73.2)	1406.1 (67.5)
Crop by Products	58.6 (7.8)	152.4 (9.0)	93.8 (4.5)
Livestock Output	188.7 (24.9)	222.6 (13.2)	583.0 (28.0)
Hiring out Machinery Services	9.0 (1.2)	78.7 (4.6)	
Total	757.0 (100)	1693.0 (100)	2082.9 (100)
Cost of Production			
Seed and Fertilizer	79.0 (19.7)	187.1 (13.3)	296.2 (18.9)
Canal Irrigation		46.9 (3.3)	35.2 (2.2)
Purchase of Tubewell Water		2.6 (0.2)	6.6 (0.4)
Operating Cost of Machinery	77.1 (19.3)	361.3 (25.7)	49.6 (3.2)
Depreciation and Interest on Implements	29.8 (7.4)	61.9 (4.4)	117.6 (7.5)
Livestock Expenses	167.8 (41.9)	410.1 (29.2)	832.5 (53.2)
Hired Labour	34.9 (8.7)	291.4 (20.7)	145.7 (9.3)
Marketing Costs	11.9 (3.0)	44.9 (3.2)	82.3 (5.3)
Total	400.5 (100)	1406.2 (100)	1565.7 (100)
Net Income <sup>jo</sup>			
Farm Family			
(a) Per cropped acre	356.5	286.8	517.2
(b) Per farm	6613.1	6920.5	4866.8

(a) Figures in parantheses indicate the per cent share of a component in total cost and returns.

(b) Includes cash expenditures on fuel and lubricants, repair, depreciation and interest on the value of machinery (tractor and tubewell).

# The Structure of Employment Opportunities in Three Philippine Villages

*Germelmo M. Bautista*

## 4.1 Introduction

### 4.1.1 Objective of the Study

In agrarian societies characterized by constricted employment opportunities, high population growth rates, and a high concentration of the population in rural areas, it is imperative to focus scholarly attention on the nature and development of the rural labour market. Theoretically, labour markets, whether found in urban or rural places, presuppose the existence of production units requiring labour services to undertake production activities, individuals offering their services at a given wage rate, and a market clearing process through which the requirements of the first group are met by the second. In neoclassical theory, the wage rate performs the market clearing function. When the supply of labour is greater than demand at a particular rate, reductions in the wage rate will align supply with demand and increase employment such that equilibrium is attained. The interaction between the supply and demand for labour, therefore, determines the equilibrium wage rate and employment levels.

In developing countries like the Philippines, rural labour markets as conceived in economic theory do not fully operate. The category of wage as a means for securing labour does not characterize all production relations in these areas. There are at least three reasons which account for this: first, the seasonality of agriculture confines wage labour only to certain months of the year. Second, not all non-family labourers are paid in wages. Some are engaged in reciprocal, exchange relations with farmers while others receive payments which take the form of pre-requisites such as food in lieu of wages, implicit future services, or interest-free loans. Third, self-employment in agricultural or nonagricultural work and family

labour-based economic activities are among the significant sources of subsistence for many rural households. The prevalence of self-employment reflects either the low existing wage rate or the lack of employment opportunities.

In the absence of a fully developed rural labour market, the wage rate does not fulfill the functions ascribed to it in the neoclassical labour market model. Although it may be significant in attracting some of the self-employed to participate, the existing wage rate is immaterial to those who cannot be hired, given the limited employment opportunities. Labourers in dire financial need for employment do not react to wage reductions by withdrawing their labour services because the available employment opportunity is the only alternative.

In recent years, the development of agricultural innovations and institutions, as well as the establishment of industrial enterprises in some areas which used to be primarily agricultural, are alleged to have produced changes in the rural employment structure. In the Philippines, estimates based on the National Census and Statistics Office figures reveal that the percentage increase in wage and salaried employees in rural areas was a low 3.8 percent in the 1965-1969 period, compared to 28.2 percent in 1973-1977. On the other hand, there was a percentage decline in family labourers of 38.8 percent in 1973-1977, compared to an increase of almost 30 percent in 1965-1969. Presumably, the improvements in agricultural production and the presence of industries account for the change. While it may be the case that indeed hired employment has increased with changes in economic activities in the rural areas, there are hardly any studies which focuses on the determinants of employment opportunities. In general, the study addresses directly or indirectly the following issues:

1. The major factors which have contributed to the growth of hired labour in the rural sector;
2. The nature of rural labour markets in the Philippines;
3. The nature, magnitude, and determinants of demand for and supply of labour;
4. The impact of changes in agricultural technology and diversification in employment structure on hired employment;
5. The proportions of hired and family labour; and
6. The impact of market and nonmarket relations on the existence of the rural labour market.

This study argues that the nature and extent of employment opportunities in rural areas depend on the cropping pattern, the way agricultural production is organized, the techniques of production in agriculture, and the existing village labour arrangements in the sector. It is also dependent on the hired employment opportunities generated by the non-agricultural sector.

The cropping pattern or the mix of crops, indicated by the form of land utilization in a given agricultural area, is determined by the external market and the extent of control the owner exerts over land use. By deciding the pattern of land

use, landowners specify the access of villages residents to the land, with the form of access defining the organization of production. Provision of direct access involves tenancy arrangements while indirect access implies an owner-administered farm estate. Employment or demand for labour originates from both the tenanted and privately owned farms. The extent of employment opportunities generated by these farms, however, depends on the specific crops produced (with its implied gestation period and seasonal labour requirements) and on the production techniques utilized in these farms.

The type of labour arrangement within agriculture has the potential of absorbing unemployed workers or restricting their participation. The labour arrangement, which consists of an informal contract between landholders and workers over the payments and duration of employment, usually emerges in response to changes in farm techniques and workers over the payments and duration of employment, and cropping patterns in the context of limited non-agricultural employment opportunities. To illustrate the possible effects of the labour arrangement on employment, a situation which forces workers to offer free services in exchange for the right to be part of a group of harvesters systematically excludes other members of the community from the employment benefits of the once open-to-labour harvest arrangement.

In the non-agricultural sector, the existence and expansion of non-agricultural activities in the rural areas, both large scale and small scale, significantly affect the range of choices open to farm households, as well as the combination of activities to which households can allocate the labour of their members. The extent and diversity of non-agricultural employment available within the village and its environs indicate the relative dependence of village labourers on a limited, localized 'labour market' or on an impersonal formal market.

#### **4.1.2 Selection of the Sample Areas**

Since this study attempts to understand the nature and determinants of hired employment in rural areas, three villages were purposively chosen, with different cropping patterns, organizations of production including tenure, levels of agricultural productivity, labour arrangements, and degrees of proximity to non-agricultural sources of employment:

*Area 1:* A rice monoculture area in Laguna, where land reform has been implemented (i.e. former share tenants have been transformed into lessees or amortizing owners) with a high level of agricultural productivity and a large scale textile factory in its boundary.

*Area 2:* A rice and sugar producing area in Leyte, with hardly any land reform implementation (i.e., peasants are share tenants), a relatively lower level- of agricultural productivity and without any industrial site close to it.

*Area 3:* A sugar producing area in Negros Occidental, dominated by a hacienda or large estate complex to this day, with the lowest level of

agricultural productivity in the production of subsistence rice for consumption compared to the other two areas, and without any industrial site close to it.

Agricultural productivity in this study is indicated by the average yield per hectare and the extent of use of modern agricultural inputs. Since the three villages differ along the variables noted as significant structural determinants of employment opportunities, the data on hired employment in these areas can suggest the relative effects, in more qualitative than quantitative terms, of the combination of these variables.

#### **4.1.3 Selection of the Sample Households**

Since the study is intended to explore the impact of several factors on employment rather than to estimate the magnitude of hired workers from the sample, an equivalent number of sample households in each village were selected. Detailed interviews of the households were conducted at two time periods, in early September, 1982 and during October to November 1982. To be able to draw a comprehensive picture of the hired labour market in each area, about half of the sample households were chosen from farm holders and the other half from landless hired workers.

The total number of households interviewed in each area were 37 in Area 1, 40 in Area 2, and 43 in Area 3. The households were chosen on the basis of a stratified random sampling design in Areas 2 and 3 except in Area 1 where the method of cluster sampling was employed.

#### **4.1.4 Plan of the Study**

This study consists of 7 Sections. Section 2 discusses the cropping pattern in each area and its impact on employment, Section 3 concentrates on the organization of production and Section 4 on the farm techniques which reflect the labour arrangements the impact of which is studied in Section 5, while Section 6 looks into the impact of non-agricultural employment opportunities. Finally, Section 7 concludes the study.

### **4.2 The Effect of Cropping Pattern on Hired Rural Employment**

#### **4.2.1 Past and Present Cropping Pattern**

Area 1 to 3 are villages or barrios located in three regions which reflect variations in historical experiences. Being the oldest settlement among the three, Area 1 was integrated to the commodity markets earlier than the other two. Located in a fertile agricultural region about 5 miles south of Manila, it was part of Hacienda de Calamba, an early friar estate in the 18th century. In the 19th century, it was a densely populated area supplying rice to Manila and sugar to the world market. Sugar cultivation, however, became less significant by the early 20th century as a result of the unstable external market in the 1880s, the ascent of Negros Occidental to the position of primary sugar producer, and the fragmen-

tation of the friar estate in 1903. After the depression in the late 1920s, village landowners were no longer responsive to favourable market prices for sugar. By the late 1960s, only 25 hectares were planted with sugarcane. This area dropped to 10 when the landowner sold 15 hectares to a textile manufacturing corporation in 1975. This integration of Area 1 to the commodity market since the early 20th century has been mainly through its paddy rice sector. Since 1975, however, 25 lessees and a resident owner have begun to plant commercial vegetables, e.g. watermelon and garlic in some rice plots, generating additional income during the dry season. Table 4.1 shows the pattern of land use in the three villages.

Area 3 and Area 2 were frontier areas which were opened only towards the late 19th and early 20th century. The cultivation of rice and sugar in the latter came at a later time relative to the former. Roads linking Area 3 to the town, the market and the sugar mill were constructed only in the 1930s. As a frontier area of the sugar-producing Negros province, the lands in Area 3 did not seem to have been extensively devoted to sugarcane in the early 1950s. The later expansion of sugar lands in the village was stimulated by the high world market price for sugar in the late 1950s and early 1970s and the increased quota for Philippine sugar sought by the USA after the 1962 embargo on Cuban sugar. The heyday of sugar production in both villages, however, ended after 1975 when sugar prices fell precipitously. As a result of the dip in prices, landowners in Area 3 either shifted some land to rice cultivation or left a substantial portion of hacienda lands idle. Thus, by 1982 the village produced two main crops. About 49 percent of total land area was devoted to sugar, 31 per cent to rice, and 15 per cent was intentionally uncultivated in the hope that the sugar price situation will improve.

As a result of the deterioration in the world sugar market, one major landowner in Area 2 went bankrupt and his 130-hectare property was consequently foreclosed by the bank in 1979. Appointing the village head as the land administrator, the bank allowed 109 hectares of the foreclosed property to be parcellized and cultivated to rice by some village residents. In response to the sharp decline in sugar prices, some landowners diversified to other crops and economic activities. One such owner intercropped cocoa on 2.5 hectares of his 27 hectare coconut farm and raised ipil-ipil and livestock in upland areas. At the time of the research, rice occupied a substantial proportion of the village's land area (62 per cent), while sugar was cultivated only in 14 per cent and coconut for copra production in 8 per cent of the land.

#### **4.2.2 Employment Opportunities in Different Cropping Regimes**

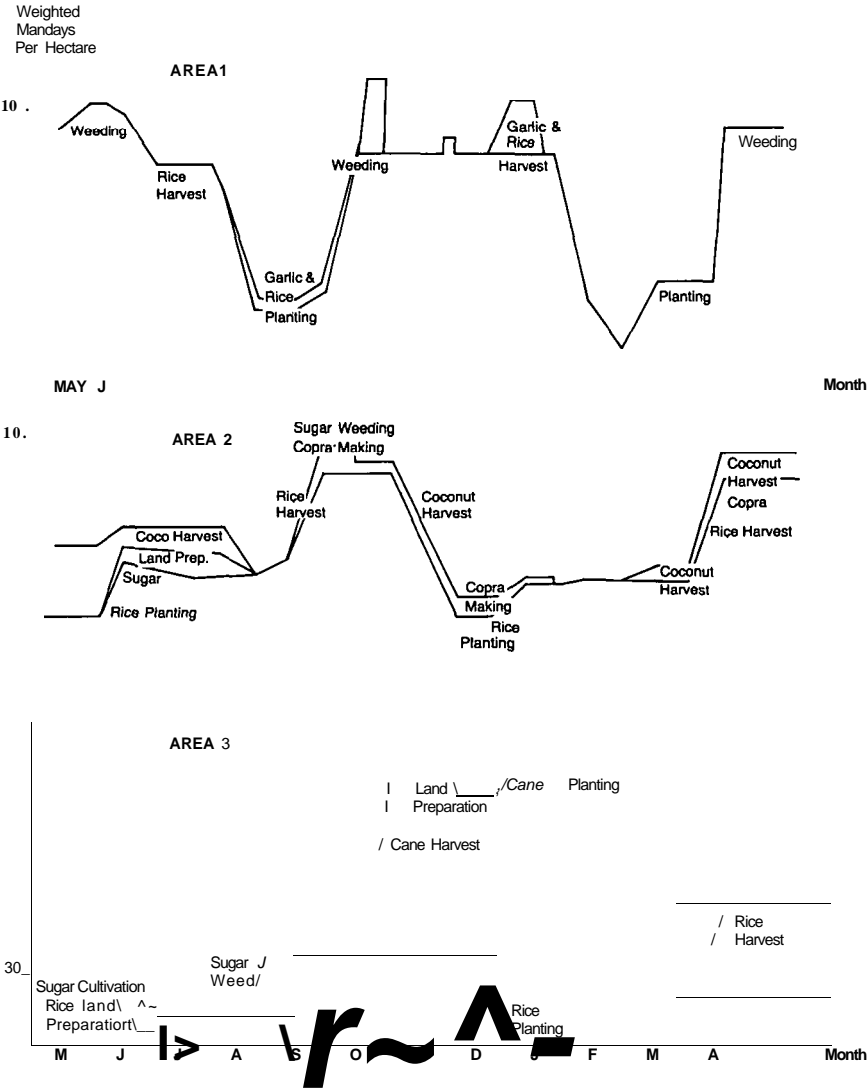
Employment opportunities in the context of limited non-agricultural jobs are mainly dependent on the nature of the cropping pattern which affects the overall level of employment opportunities as well as their seasonal availability. Table 4.2 quantifies the overall level of employment generated in five different types of cropping pattern, while Figure 1 gives a graphical representation of the yearly

Table 1. Hired Labour and Rural Labour Markets

Crop	Hired Labour		Rural Labour		Total	
	Area	Per cent	Area	Per cent	Area	Per cent
Wheat (Wheat)	100 (6.3)	100	100 (6.3)	100	100 (6.3)	100
Barley	100	100	100	100	100	100
Corn	1	1	1	1	1	1
Beans	1	1	1	1	1	1
Wheat and Barley	1	1	1	1	1	1
Wheat and Corn	1	1	1	1	1	1
Wheat and Beans	1	1	1	1	1	1
Wheat and other enterprise	1	1	1	1	1	1
Total	100	100	100	100	100	100



Figure 1: Illustrations of Employment Peaks on Monthly Farm Activities in the Three Villages



seasonal employment pattern associated with the crop combination in each village.

Within Area 3, a hectare of sugarland generates more employment than a hectare grown to rice. As implied in the proportion of hired to total mandays per hectare, all available employment in sugarcane production is filled by hired labourers. Given the high labour requirements of sugarcane cultivation, the demand for hired workers in a hectare cultivated to rice and sugar is of course higher than in a hectare planted only with rice.

A similar pattern occurs in Area 1. The total employment per hectare in rice and garlic farms is greater than employment in rice farms alone. However, the proportion of hired to total employment (69-86 per cent) depends on the amount of family labour expended in garlic plots. Since garlic production is a newly introduced commodity, its cultivation has increased employment opportunities for both family and hired labour. Unlike the two other barrios, the number of mandays on a hectare grown to a combination of rice, sugar and coconut in Area 2 is slightly less than the mandays on a palay hectare, reflecting the low demand for labour on coconut lands. However, they nearly equalize when hired labour mandays are considered. Specifically, the three-crop combination mobilizes extra mandays of hired labour relative to the purely rice crop pattern. Before the foreclosure of the sugar hacienda, the employment pattern in the village may not have been significantly different from that of Area 3.

A specific cropping pattern is associated not only with a certain level of work opportunities for hired labourers but also the seasonality of employment. In figure 1, the points corresponding to a month in each graph are based on the average mandays per hectare for the specific crop activity scheduled for that month, weighted by the proportion of cultivated land under the corresponding crop. The curves connecting the points, in turn, are based on a rough notion of inter-farm activities in the village.

The seasonal pattern of employment shows the slack and peak demand periods for labour, the duration of the slack, and the simultaneous farm activities of different crops within a village. The predominance and the state of rice agriculture in Area 1 enables its cropping pattern to provide the greatest level of employment opportunities among the three case villages. The technical conditions of rice farming in the village and cultural practices of its cultivators enable the labour intensive weeding activity to be undertaken three times a year. Also, on certain periods the practice of weeding simultaneously coincides with harvesting on other village farms. Harvesting is the most labour intensive farm activity.

The rice farms of Area 3, in contrast, provide the least employment opportunities among the case villages because of the predominance of sugar and the poor technical conditions of rice agriculture in the village. With its current cropping pattern, a substantial portion of employment opportunities is concentrated during the cane-cutting and loading season (October to March). Before 1976 when a greater proportion of village lands was devoted to sugarcane, the con-

Cropping Pattern	Total Employment Per Hectare			Hired Employment Per Hectare			% of Hired Employment to Total		
	Area 3	Area 2	Area 1	Area 3	Area 2	Area 1	Area 3	Area 2	Area 1
Rice	55	80	231	0	2	192	0	£	83
Sugar (.5 ha. under Rattoon)	50	1		50	1		0	1	
Rice (.4 ha.) & Sugar (.6 ha.)	50	1		50	1		8	1	
Rice (.8 ha.) & Garlic (.2 ha.)	—	1	253-263	1	1	175-227	1	1	69-86
Rice (.7 ha.)	—	£		1	8		1	8	
Sugar (.2 ha.) & Coconut (.1 ha.)	—	£		1	m		1	8	

centration of farm activity during the cane harvesting season was more acute. When cane harvesting coincides with palay reaping and planting on rice farms within the hacienda, whether in the past or at present, landless labourers cannot join cane harvesting groups and engage in the more remunerative tasks of rice production at the same time.

The slack in employment in Area 1 takes place only in two months within the year. In Area 3, the slack time consists of five months. Area 2, on the other hand, which is in between the two other barrios in rice production has less slack time than Area 3. The combination of rice with secondary crops like coconut and sugar increases the seasonal employment and reduces the level of seasonal unemployment during slack periods.

Certain employment implications can be drawn from the seasonal employment pattern of the sample households. The simultaneous occurrence of activities like weeding in some farms and harvesting in others partly sets the limit on the number of harvesting contracts a labourer in Area 1 can secure. In Area 3, a labourer can raise his employment chances by participating in the three-crop pattern. However, the scale of coconut and sugar production and the technical conditions of rice production in the village can only mobilize a very small segment of landless labourers. In Area 3, on the other hand, the status of the farm household partly determines the extent of its involvement in the villages cropping pattern. Household heads with access to rice lands within the hacienda are self-employed during the slump periods of sugar cultivation (May to August) and while they are hired to plough the cane fields in February, their households members engage in palay harvesting. Landless labourers, on the other hand, must choose between palay transplanting and cane harvesting in October, but are restricted only to palay harvesting from March to April. The employment options of landless households in the area are therefore, much narrower compared to those of households with access to land.

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The distribution of employment opportunities cannot be directly explained by the cropping and seasonal employment pattern. The above example cites the status of the household as a factor affecting the distribution of employment opportunities in agriculture. Other factors are the organization of production, level of agricultural productivity and the labour arrangement which will be discussed in subsequent chapters.

## 4.3 The Effects of the Organization of Production on Hired Rural Employment

### 4.3.1 The Organization of Production in the Three Villages

In Area 1, tenanted holdings developed both to rice and sugar cultivation had been the main production units since the formation of the Spanish friar estate which incorporated the area. The fragmentation of this estate into a system of small tenant farms associated with different landowners was formalized when the

Philippine Commission sold estate parcels in 1904 to non-cultivating leaseholders. The land transfer was the response of the colonial authorities to the late 19th century conflict between the leaseholders and friar estate owners who were demanding higher rents (at a time when the former was most vulnerable to the sharp decline in sugar prices). Since most of the non-cultivating buyers had share tenants working on their land, the promulgation of the Land Reform Code of 1963 consequently converted these share tenants into lessees. Cultivating an average of less than 2 hectares, lessees currently predominate in the village. The demand for hired labourers originate from the lessees.

There are only two resident rice farm owners in Area 1, holding 7.5 hectares. Under land reform, rice lands cannot be sold legally. Although informal and illegal exchanges of cultivating rights have been, noted in other areas, as far as the barrio is concerned, the legal code has placed constraints on the buying and selling of reformed lands. Only one of the two owners is known to have acquired the cultivating rights on two hectares of a heavily indebted lessee in the village.

For Area 2 and Area 3, the cultivation of sugarcane with the use of wage labourers continues to be undertaken within the hacienda organization. The process of land fragmentation in the former began only in 1979 after the bank foreclosed the 130-hectare hacienda. In Area 3, the five large sugar haciendas remain intact to this day.

Table 43 shows the type of production organization on non-rice lands, while Table 4.4 shows the number and tenure of rice farmholders and the area cultivated.

Except for a resident owner with a 12-hectare sugarland, cane production in Area 3 is a large scale operation performed in hacienda-administered farms. In the barrio's biggest hacienda, a foreman for planting, cultivating and harvesting, a warehouseman, two to four truck or tractor drivers are permanently hired. In the smaller ones, the farm administrator supervises the labour process himself or hires a contractual foreman. Members of the administrative staff receive wages on a monthly or weekly basis. Farm labourers are recruited from among the resident landless workers and rice farmer households in the area. These households provide an adequate supply of labourers for all sugar farm tasks. Thus, there is no need to advance wages for pre-harvests, which distinguishes Area 3 from some hacienda villages in Negros Occidental.

It is important to note that while most of the non-rice farm lands in Area 2 and Area 3 are devoted to commercial production there are segments of land on which some villagers have free access to plant food crops (like corn, vegetables, bananas, root crops) for direct household consumption. These peasant forms of production are, however, non-existent in Area 1, which may indicate the greater commercial value of land in the area and opportunities for subsistence are drawn mainly from participation in the labour market.



On the rice lands of Area 2 and Area 3, as shown in Table 4.4, lessees do not predominate in contrast to the situation in Area X. A substantial area is cultivated by tenants with temporary contracts, 'rotating' tenants and farm worker-tenants. These three tenure categories reflect the owner's object to safeguard his property from current or future land reform coverage.

Temporary rice tenants work in former sugarlands which had been converted to rice because of the unprofitability in sugar production. They shoulder all farm expenses and pay 25 per cent of the net harvest as rent in Area 3 or 35 per cent in Area 2. Their temporary status implies that the owner or administrator can recall back the parcel when the sugar market improves. 'Rotating' tenants, on the other hand, have the same arrangement as temporary tenants. However, the former have a more secure tenure than the latter because they cultivate hacienda land traditionally devoted to rice. However, the hacendero ensures that no specific parcel is identified with a particular 'rotating' tenant by transferring him from one parcel to another after a certain period.

Farm worker-tenants emerged in the 70s when the resident merchant-landowner in Area 3 designated some landless workers to work on his newly acquired property. Under this arrangement, he provides the farm inputs and cash payments for hired labourers to the farm worker-tenant who in turn receives 10 per cent of the harvest.

The existence of tenants with temporary contracts, 'rotating' tenants and farm worker-tenants within the large land estates of Area 2 and Area 3 reflects the response of estate administrators and owners to both the slump in the world sugar market and the subsistence needs of some landless estate residents. The appointed administrator over the foreclosed estate in Area 2 has sought to formalize a contract with the temporary tenants that they are mere wage labourers with no tenure rights over a piece of estate land. Conflict has ensued, however, when the administrator demanded the return of all distributed property, while the tenants refused to surrender their holdings. The latter argue that they are rightful tenants who, having paid an initial cash advance and 35 per cent of their annual net produce, cannot be evicted.

Conflict over land use has also been generated in Area 3 with the aftermath of the world sugar market decline. Landless villagers from a neighbouring *barrio* occupied a portion (about 20 hectares) of idle hacienda land which the former absentee owner sold to a resident merchant-landowner in Area 3. Converting them into rice parcels, these occupants began depositing *palay* (unhusked rice grains) rent to the bank in the name of the new owner to ensure their tenure. The owner refused, however, to accept these payments and brought legal charges on the 'squatters' in order to force them out of his property.

#### **4.3.2 The Effects of the Organization of Agricultural Production on Hired Employment**

The organization of agricultural production affects hired employment through the impact of tenure and farm size on the number and proportion of hired

Table 2. *Si u '8*

Tenure	AREA 1		AREA 2		AREA 3	
	No	Area	No	Area	No	Area
Resident Owner	01	S in	1	1	1	1
Lessee	a	H	70	1.2	rt	8
Share tenant	m		2	10	1	1
Tenant w/temporary contract	i	.	20	2.7	if	—
'Rotating' tenant	ii	.	1	1	2	m
Farm worker-tenant			1	1	8	m
Subtenant	i	.	3	1.3	1	1
Mixed (lessee, owner)	-	m	1	1	1	1
Non-resident tenant	i	.	10	10	1	—
Total	32	70.8	127	202.7	149	208.7

3 6 4



labour employed on the farm, and the role of different tenure groups in the local labour market'.

In all three villages, all the owned farms, which are also large than the tenanted rice landholdings, registered a high dependence on hired labour. Managed directly by the owners or by their administrators, the different farm activities in the large sugar and coconut-cocoa farms are carried out by hired workers. Similarly, the largest rice landowner-operator in the Area 1 sample depends more on hired labour, compared to the demand for hired labour by the tenant-operators. The resident rice landowners in Area 3, on the other hand, manages his farm parcels through a number of farm worker-tenants.

•While the role of large farm owners as employers in the 'village labour market' is unambiguous, the role of small rice tenant farmholders with relatively secure tenure and their working household members is not as definite across the three villages. In general, the rice lessess and share tenants in the three villages hire in labourers for certain paddy rice farm activities, and the number of hired labour employed per hectare is directly associated with farm size. However, together with their working household members, they also hire themselves out for certain rice and other crop activities. Aside from this dual role, these households also obtain part of their subsistence- or income through farm and nonfarm self-employment activities.

Table 4.5 illustrates the net position of the lessee and share tenant households in and out of the 'village labour market'. In the crop activities of Area 1, the lessees clearly function as employers of hired labour, while their counterparts in Area 2 and Area 3 play a net hiring-out position. However, since non-agricultural employment opportunities (discussed in section 4.6) are greater in Area 1 compared to 'the other two villages, members of the lessee household in the former have become wage labourers. This status as a result, greatly erodes the net hiring-in position of the lessees in the Area 1. Though limited, the availability of non-agricultural wage employment in Area 2 and 3 reinforces the net hiring-out position of these tenant farmholding households.

**TABLE 4.5**  
Average Mandays of Labour Hired-In or Hired-Out and  
Of Self-Employment in Different Activities

Tenure (Area)	CROP ACTIVITY			NON-AGRICULTURAL	
	Hire-In	Hire-Out	Self-Empl.	Hire-Out	Self-Empl.
Lessee (1)	264	20	125	239	90
Lessee (2)	178	184	219	150	60
Share Tenant (2)	120	197	162	55	71
Lessee (3)	119	269	230	37	47

Two other features can be noted from the table. First, the share tenants in Area 2 tend to participate more as hired workers in farm activities, compared to the lessees, while the latter can secure more non-agricultural wage employment. Second, the tenant households in Area 2 and Area 3 devote more of their time to agricultural self-employment opportunities, compared to the farmholding households in Area 1.

#### 4.4 The Effects of Farm Techniques and Agricultural Productivity on Hired Rural Employment

##### 4.4.1 Farm Technique and Agricultural Productivity

The technical condition of sugar production Area 2 and Area 3 are relatively lower than in other sugar growing villages. Although the new sugarcane variety tested and released by the Philippine Sugar Institute in 1977 is used in haciendas, the level of mechanization is low. In Area 2 and 3, the haciendas, except for one in the latter have no tractors for land preparation. Rice farmers in the areas, therefore, are employed with their carabaos to prepare the land. Aside from the low level of mechanization, the sucrose content of the harvested cane is not kept at its optimum level because the haciendas in both village are not linked to the mill by rail carts. Instead, trucks are used to transport the cane. Transporting cane by rail prevents certain losses because the cane enters the mill directly while trucks have to wait for a day or more.

Differences in farm techniques over time and across villages are more apparent in rice than in sugar production. A river dam built in the 19th century with a network of canals and later improved in 1970s by the government supplies the irrigation needs of farmers in Area 1. The new seeds were earlier used in this village than in Area 2 and Area 3, not only because of the more developed irrigation system in Area 1, but also because of its proximity to the International Rice Research Institute. While the new seeds have been planted in all three villages since the mid-70s, greater complementary farm inputs are used in Area 1. Rice cultivators in this village spent an average of 1660 (pesos) in 1981 while those of Area 2 and Area 3 disbursed only about 300 (pesos) for current inputs.

Cultural practices, specifically in seedlings preparation and weeding, also differ among the three villages. The availability of adequate and controllable irrigation facilities in Area 1 enables farmholders to employ the more efficient technique of seedling preparation. The prevalent method in the village is the so-called *dapag* technique, where seedlings sown on banana leaves or plastic sheets are allowed to germinate for a shorter period (a maximum of 11 days) compared to the more typical seedbed method. The *dapog* technique minimizes root damage since seedlings are not pulled from seedbeds and transplanted at a later time. Moreover, a greater number of tillers can grow. The short growth period makes staggered sowing possible, permitting the farmers to control the pace of farm activities and

to schedule the use of their plots. It is this last advantage which allows rice growers in Area 1 to have year-round use of the land, to reserve rice plots for garlic and other commercial crops during the dry season, and become more integrated to the product market.

Older farmers in Area 1 claim that their parents were already employing *dapog* at the close of the 19th century. At that time, water for the short planted seedlings was obtained and drained using self-constructed dikes which compartmentalised as many as 21 small plots of various sizes in a hectare of rice land. Since the shortness of the *dapog* seedlings facilitates weed growth, the method necessarily involves extensive weeding activity. The practice of *dapog* before the 20th century implies that the technique and the practice of weeding did not obviously commence with the introduction of the new seeds and commercial fertilizers in 1966. However, the need for weeding increased with the use of fertilizers which enhanced the growth of weeds.

In both Area 2 and Area 3, rice farmers employ the more typical method of seedling preparation. It involves the use of a small plot of land within the farm, where seedlings are made to germinate for 25 to 35 days. The seedlings are then pulled and transplanted on the other parts of the farm. During the dry season, the rice cultivators in Area 3 do not prepare any seedbed but merely broadcast the seeds on the farm because of inadequate water supply which the sugar haciendas also require.

The cultivator's technique for seedling preparation affects farm expenses and subsequent cultivation practices. The practice of direct seeding during the dry season in Area 3 is the cheapest technique, and it does not require manual weeding. The seedbed method, on the other hand, not only involves the employment of farm labourers to pull the seedlings, in contrast to the two other techniques, but also requires weeding. In both Area 1 and Area 2, weeding is performed manually and with the use of the rotary weeding equipment. In Area 3, the rotary weeder has not yet been introduced.

Farm techniques in harvesting and threshing have also undergone some recent changes. The use of the sickle was only introduced in 1970 in Area 3 while it had been available in the 19th century in Area 1. Before 1978, manual threshing was performed in all these villages. When the mechanical thresher was introduced in Area 1, it eliminated manual threshing and increased production turnover. In Area 2 and Area 3, on the other hand, the increasing use of machine has not fully displaced foot threshing.

#### **4.4.2 The Effect of Farm Technique and Agricultural Productivity On Hired Employment**

Table 4.6 shows the total and hired labour employed per hectare in the three villages. The employment levels in the different rice farm activities are similar to the findings of IRRI's panel study of sampled Laguna and Central Luzon farms.

Farm Activity	Area 1		Area 2		Area 3			
	Hired	Total	Hired	Total	Wet Season		Dry Season	
					Hired	Total	Hired	Total
Land Preparation	100	100	100	100	100	100	100	100
Repair, Clean Dikes	100	100	100	100	100	100	100	100
Seedling Preparation	100	100	100	100	100	100	100	100
Pulling of Seedlings	100	100	100	100	100	100	100	100
Planting	100	100	100	100	100	100	100	100
Direct Seedling, Replanting	100	100	100	100	100	100	100	100
Weeding	100	100	100	100	100	100	100	100
Fertilizer, Pesticide Application	100	100	100	100	100	100	100	100
Harvesting, Stacking	100	100	100	100	100	100	100	100
Threshing; Transport Supervision	100	100	100	100	100	100	100	100
TOTAL	800	990	800	889	800	89.5	800	66.1
% of Hired Labour (HL)	80		80		80		80	

The IRRI report indicates how differences between the two locations in farm practices and mechanization partly affected employment levels.

The rice farms in Area 1, the Laguna village, require more mandays of hired and total labour per hectare compared to the two Visayan villages. Two farm activities, namely weeding and harvesting, account for the relatively greater labour absorptive capacity of Area 1 ricefields. In turn, the higher labour requirements in these tasks stem from the direct employment effect or interaction of the following conditions: the applicability of the *dapog* seedling preparation technique in Area 1, the more extensive use of the new seed-fertilizer inputs in these farms, and their much higher yield per hectare. Moreover, the practice of *dapog* and its effect on the schedule of farm activities, together with the existing local market for commercial crops, allow the rice farmers in Area 1 to engage in a more labour-intensive cropping pattern.

However, the hired labour requirement in Area 1 has actually declined relative to the time when manual threshing prevailed in the barrio.

The rice farms in Area 2, on the other hand, have slightly more employment opportunities than those in Area 3. Compared to the farmers in the latter, Area 2, farmers can prepare seedlings through the seedbed method rather than engage in direct seeding in the dry season. Also, slightly more weeding activity is performed in Area 2, and the use of the mechanized thresher is not as widespread. As more current inputs are affordable in Area 2, as well as in Area 3, it may be expected that more mandays of labour will subsequently be employed.

## 4.5 The Effects of Labour Arrangements on Hired Employment

### 4.5.1 Labour Arrangements in the Three Villages

Production relations in agricultural activities involving hired workers are defined by a labour arrangement. Among all the hired farm labour arrangements, the labour contract dealing with the harvesting and threshing of palay has had the most significant effect on landless farm workers. It is a direct source of subsistence for workers because payments are made in terms of a fixed share of the staple crop. And in the last decade, demographic, technological and other changes in external demand have modified the work requirement and compensation of the traditional arrangement. No such change has occurred in agricultural products other than rice.

Before the 1960s, harvesting and manual threshing work in Area 1 were accessible to any villager and seasonal migrant. Under this traditional open-to-all arrangements, groups of 20 or more people would work on a parcel and earn one-sixth of the harvest. This arrangement originated at an earlier time when labour was relatively scarce, especially during the peak labour demand season of harvesting. By 1970, however, a new labour arrangement called *gama* was introduced, where workers who weeded an assigned plot for no immediate compensation had the exclusive rights to reap and manually thresh its harvest. *Gama* from 1970 onwards spread to other farms and subsequently prevailed in the barrio.

In other Philippine villages, whether involved in rice monoculture or not, the new harvesting labour arrangement also emerged. In general, the provision of unpaid labour services in a pre-harvesting activity, whether in pulling the seedlings, transplanting or weeding, enabled a worker to participate in the harvesting tasks. Possibly determined by the technical farm conditions and cultural practices within the villages, the specific pre-harvesting task associated to the new arrangement is a free service or an investment of labour to realize the same harvest share previously paid under the traditional arrangement. Moreover, the institutionalization of exclusive harvesting rights provides job security to those who have rendered prior free labour services but at the same time restricts opportunities for harvesting employment for those who are not part of the contract.

In Area 2 and Area 3, the new harvesting labour arrangement also exists, but its nature and scope differs from that of *gama*. In the former, the new arrangement called *prendes* provides that workers who give free transplanting or weeding services (with the former being more predominant in the village) have the harvesting and threshing privileges over the standing palay crop on a particular segment of the farm. *Prendes* workers are paid one-sixth of their harvest. In contrast to *gama*, *prendes* does not entail a one-to-one correspondence of a worker or his household to a particular plot because the required transplanting activity involves a group. Also, the *prendes* contract does not necessarily cover the entire rice farm of a holder. The harvesting responsibility over a segment of (or a number of plots within) the farm either may be reserved for the farmholder's household or may be performed under the traditional open-to-all arrangement.

In Area 3, on the other hand, two new harvesting labour arrangements have appeared, and they co-exist with the traditional open-to-all labour arrangement. Before the mid-70s, the *bahig* arrangement was introduced, wherein farm labourers involved in pulling and planting the seedlings have the exclusive right to reap and foot-thresh the harvest over the planted area. Similar to *prendes* in this respect, *bahig* however differs because the transplanting labourers continue to be paid. Wage payment is made under *bahig* because the planting period coincides with the intensive cane cutting and loading activities in the sugar haciendas. However, the collapse of the sugar market in 1976 and the consequent decline of cultivated sugar lands placed pressure on the new (*bahig*) arrangement and subsequently led to the transfer of *bahig* parcels back to the traditional open-to-all arrangement. Thus, unlike the other two barrios, the open-to-all harvesting arrangement has become more predominant in Area 3.

The accessibility to harvesting work which the traditional arrangement preserves was somewhat threatened in Area 3, however, by a more recent labour arrangement which came with the introduction of the mechanical thresher in 1978. Practised in farms operated by farm worker-tenants and lessees, this new arrangement called *pakyaw* shifted the harvesting tasks away from previous harvesting workers to the crew members of the threshing machine operator-owner. The lessees employing this arrangement have found it favourable because it has

relieved them of supervisory work and has ensured them of prompt threshing and an accurate share of the harvest. The farm worker-tenant, on the other hand, did not explicitly opt for *pakyaw*. Rather, the decision was made by the merchant-landowner who had bought the threshing machine. Like the rice estate owner of the early 20th century, the landowner sought to control his share of the farm produce.

#### 4.5.2 Labour Arrangements as Adjustment Mechanism

Among all the hired labour arrangements in agriculture, only the arrangement covering the harvesting and threshing of unhusked rice has undergone recent changes and reversals. These developments reflect the importance of these hired employment opportunities in providing a direct source of subsistence to landless rural workers. Faced with changes in rice farm techniques or an increasingly limited structure of employment opportunities which may stem from a declining external market, landless workers adapt to the disequilibrium condition by contracting for a labour arrangement which provides a source of subsistence or ensures them of secured employment. The establishment of a harvesting labour arrangement does not only emerge in a rice monocultural setting undergoing technical change, like Area 1. It also being adversely affected by the slump in external demand provides fewer employment opportunities. The experience of Area 3 typifies this situation.

##### (a) Area 3's *Bahig* Arrangement

By 1975, two harvesting labour arrangements co-existed in Area 3 — the prevailing open-to-all arrangement and *bahig*. Though the former made harvesting accessible to any villager, harvesters were unsatisfied with its one-seventh share payment which after being divided among many harvesters gave each worker very little palay to take home. To increase the amount of palay they could earn, the harvesters took three courses of action, *bahig* being the last. First, they shifted from the use of the small harvesting knife to the locally made sickle in order to reap more stalks from which their share was determined. However, as each harvester began to own and use a sickle, the harvesting activity was merely hastened and each one's absolute share did not increase. Second, the harvesters attempted to increase their *takehome* pay by leaving the foot-threshing activity (which delayed their participation in harvesting other farms) and concentrating on harvesting as many parcels as possible.

The third course of action was initiated by small groups of transplanting workers. They petitioned the tenant farmholders to grant the labourers, hired in Dulling and planting the seedlings, the exclusive right to harvest the planted area. Farmholders found the *bahig* arrangement acceptable at the onset even if the workers were paid for pulling and transplanting because labourers were readily available to reap and thresh the harvest during the peak demand periods coinciding with cane cutting and loading.

Unlike their counterparts in Area 1 and Area 2, the harvesters who were deprived of employment in Area 3 were more active in their resistance to the

new arrangement. With the collapse of the sugar market in 1976 and the consequent decline of cultivated land, the dissatisfaction of workers with restricted employment opportunities resulted in their reaping standing *bahig* crops at night. Succumbing to the spontaneous pressures of the unemployed, the farmholders reverted some parcels back to the traditional open-to-all harvesting arrangement.

(b) Area 2's *Prendes* Arrangement

In Area 2, on the other hand, the traditional open-to-all harvesting arrangement began to decline in its predominant role by 1970. Resident village transplanters felt that the arrangement which allowed anyone within or outside the barrio to participate left them with a limited share due to competition with other harvesters. The transplanters therefore offered their services for free in exchange for the exclusive right to harvest. Since the farmers realized that they could economize on production expenses with the proposed system, those who were first approached in 1972 agreed to institute the *prendes* arrangement.

In general, most of the rice parcels with lower than average yields (i.e. 40 cavans or less) are under the traditional arrangement. This is the case because farm workers prefer to be paid in cash for their transplanting services rather than invest free labour only to obtain a few cavans of palay later on. In contrast, parcels with yields from 50 to 60 cavans per hectare are under *prendes*. The implicit wage rate (0.16 to 0.19 cavans per day) is smaller than the hypothetical rate under the traditional arrangement (0.20 to 0.24 cavans) that the *prendes* transplanters receive and the security of a plot to harvest without having to share the payments among many workers as in the traditional arrangement can partly, if not fully, offset the difference.

Under *prendes*, a one-to-one correspondence between a household and a plot is guaranteed as in *gama* because transplanting is an activity undertaken collectively on a specified parcel. *Prendes* workers are either arbitrarily assigned to a certain segment of the farm or the entire group is granted exclusive harvesting rights over a number of plots. As a result, farmholders can reserve a few plots for family members and other villagers while maintaining more *prendes* labourers than available harvesting plots.

The coexistence of the new and old arrangement in Area 2 illustrates the transitional state the village is in. It also reflects the partially underdeveloped state of rice agriculture and the dual role of farmholders in the local labour market. While working household members of a majority of farmholders are engaged in *prendes* work, some holders not only serve as employers but also as *prendes* workers in other farms. Having this dual role is actually a risk-sharing device to ensure alternative sources of food supply for his household.

(c) Area 1's *Gama* Arrangement

Competition among farm workers in Area 1 for the limited agricultural jobs has led to the institution of a labour arrangement which constrains the available



number of farm employment opportunities. Until 1950, harvesting was done by willing seasonal migrants or villagers who, working in groups, received a sixth of the harvest for reaping and manually threshing palay. In time, workers who prepared the land or performed weeding tasks complained about their small share of the harvest. In response to these complaints and to facilitate the collection of their own share of the harvest, farmholders began to assign labour households the responsibility of weeding and harvesting particular plots, reducing "the land area open to all villagers and migrant workers. As farmers began to acquire or rent power tillers from the mid-60s on, they realized the need to consolidate their plots to make irrigation more efficient. So the land allotted to the open-to-all arrangement was reduced, and most plots were worked by specific farm households.

The assignment of labourers to particular plots which only their household can harvest and the decline in the number of available plots motivated other workers to offer their weeding services on a plot for free in exchange for the exclusive right to reap and manually thresh the harvest. Farmholders agreed not only because the daily wage for weeding services had increased but also because the offer reduced the harvesting and threshing labour payment indirectly. The system called *gama* was a means, therefore, on the part of the less favoured village workers to equalize access to employment, relative to those already favoured, by bargaining for work on a plot at a lower rate. And its free-weeding contract had the effect of eventually eliminating the participation of non-villagers who could not be around to perform the weeding responsibilities.

With the improvement of palay yields, the labour household's share of the harvest was reduced from the traditional one-sixth to one-eighth plus one can of palay. Since per hectare yield in the 70s was higher, the new payment closely approximates the traditional share payment. Moreover, this new payment had an advantage for both labourer and employer. The payment of a can of palay minimized the risks for the labourer of receiving a share lower than that based on the average yield at the traditional rate. At the same time, if yields were above average, the new payment scheme transferred the productivity gains to the farmholder.

It should be noted that when the machine thresher was introduced in 1978 in the village, the payment to harvesters was reduced by one can, making the current implicit wage rates lower than the traditional one-sixth rate. Despite complaints from workers, however, the effective implementation of the new rate reflects the overall weakness of farm labour households vis-a-vis their employer.

The attempts of farmers to reduce labour costs by lowering the implicit wage rate, increasing supervision over tasks and demanding additional services have led to a condition of potential conflict between employers and *gama* workers. Farmholders on one hand complain that workers do not weed properly and harvest on time. They would constantly threaten these workers with a reassignment of their plots to other residents and migrant squatters from neighbouring villages.

These threats indicate the growing contractual relationship between farmers and agricultural labourers. The threats, in turn, increase the dissatisfaction of some labourers who state sardonically that if the rate of payment is reduced as threatened by their employers to one-ninth, they would prefer to be paid in cash and supervised for eight hours.

The potential conflict is related to the intrinsic nature of the *gama* contract and its operation within an interfarm context. Since *gama* workers are responsible for weeding and harvesting, they determine the intensity, pace and schedule of the work. Their relative independence from farmholders is reinforced by two factors. First, the lessees in Area 1 perform minimal work on their parcel since their household is involved in other farm and nonfarm sources of income. Second, a plot assigned to a farm labour household does not yield enough palay for subsistence. Household members, therefore, seek contracts from other farmers. Since farm labourers are independent from farm holders and since some have multiple employers, they decide the weeding schedule on a plot without any sense of loyalty or obligation to a specific employer. The location of Area 1 in the vicinity of the primate city has encouraged the development of a more impersonal labour market around the village.

#### 4.6 The Effects of Non-Agricultural Employment Opportunities on Hired Rural Employment

The availability and diversity of non-agricultural employment in villages depend on the demands of residents for locally available goods and services and on the ability of external economic changes to reach and involve rural households. Local demand for goods and services expand as the village community becomes a less homogeneous, self-sufficient peasant society and as farm households capture commercial gains and benefits of productivity improvements. Local demand also increases as externally-generated non-agricultural employment opportunities provide alternative or additional income. External economic changes as a stimulus to non-agricultural employment presuppose the development of productive forces outside the agricultural sector and depends on the pace and direction of investment flows.

The nature of postwar economic changes in the Philippines geographically concentrated the development of productive forces in the Southern Tagalog region. While the output growth of new manufactured export commodities enabled it to increase its share within the sector and to expand the structure of exports, their effect on overall employment in manufacturing has been insignificant. The continued flow of investment into domestically-oriented industries (e.g. textile and food products) implies that the generation of non-agricultural employment opportunities depended on these industries and on other economic sectors, like construction. The characteristics of these postwar economic developments are reflected in the employment and income pattern of households in the three case villages.

The non-agricultural employment opportunities in Area 1 provide a stark contrast to that of Area 2 and 3. Less than two hours by bus from Manila, Area 1 is in the mainstream of recent economic developments while the two Visayan villages remain marginal. Within the vicinity of the Laguna barrio, a number of commercial establishments are found, and manufacturing plants line the highway which passes through the village. Within the vicinity of Area 3 or in neighbouring towns, no similar commercial and industrial establishments can be found. The village is far from the sugar mills and provincial commercial centres, and the province itself has continued to specialize in sugar.

The effects of external economic changes, specifically in Area 1 is partly illustrated in the occupational distribution of household heads, which is presented in Table 4.7. Despite its limitations, the Table specifies the obvious differences among the three barrios. Majority of household heads in Area 2 and Area 3 are identified with the agricultural sector as landholders or landless farm workers, with Area 3 having the larger proportion of farm workers. Majority of heads in Area 1, on the other hand, hold non-agricultural jobs in the construction and manufacturing industries, transportation and services. Those with occupations associated with the construction industry comprise the largest industrial grouping. This reflects not only the demand for Filipino workers in overseas construction projects but also the local manpower requirements for housing and infrastructural development projects within the province or region. Complementing these local construction projects are the activities of those villagers engaged in hauling and collecting sand and gravel from the river banks. Compared to those connected with the construction industry, household heads employed in factories lining the highway as well as in the nearby textile plant constitute a small proportion (5 per cent).

Very little construction activity is done outside or within Area 2 and Area 3.<sup>1</sup> The range of nonfarm work in Area 2 is greater than in Area 3. In addition to the village oriented activities, the former has a few part-time tailors and government employees, electricians, copra mill workers, self-employed stevedors in the town's pier and bus depot, and a few households engaged in the making of brooms and rotary weeders. However, the range of these non-agricultural activities do not compare with that of Area 1.

In Area 3, the opportunities for non-agricultural employment are virtually nonexistent. Since the province continues to rely mainly on sugar production and since the nearby town's economic activity revolves around the weekly market, nonfarm opportunities are limited to supplying the needs of local residents. These opportunities consist of the sale of food snacks by seasonal vendors to farm workers during the planting and harvesting periods, the retail sales activity of stores owners, and the services of a small rice milling operator, farmer-blacksmith,

1. During the lime of the research a fertilizer plant was being built in a town near Area 2. and this provided construction jobs to some villagers.

elementary school teachers and tricycle drivers. Due to the limited nonfarm opportunities, some members of farm households have migrated out to work as domestic servants, drivers, security guards, sales or factory workers in the provincial city or in Manila.

**TABLE 4.7**  
Distribution of Total Household Heads in the  
Three Villages, by Major Occupation

	AREA 1		AREA 2		AREA 3	
	N	%	N	%	N	%
Farm Holders						
Resident Owner	2	0.4	1	0.4	3	0.7
Lessee, Tenant	37	7	127	49	3	34
Farm Laborer	75	14	79	31	230	53
Fishermen	—	—	2	0.8	—	—
Carpenter, Masons and Tinsmith	40	7	14	5	6	1
Electrician, Welder	—	—	3	1	—	—
Foreman	15	3	2	0.8	5	1
Overseas Workers	87	16	—	—	—	—
Raulers	35	6	4	2	—	—
Driver, Conductor	50	9	12	5	22	5
Mechanic, Blacksmith	15	3	1	0.4	3	0.7
Seller, Business	27	5	4	2	7	2
Employee, Police, Soldier	55	10	4	2	2	0.5
Tailor, Photo, Barber	—	—	—	—	—	—
Rice Mill Operator	—	—	3	1	3	0.7
Factory Worker	30	5	1	0.4	—	—
Stevedore	20	4	—	—	—	—
Teacher, Professional	45	8	2	0.8	5	0.1
Vendors	15	3	—	—	—	—
Net Makers	5	1	—	—	—	—
TOTAL	553*	100	259	100	434	100

Constitutes only about 80 per cent of the total number of households.

The different sources of income or subsistence tapped by village households can further specify the nature of available employment opportunities. Table 4.8 shows the distribution of household income by sources for the sample households.

Farmholders in Area 1 obtain only 36 to 53 per cent of their household income from agriculture, while lessees and tenants in the other two barrios rely on both farming and hired farm employment for 69 to 85 per cent of their household income. Households of landless labourers in Area 3 and Area 2

[illegible]

depend on hired farm employment for 73 to 82 per cent of their household income. In other words, non-agricultural employment can only provide 18 to 27 per cent of household income. In Area 2, on the other hand, landless households whose members are involved in hired farm work obtain about half of their household income from nonfarm wage and self-employment activities.

Among the older members of landless farm labour households in Area 1, the significant nonfarm employment sources are in construction, stevedoring and hauling sand and gravel. Other household members are also involved in vending food items to commuters or selling in the town market, and providing laundry or tricycle transportation services. It should be noted that wage employment in the textile factory or any manufacturing plant within the vicinity is not accessible to farm workers. One requirement which disqualifies most, if not all, farm labourers in Area 1 is a high school education.

The primary source of wage employment for these landless labourers is in construction work. The hauling and gathering of sand and gravel is not a wage employment activity but one of self-employment. Starting in July when rice harvesting work tapers off and ending by December, a team of self-employed workers obtains sand from the river bed, piling them in order to be sold subsequently to construction supply firms. According to the villagers engaged in hauling sand, their earnings in this activity especially during the intensive months is much more remunerative than the wage of a factory casual or apprentice.

The gathering of sand from the river and gravel and topsoil from Area 1's marginal land illustrates the means employed by landless households to secure subsistence through non-agricultural self-employment activity. The feasibility of this approach reflects the high demand (since the 1960s) for these local resources. The diversion of marginal land to such uses does not hold in Area 2 and Area 3. In these villages small landholders and landless labourers plant subsistence non-rice crops in these lands.

Opportunities for nonfarm employment are virtually nonexistent in the two Visayan villages. This is especially true for Area 3. Since Negros Occidental continues to rely mainly on sugar production and since the nearby town's economic activity revolves around the weekly market, nonfarm opportunities in Area 3 are limited to supplying the needs of local residents. These opportunities consist of the sale of food snacks by seasonal vendors to farm workers during the planting and harvesting of a small rice milling operator, farmer-blacksmith, elementary school teachers and tricycle drivers. Very little construction is done outside or within the village. Due to the limited nonfarm opportunities in Area 3, some members of farm household have moved out to work as domestic servants, drivers, security guards, sales and factory workers in the provincial city or in Manila. In turn, some of them remit part of their salary or savings to their parents in the village.

The range of nonfarm jobs in Area 2 is greater than in Area 3. In addition to the village oriented activities found in the latter, Area 2 has a few part-time

tailors and government employees, electricians, copra mill worker, construction workers, self-employed stevedores in the town's pier and bus depot, and a few households making brooms and rotary weeders. The range and diversity of non-agricultural activities in Area 2, however, does not compare with that of Area 1.

The main source of non-agricultural wage employment for the farmholding and landless households in Area 2 and 3 is construction work. This is also true for the landless farm labour households in Area 2. But what distinguishes the non-agricultural employment opportunities obtained by landless households in the last village from those in the other two villages is not only the greater demand for construction workers but also the extent and diversity of nonfarm self-employment opportunities.

Self-employment in non-agricultural activities in Area 1 has stemmed from the growth in external demand for local resources and partly from the developments induced by the establishment of the textile factory within the village. The start of factory operations in Area 1 mobilized some qualified village residents who constituted about 18 per cent of the factory's 2000 work force. The other 82 per cent came from neighbouring municipalities, provinces, and Metro Manila. Faced with the expenses of commuting to and from their place of residence, the majority of non-resident workers have decided to live in the village as boarders, thus increasing and diversifying the village population. The sudden rise and diversity of the population has had implications for the scope of non-agricultural self-employment opportunities. Aside from providing housing, some residents provide services, like laundry, tricycle transportation, health care, and tailoring or dress-making for the factory workers. Retail storeowners also extend their operations to restaurant activities. As a result, certain landless households have been able to secure about 13 per cent of their income from some of these opportunities.

To the landless labour households in Area 1, non-agricultural self-employment provides a slightly greater proportion of household income than non-farm wage employment. Landholding households, on the other hand, depend more on non-farm wage employment than on nonfarm self-employment. This may imply that members of landholding households are being 'proletarianized' more than members of landless farm labour households. However, this development is simply the outcome of limited industrial development within the context of an overabundant labour supply. In this situation, the hiring requirements of industrial employers (e.g. level of educational attainment) implicitly favour members of households with the wherewithal to meet the standard qualification.

The dependence of landless households on non-agricultural self-employment while involved in hired farm and non-farm jobs may be considered as an attempt to maintain some degree of autonomy in their pursuit of subsistence. In the context where available non-agricultural opportunities are limited, such as in Area 2 and Area 3, autonomy is partly realized by landless workers through involvement in peasant forms of production. The strategy to combine wage employment with forms of self-employment in different economic environments defines the behaviour of the so-called 'peasant-workers'.

## 4.7 Conclusion

This study attempted to explore the implications of five structural variables, cropping pattern, level of productivity and farm technique, tenure or organization of production, labour hiring arrangements, and the presence of non-agricultural job opportunities on hired rural employment in three villages which differ along these variables. While the farm level study was mainly qualitative, it suggests the following assertions:

1. Given the surplus of *labour* in most agrarian societies in general, and in the rural areas in particular, the presence of non-agricultural opportunities can spell the difference in the extent and diversity of hired employment. This assertion, however, should be qualified, in the case of the Philippines, the non-agricultural employment opportunities are found mainly in the fringes of the Metro Manila area, the primate city, and other secondary cities. The presence of industries and commercial activities correlate highly with the development of the factor markets in an area. Whereas marginal lands in villages like Area 2 and Area 3 are used for subsistence production in slack periods, the marginal lands" of Area 1 have value as residential or commercial or industrial plots. The level of development in places like Area 1, however, attract more people offsetting, though partially, the positive effects of non-agricultural opportunities on the actual employment of resident village workers.
2. The type of crop partly determines demand for labour. Between sugar and rice or rice-sugar (garlic) versus rice, the former has a high (hired) labour requirement. However, because employment opportunities in the sugar sector are clustered in a certain period and overall opportunities are dependent on the vagaries of the external export market, severe under-employment and poverty characterize the sugar-producing villages. In the case of village 3, the slacks in employment could have been filled by employment in the rice sector had it occupied a greater portion of village lands, productivity in the area being high, and farmholders had options in the non-agricultural sector. The presence of these employment constraints reflects the asset preference of current sugarland owners, the utilization pattern of surplus extracted from the sector, the consequent lack of investment flows into the local economy, and lastly, the limited scope of the existing land reform programme.
3. The level of agricultural productivity, which reflects the techniques of production at work or viable in a given area is intimately linked to the demand for hired workers in agriculture. Given the production of rice in the three villages, more hired labour per hectare can be mobilized in Area 1 than in the other two villages, and farm labour in the former receives a higher rate. However, the rise of new labour harvesting arrangements, accompanying or preceding the realization of productivity



improvements, restricts the number of hired workers which can benefit from the above favourable 'labour market' outcomes.

4. The presence of restrictive labour arrangements seems to be independent of the availability of non-agricultural employment opportunities and, to a lesser extent, the level of agricultural productivity. This implies that the emergence of these arrangements is related not to external or exogenously-induced developments, such as the new seed-fertilizer technology or increased investments in the non-agricultural sector, but to the internal structure of and/or developments in the 'rural labour market'.
5. The new labour harvesting arrangement represents the adjustment mechanism in the context of a surplus of labour, which may be initiated by either the employer or the labourer in pursuit of individual interest. Faced with an overabundance of potential labourers, farm employers in Area 1, for instance, set requirements for employment, that is, in the form of the required free weeding services in order to secure a *gama* harvest contract. Also, recently some lessees in the same village have informally required that the *gama* workers perform certain pre-harvesting tasks, aside from the free weeding labour service, if they wish to retain their *gama* harvest contract. Similarly, the hiring policy of the textile factory in the same village can be viewed as a formal approach to the surplus-of-labour situation. The policy requires at least a high school education for casual or apprentice workers, thus segmenting the labour pool and disqualifying in effect the household members of poor small farmers and landless farm workers.
6. In the context of a surplus of labour, the adjustment process may involve the willingness of individual labourers or groups to take more work functions, even at the expense of a lower implicit wage rate, in order to have job security and a source of subsistence. This motivation underlines the establishment of the *gama* and *prendes* harvesting arrangement. In turn, this labour arrangement illustrates the possibility for the existence of a vertical section in the village farm labour supply curve. This represents a situation where members of the labour force do face the dire need for employment and do not react to wage reductions, implicit or otherwise, by withdrawing their labour services. Labourers in need cannot work less or quit whenever the money wage is reduced because the available employment opportunity is the only alternative. Also, it should be noted that while the vertical section represents the fact that available employment has remained constant, the presence of the harvesting arrangement restricts this opportunity to fewer labourers who have more mandays of work compared to the old labour arrangement.
7. This study has also identified another adjustment mechanism. Hired farm workers, belonging to the surplus pool of labour, who had been displaced by the decline of employment opportunities, may spontaneously

express their desire for employment opportunities, with the more privileged workers. In response to this demand, the adjustment may take the form of a shift from a restrictive to a more accessible labour arrangement. This is reflected in the shift from the *bahig* to the open-to-all labour arrangement in Area 3. It is interesting to note that this process did not take place in Area 1, possibly because the availability of non-agricultural wage and self-employment opportunities makes the struggle for subsistence less intense.

8. This study has implicitly highlighted the importance of self-employment opportunities. In the context of a surplus of labour or constricted hired employment opportunities, peasant and non-agricultural self-employment activities provide a definite source of subsistence. This strategy is crucial for the so-called peasant workers. The peasant-workers combination represents a balancing mechanism enabling households to maintain subsistence levels in an environment characterized by seasonal employment opportunities and fluctuating external demand. Among the three village cases, this strategy is adopted mainly in Area 2 and Area 3 where non-agricultural employment is very limited.

The category 'peasant-worker' may provide an explanation to the favourable disposition of landless hired farm workers towards self-employment vis-a-vis hired wage employment. The former apparently conforms to the peasant's subjective value (preference) for autonomy or control over his time. *Gama* work as practised in Area 1 also seems to assure the hired worker of his autonomy.

# Family Labour, Hired Labour and Employment Linkages in Rural Thailand

*Luechai Chulasai, Suwarat Bhekasut & Thongchai Shusuwan*

## 5.1 Introduction

The economy of Thailand has been until recently predominantly agricultural. Even today, in spite of the rapid industrialization, over 85 per cent of the population live in rural areas. Although Thailand can be classified as one of the fast growing developing countries, she has not been able to overcome the problems of poverty in rural areas. Agricultural production alone cannot generate sufficient income for rural population. In the North and the Northeastern regions, over 90 per cent of the total population live in rural areas and generate only around 40 per cent of income from agriculture.<sup>1</sup> Another evidence suggests that less than half of the total net cash income was from the farming sector.<sup>2</sup> This implies that at least half of the rural households, particularly those who are in the Northeastern and the Northern regions have to seek alternative sources of income elsewhere.

Heavy dependence on non-farm employment in the North does not seem to be the result of low productivity in agriculture nor the existence of surplus labour in rural area, particularly after the mid-60's. It is known that about 20 per cent of total land under rice cultivation is in the North, but its share in paddy production was 29 per cent in 1979/80. Moreover, the North registered the highest land productivity in Thailand. The highest yield per *rai* was registered in Chiang Mai province in the same year, which was 509 kg. per *rai*, followed by Chiang Rai (500 kg/*rai*), also in the North. This high yield is due to the successful adoption

1. National Statistics Office, *1978 Agricultural Census Report*, Bangkok 1981.

2. Ministry of Agriculture & Cooperatives, *Agricultural Statistics of Thailand- Crop Year 1980/81*, Bangkok 1981

of new technologies based on a well developed irrigation system. Four major government irrigation systems have been constructed since 1935 and more than 2,000 small-scale community-based irrigation systems have been functioning for generations in the Chiang Mai valley.

In common with the rest of Thailand, the agricultural economy of the North has been able to support very high rates of population growth in the past. One of the potential gains of the Green Revolution is the growing capacity of agricultural production to absorb surplus agricultural labour. In recent years however, Northern Thailand (and especially the province of Chiang Mai) has experienced a rapid decline in the rate of population growth. The NSO figures show the average population growth rate from 1974-76 was 2.8 per cent for Thailand as a whole; for the North, the rate was 1.6 per cent.<sup>1</sup>

Farming in the North is carried out mainly by owner farmers. Land under tenancy was about 22 per cent in the North, which is the second highest ratio next to the Central region (32.2 per cent). In actual field operations, a little more than half of the total labour input was borne by family labour. It is interesting to note that approximately 20 per cent of labour input was in the form of traditional exchange labour, and hired labour was employed in the remaining 25 per cent.<sup>2</sup> This composition of labour input in farming in Chiang Mai (North) shows a sharp contrast which is substantially different from the one in Ayuthaya (Central).

Characteristics of the North described above suggests at least three areas of interesting inquiry; allocative efficiency of family labour in various income earning activities, magnitude and function of hired labour in changing agrarian structure, and pattern and direction of development of the non-farm sectors.

The basic objective of this study is to provide a detailed diagnosis, through the generation and use of primary-level data, of the following major issues : (i) overall picture on employment in sample villages; (ii) labour allocation of farm and non-farm households in alternative income earning activities; (iii) identification of sources of demand for labour, particularly hired labour in crop, non-crop and non-agricultural activities; (iv) the nature of labour supply in sample villages; (v) impact of institutional and technological changes on labour demand and supply-structure; and (vi) the nature of non-crop, non-agricultural activities and the potential growth of demand for family labour and hired labour.

## 5.2 Sample and Methodology

The district of Chom Thong was selected as the sample of high and low agricultural growth areas and San Kamphaeng district was selected as the sample of the area close to industrial and/or commercial activities. All the villages in Chom Thong district were stratified on the basis of the cropping intensity and

1. National Statistics Office, *Labour Force. Surveys 1971-78*, Bangkok.

2. Chulasai, Luechai, *Rural Labour Employment and Economic Development: A Northern Thailand Study*. IDE Tokyo V.R.F. Series #79.

irrigated land. In 1979, approximately 73 per cent of the total agricultural land in Chom Thong was irrigated.<sup>1</sup> For high agricultural growth area, *tambon* Ban Laung and *tambon* Doi Kaeo were selected as the samples and *tambon* Ban Pae was selected as the representative area for low agricultural growth. For the area close to industrial and/or commercial activities, *tambon* Buang Kang and *tambon* Thung Pao were selected as the samples. Approximately three hundred respondents, 100 from each, were taken from high, low agricultural growth areas and the area close to commercial activities (see Table 5.1).

In our study *tambon* Ban Laung and *tambon* Doi Kaeo in Chom Thong are in the sanitary zone (Sukaphiban) of the district. Most agricultural land in these two *tambons* is irrigated and most farm households are able to grow crops in the dry season. On the other hand *tambon* Ban Pae which represents low agricultural growth area in our sample may be said to be the slowest growing *tambon* in Chom Thong district. Irrigation is poor, multiple cropping is limited due to insufficient water supply in the dry season.

**TABLE 5.1**  
**Actual Sample Distribution**

Area	District	Tambon	Samples
High Agricultural Growth	Chom Thong	Ban Laung	50
		Doi Kaeo	50
Low Agricultural Growth	Chom Thong	Ban Pae	96
Close to commercial Activities	San Kamphaeng	Buang Kang	50
		Thung Pao	49
TOTAL			295

Households in *tambon* Buang Kang and Thung Pao which are situated near the commercial centres of San Kamphaeng district were drawn to represent households from area near industrial centres in the sample. Both are in the sanitary zone of San Kamphaeng district. Though there is no industrial factory as such in *tambon* Buang Kang and only three small scale industrial factories in *tambon* Thung Pao, most households in these two *tambon* are engaged in some kind of cottage industries which include umbrella making, wood carving, weaving, sewing and basket making. Baan Bo Sang which is a "village" in *tambon* Buang Kang and is adjacent to *tambon* Thung Pao, is a well known tourist attraction for paper umbrella making and wood carving. Both paper umbrella making and wood carving are very labour intensive activities and they provide good employment opportunities for the neighbouring villagers, especially in the dry season which also coincides with the tourist season. In addition umbrella painting and wood carving are preferred to be done in the dry season when the weather is not so humid.

Baan Bo San is also situated not very far from another tourist "attraction-of San Kamphaeng district. This is the commercial center of the district itself which is well known for silk and cotton weaving and recently, cloth making. There are also a number of small scale wood carving factories situated in this commercial area of San Kamphaeng district. These two commercial centers of San Kamphaeng are important sources of non-agricultural employment for the agricultural households in the district.

### 5.3 Farm Labour, Employment and Income

The basic patterns of the use of farm labour and employment in our sample of agricultural areas can be drawn from the data presented in Table 5.2.<sup>1</sup> The average family size of farm households in both high and low agricultural growth areas was estimated to be 4.6 persons. The average number of employed labour per households for both areas were 3.22 with that of the low agricultural growth area being slightly higher than that of the high agricultural growth area. The average labour force ratio<sup>2</sup> was calculated to be nearly 80 per cent for both groups. In the low agricultural growth area, male labour force ratio was higher than in the high agricultural growth area i.e. 83.0 per cent in the former as against 80.0 per cent in the latter. However, female labour force ratio in the low agricultural growth area was found to be lower i.e. only 76.5 per cent as opposed to 79.4 per cent in the high agricultural growth area. These relatively high labour force ratios in our sample reflect a rapid decline in the rate of population growth in Chiang Mai.

The average labour force participation rate<sup>4</sup> of farm households for both low and high agricultural growth areas was nearly 88 per cent. However, it is interesting to note that average labour force participation rate in the low agricultural growth area was 89.9 per cent and therefore 4 per cent higher than that in the high agricultural growth area whose rate was 85.7 per cent. Also the female labour force participation in the low agricultural growth area was found to be more than 10 per cent higher i.e. 89.6 per cent as against 76.4 per cent in the high agricultural growth area. The labour force participation rate for males was

1. For a snap shot picture of the occupational pattern of the sample households, see tables V. 1 and V.2 in the Appendix.
2. The labour force ratio is derived by dividing the average number of labour force per household by the average household size, multiplied by 100.
3. This phenomenon has been well documented by a demographer at Chiang Mai University, Tieng Pardthaisong, whose research shows a reduction in total fertility from 6.5 per cent in 1964 to 1.9 per cent in 1975. The NSO has now published figures confirming Tieng's Findings. See Tieng Pardthaisong. *The Recent Fertility Decline in Chiang Mai Area of Thailand* paper of the East-West Population Institute # 47 (1978).
4. The labour force participation rate is derived by dividing the number of employing persons by total labour force, multiplied by 100. For agricultural households, the employed persons are defined as those family members who work more or less full time during the periods of peak labour requirements (rice planting and harvesting).

only 2 per cent lower in the low agricultural growth area than in the high agricultural growth area. In all, the participation rates in our sample were relatively high and are consistent with both the regional and the national estimates compiled by the National Statistics Office.<sup>1</sup> A study by the World Bank also confirmed that labour force participation rates for both males and females, especially females in Thailand are among the highest in Asia.<sup>2</sup>

**TABLE 5.2**  
**Average Family Size, Labour Force, and Labour Participation**  
**in Sample Households**

Variable	Local Industrial	Agriculture			Total
		Low	High	Average	
<b>Family Members/H.H. (1)</b>					
Total	4.75	4.62	4.58	4.60	4.65
Male	2.66	2.36	2.25	2.30	2.42
Female	2.09	2.26	2.33	2.29	2.23
<b>Labour Force/H.H. (2)</b>					
Total	4.22	3.69	3.65	3.67	3.85
Male	2.35	1.96	1.80	1.88	2.04
Female	1.87	1.73	1.85	1.79	1.82
<b>Working (3)</b>					
Total	3.47	3.32	3.13	3.22	3.31
Male	1.94	1.77	1.66	1.71	1.79
Female	1.53	1.55	1.47	1.51	1.52
<b>Labour Force Ratio</b> (2)4-(1) x 100 (Percent)					
Total	88.84	79.87	79.70	79.78	82.80
Male	88.35	83.05	80.00	81.52	83.80
Female	89.47	76.55	79.40	77.97	81.81
<b>Labour Force Participation</b> <b>Rate (%)</b> : (3) ^- (2) x 100					
Total (Percent)	82.23	89.97	85.75	87.86	85.98
Male	82.55	90.31	92.22	91.26	88.36
Female	81.82	89.60	79.46	84.53	83.63

Note: H.H. denotes households.

It is observed that there is a significant difference in labour utilization patterns between the peak and the slack agricultural seasons, (see Table 5.3) For both low and high agricultural growth areas, all respondents reported being employed

1. NSO. *Labour Force Survey* 1971 -1976.

2. Bertrand. Trent, *Thailand: Case Study of Agricultural Input and Output Pricing*. World Bank Staff Working Paper No. 385. April 1980.

Month	Local Industrial Area			Low Agricultural Area			High Agricultural Area		
	Do Other Work	No Work	Employed	Do Other Work	No Work	Employed	Do Other Work	No Work	Employed
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
H =	TJ-000)	(NTtONc-j^fsotria^-- , as oo co 0 - - (NCSTJ-00N- - r^i/Sr^	Tfoocor^tNOco^or-oi/iTi- ooooooooooooooooor-r-oooooooo	(^ ∞ QN ^ C1 ∞ = i vi . 1 / S C N o o o o ' o o	o m oo o * o o u S - r - ^ t - ^ o o o o o o co co vo t m -	o o ^ O ' S - T r m o o o o o o o i / S c S o ^ t - ^ t - ^ O O O P O @ v o v o > o o o o o o o o o o	o - f r - : » ff » CM m v d - o o o o o o	O r - i r O f N v O ^ O O P O O O * VI N	p ^ v O o q r ^ r o r o p p p p p 8 8 9 ( 8 > v S v E C O t C O T S 8 8 9 O O O
Average all year	9.6	11.0	79.4	5.3	21.0	73.7	5.7	10.8	83.5
Sample Size		343			314			305	



during the peak season which starts from July to December for the low agricultural growth area, and to February for the high agricultural growth area. The slack agricultural season is therefore longer in the low agricultural growth area. Unemployment was highest in April for both areas with 71 per cent of the respondents in the low agricultural growth area reported that they were truly unemployed with no other work to do, while only 52.4 per cent of the respondents in the high agricultural growth area reported so. On the whole, it can be clearly seen that both areas exhibit similar seasonal variations in employment but there, were higher unemployment in the low agricultural growth area during the slack agricultural season than in the high agricultural growth area.

**TABLE 5.4**  
**Income Status of Sample Household**

	Local Industrial	Agriculture		Total
		Low	High	
<b>Sample</b>	100	96	99	295
<b>Gross Income</b>				
Mean	46,989	12,528	27,707	29,075
<b>Major Income</b>				
Mean	40,677	10,933	25,698	25,769
S.D.	20,972	8,739	17,847	
<b>Minor Income</b>				
Mean	6,312	1,595	2,009	3,305
S.D.	10,768	2,693	2,769	
<b>Family Size (Persons)</b>	4.75	4.62	4.58	4.65
<b>Per Capita Income</b>	9,892	2,711	6,049	6,218

Note: Income figures are annual, given in *baht*, the Thai currency.

S.D. denotes standard deviations.

For farm income, Table 5.4 shows data on the average gross major and minor income<sup>1</sup> and income per capita of the farm households in both the low and high agricultural areas. As expected the average gross income, average major income as well as the average minor income, is higher for the high agricultural growth households than for the low agricultural growth households. The average gross income for the high agricultural growth households was 27,707 baht while that for the low agricultural growth households was only 12,538 baht. Households in the high agricultural growth area earned high income from *both* farm and non-farm activities than households in the low agricultural growth area. The income per capita in the high agricultural growth area was more than three times higher than that in the low agricultural growth area.

### 5.3.1 Employment and Income of Households in Local Industrial Area

The picture of employment pattern by month for the local industrial group can be derived from Table 5.3. Employment varied from month to month, being highest in October and lowest in August i.e. It is interesting to note that unemployment rate was less than 10 per cent during the last six months of the year which is the rice growing season. In only three months, March April and May, employment in the local industrial area was higher than employment in the two agricultural areas.<sup>1</sup> Though the employment pattern in the local industrial area did show some seasonal fluctuations the extent of its fluctuations was smaller when compared with that exhibited in the agricultural areas. Figure 5.1. helps to illustrate this point more clearly. The average major income earned by households in this area was found to be nearly double of that of households in the high agricultural growth area and nearly four times higher than in the low agricultural group.

Household members' occupations in the local industrial area are shown in Table 5.5. The most important occupation for household members in this group was farming which was 27.9 per cent. Sewing and/or weaving was reported as the second important occupation for household members in this group with 19.9 per cent of household members in this group being engaged in this occupation. Carving and painting were also found to be important occupation among the household members in the local industrial area. Other occupations reported include various general activities, umbrella making, small trade, and handicrafts.

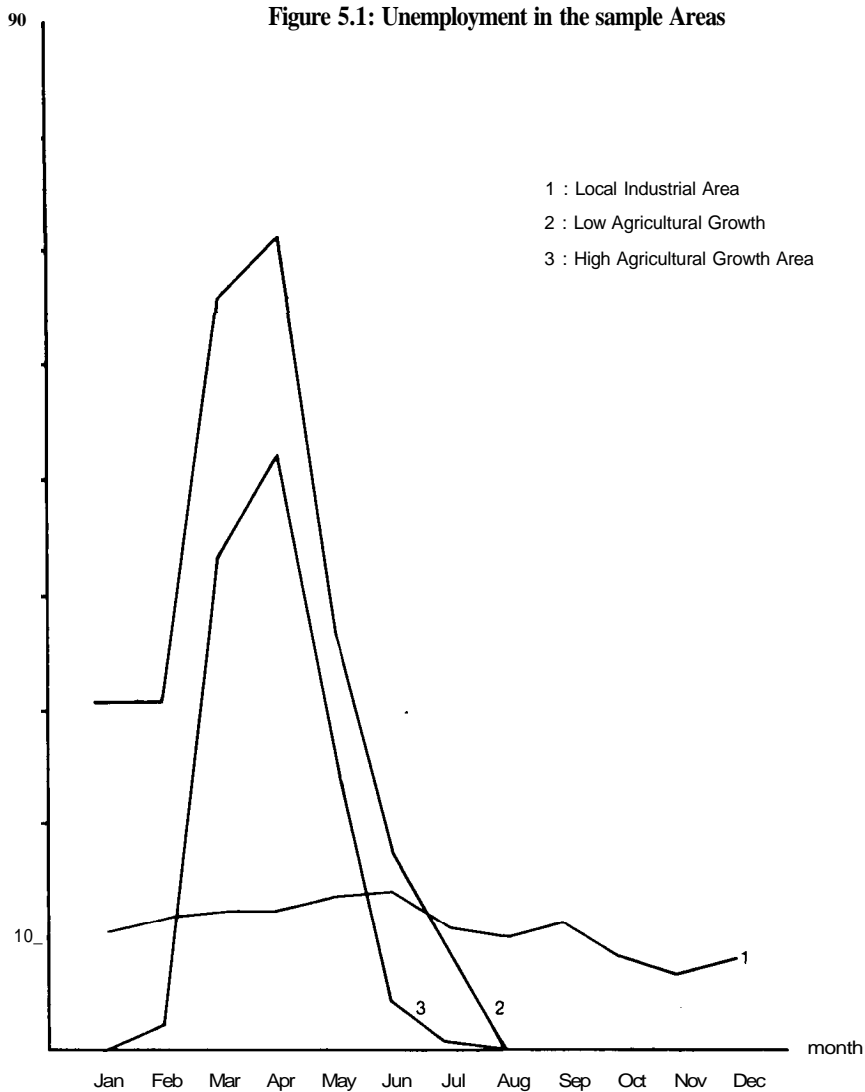
**TABLE 5.5**  
**Household Members' Occupations in the Local industrial Area.**

Occupation	No. of Persons	Percent
Painting	38	11.0
Carving	59	17.2
Small Trade	19	5.5
Umbrella Making	18	5.2
Sewing/Weaving	69	20.1
General Hired Labour	30	8.6
Government Service	3	0.8
Farming	97	28.2
Others	12	3.4
Total	343	100.0

1. One should bear in mind that the difference in nature of employment between the farm and non-farm activities makes this comparison less clear cut than it should be. For agricultural households, the employed population is defined as those family members who work more or less full time during the periods of peak labour requirements.

Unemployment (%)

Figure 5.1: Unemployment in the sample Areas



### 5.3.2 Linkages Between the Farm and Non-Farm Sectors

As mentioned earlier farming was still the most important occupation for household members in the local industrial area. This is confirmed by our finding that half of the interviewed respondents reported they returned to work on the farm at one time or another during the rice growing season. Table 5.6 shows that quite a large percentage of household members who were engaged in non-farm employment i.e. 22.2 per cent of those who reported that they returned to work on the farm did so in July/August and November/December. This finding is consistent with the fact that demand for labour in rice growing is highest in the planting and harvesting stages which normally falls on July/August and November/December respectively. This coincides with the slack season of some activities in the local industrial area such as umbrella making and painting whose activities have to slow down due to high humidity during the rainy season. No household members who were employed in the non-farm activities reported that they returned to work during the months of January to June which also coincides with the slack agricultural season. Thus we may state with some conviction that there is some degree of complementarity between the farm and non-farm sectors with regard to employment opportunities.

**TABLE 5.6**

Months of the Year During which Household Members  
in the Local Industrial Area Returned to Farming.

Month	No. of Persons Returned to Farming	Percent
July	32	18.2
August	39	22.2
September	19	10.8
October	11	6.2
November	38	21.6
December	37	21.0
Total	176	100.0

### 5.3.3 Levels of Mechanisation

In the context of our analysis of labour utilisation, one must note that the degree of mechanisation in the sample areas is relatively low. This is brought out in Table 5.7 which shows the use of tractors and farm animals in the rainy and dry seasons. Relatively speaking, the use of tractors in the high agricultural growth area was found to be higher in both the seasons. However the percentage of households reporting the use of tractors in place of draft animals was still relatively low for both groups. In the rainy season, only 11.6 per cent of households

in the low agricultural growth area and 13.1 per cent of households in the high agricultural growth area reported use of tractors. The percentage was even lower in the dry season i.e. only 2.9 per cent and 6.1 per cent of households in the low and high agricultural growth areas respectively reported use of tractors in growing their first crop of the dry season. This evidence of relatively low use of mechanisation among farm households in our survey is consistent with what is reported in the National Agricultural Census.<sup>1</sup>

The above evidence thus implies that the traditional pattern of labour utilisation and the allocation of labour resources have not undergone any remarkable change.

**TABLE 5.7**  
Use of Tractors and Farm Animals By Season Crops

	Agriculture		Total
	Low	High	
<b>, Rainy Season</b>			
No. of Tractors	11 (11.6)	13 (13.1)	24 (12.4)
No. of Farm Animals	84 (88.4)	86 (88.9)	170 (87.6)
Sample Size	95 (100.0)	99 (100.0)	194 (100.0)
<b>First Dry Season</b>			
No. of Tractors	2 (2.9)	6 (6.1)	8 (4.7)
No. of Farm Animals	68 (37.1)	93 (93.9)	161 (100.0)
Sample Size	70 (100.0)	99 (100.0)	169 (100.0)
<b>Second Dry Season</b>			
No. of Tractors	0(0)	3 (3.9)	3 (3.7)
No. of Farm Animals	4 (100.0)	74 (96.1)	78 (96.3)
Sample Size	4 (100.0)	77 (100.0)	81 (100.0)

## 5.4 Labour Utilisation and Hired Labour in the Farm Sector

### 5.4.1 Pattern of Labour Use in the Farm Sector

Generally speaking, the requirements of labour input in rice cultivation are variable at different stages of cultivation, depending on method of cultivation. There is a marked difference in use of labour input per *rai* between transplanting and broadcasting methods. Transplanting method which is the common practice in the Chiang Mai Valley requires more mandays per *rai* than the broadcasting sowing method. The latter is rarely practised among farmers in the Chiang Mai valley although it is quite common in the Delta region of Thailand. For transplanting method labour inputs are mostly higher in each individual stage of operations and are allocated fairly evenly over each stage with labour requirements being highest at the stages of transplanting and harvesting.

1. NSO. 1978 *Agricultural Census Report*, Northern Region..

In our study of the two agricultural areas in Chiang Mai where transplanting method is used the average number of mandays required per *rai* was found to be about the same in both areas. For glutinous rice cultivation in the rainy season the average number of mandays per *rai* was 20.45 in the low agricultural growth area and was 19.93 in the high agricultural growth area. For non-glutinous rice production in the rainy season, the average number of mandays per *rai* was the same, i.e. 19.31 in both areas. The average labour use for both areas as a whole was about 20 mandays per *rai*. This figure differs slightly from Tanabe's<sup>1</sup> (21.7 mandays per *rai*) and is more or less the same as Surareks<sup>2</sup> studies of Chiang Mai during 1974-75 and 1982, respectively. The average labour use classified by stages of production for rice cultivation in both the rainy and dry seasons of the two agricultural areas is presented in Table 5.8.

**TABLE 5.8**  
Average Labour Use, Yields and Size of Operation For Rice Cultivation  
in Rainy Season and in Dry Season.

	Rainy Season				Dry Season	
	Low (1)	High (1)	Low (2)	High (2)	Low (2)	High (2)
Number of Respondents	87	80	7	17	4	40
Average Size of Operation ( <b>Rai</b> )	3.4	5.9	4.2	5.7	4.5	3.7
Average Yield (kg/rai)	608	598	613	611	458	485
Average <b>Labour</b> Use (Man-days/rai)	20.45	19.93	19.31	19.31	20.00	19.70
— Seedbed	0.65	0.77	0.52	0.76	1.11	0.69
— Land Preparation	3.56	3.61	3.72	3.50	3.28	3.40
— Transplanting	4.03	3.82	3.48	3.62	3.61	3.78
— Harvesting	4.85	4.73	4.14	4.66	4.28	4.67
— Threshing	3.03	2.70	2.96	2.63	3.17	2.89
— Building/hauling	1.56	1.66	1.55	1.53	1.67	1.61
— Weeding	0.67	0.44	0.59	0.36	0.61	0.53
— Others	2.10	2.20	2.35	2.25	2.27	2.10

Notes: (1) Glutinous Rice  
(2) Non-Glutinous Rice

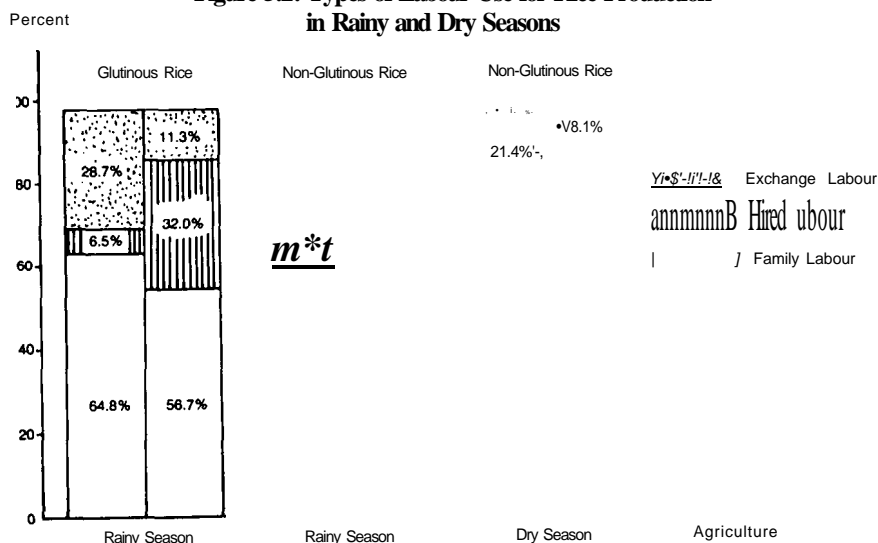
#### 5.4.2 Types of Labour Inputs

Given the method of cultivation, the types of labour resource mobilised, and the manner in which they are allocated to the stages of production depend on a

1. Shigeharu Tanabe. "Cooperative labour and Wage Labour in Rural Thailand: An Anthropological Study of Labour Utilisation in Peasant Economy". (A Mimeo)
2. Vanpen Surareks and Luechai Chulasai. *Water Management and Employment in Northern Thailand*. Chiang Mai University, 1982.

number of socio-economic variables. Availability of family and non-family labour, land tenure status, social conventions and the degree of agricultural development all appear to have a significant impact upon the allocation of labour resource. In general, there are three main sources of labour supply in the farm sector family labour, exchange labour and hired labour. Rice cultivation frequently requires supplementary labour resource in addition to family labour regardless of its size, usually necessitated by the ecology of rice cultivation itself. There are certain operations, especially uprooting, transplanting, and harvesting which have to be completed within a limited time and therefore require outside labour resources in addition to family labour. In Chiang Mai's transplanting cultivation, the dependency on non-family resources is greatest at the stages of transplanting and harvesting, and to some extent, in the stages of bundling and threshing. The allocation of outside labour between exchange labour and hired labour at these crucial stages of production depends on the existing social relationships and organizational agreements. Hired labour is principally a substitute for exchange labour and for marginalised family labour, which has generally occurred under the recent penetration of money economy and the development of capitalistic relations of production in the rural sector. In Chiang Mai villages where the penetration of money economy has taken place much later and more slowly than in many other regions, especially in the Central Plain of Thailand, the use of hired labour is still moderate. A comparative study on labour allocation in rice production between a village in Chiang Mai and a village in Ayutthaya showed that the latter where farming was relatively commercial in nature was dependent more on hired labour than the former, classified as subsistence economy.<sup>1</sup>

**Figure 5.2: Types of Labour Use for Rice Production in Rainy and Dry Seasons**



We now turn to examine how the three types of labour resources are allocated in the various stages of rice cultivation in the two agricultural areas of our study. Table 5.9 and Figure 5.2 show in a broad manner, the degree of dependency on the three different forms of labour in the production of rice in both the rainy season and the dry season. As expected, in both areas family labour provided the most important source of labour supply. However, exchange labour played a more significant role than hired labour in the low agricultural growth area while, hired labour was more significant than exchange labour in the high agricultural growth area. This may be taken to reflect the tendency of increased use of hired labour as the economy becomes more and more commercial and monetised.

The allocation patterns of labour use shown in Figure 5.2 and Table 5.9 include only hired labour engaged in the production of rice in the rainy season and the dry season. This biases the role of hired labour downwards as they exclude many non-rice production operations performed by use of hired labour. Since the operations of non-rice production vary quite widely within each agricultural area and between the two agricultural areas of study we will concentrate only on rice production which is the major farming activity in both areas.

**TABLE 5.9**  
Percentage of Family, Hired and Exchange Labour

	Rainy Season				Dry Season	
	Low	High	Low	High	Low	High
	Agriculture		Agriculture		Agriculture	
	(1)	(1)	(2)	(2)	(2)	(2)
<b>Family Labour</b>	64.8	56.7	65.0	53.8	73.0	59.4
Male	61.8	66.5	69.8	65.5	60.1	64.0
Female	38.2	33.5	30.2	34.5	39.9	36.0
<b>Hired Labour</b>	6.5	32.0	4.1	31.8	5.6	32.5
Male	35.6	53.4	65.2	44.3	0	51.0
Female	64.6	46.6	34.8	55.7	100.0	49.0
<b>Exchange Labour</b>	28.7	11.3	30.9	14.4	21.4	8.1
Male	39.1	36.3	31.2	30.7	31.2	38.4
Female	60.9	63.7	68.8	69.3	68.8	61.6
Number of Respondent Households	87	7	80	17	4	40

Notes: (1) Glutinous Rice  
(2) Non-Glutinous Rice

It is generally agreed that amongst many socio-economic variables relevant to labour utilisation, land tenure status, determining access to the means of produc-



tion, has a vital effect upon its allocation patterns. This is mainly because in the rural sector, landholdings constitute the most valuable and main assets that seem to generate wealth and power, and consequently have a strong relationship to availability of non-family labour resources. The same study by Tanabe earlier mentioned<sup>1</sup> shows that among the non family resources, in Chiang Mai's transplanting cultivation, the use of co-operative labour<sup>2</sup> is extensive among the landlord-operators, showing a decline towards the lower categories, particularly among the part tenant. Like wise, the utilisation of hired labour is highest in the landlord — operator group and least among the tenants. However, in our study the land distribution in the two agricultural areas was more or less the same, hence we did not focus our attention on the relationship between land tenure status and availability of non-family labour. In turn, we concentrate on a broader area of the role of each type of labour resource, especially hired labour in the two agricultural areas. However, on the assumption that the average farmer in the high agricultural growth area is richer than the average farmer in the low agricultural growth area, we can see a clear disparity in availability of non-family labour resources between the rich farmers and the poor farmers as presented in Figure 5.2 and Table 5.9. In other words, the upper strata are able to mobilise more non-family labour, while the lower strata have to rely upon their own family labour.

### *Family Labour*

Among the several factors that determine the use of family labour, the most obvious one is its availability. The relevant parameters in this case are : family size and age and sex composition of household labour force. In the low agricultural growth area family labour accounted for 65 per cent of total labour input for both glutinous and non-glutinous rice production respectively in the rainy season. This figure was higher than in the high agricultural growth area where family labour accounted for only 56.7 per cent of labour requirements in glutinous rice production and 53.8 per cent for non-glutinous rice production. However, this figure was higher for non-glutinous rice in the dry season, the family labour accounted for 73 per cent in the low agricultural growth area and 59.4 per cent in the high agricultural growth area.

Since family size in both areas were more or less the same i.e. 4.6 persons, the difference in sex composition of the household labour force between the two areas may help partly explain this point. There were more males than females in the household labour force in our sample of the low agricultural growth area than in our sample of the high agricultural growth area. The difference in age composition of household labour force between the two samples may also contribute to the different rates of family labour use between the two areas.

1. Tanabe. *op cit*.

2. In his study, cooperative labour is used to include both the reciprocal exchange of labour and free labour service in which landlords and other rich households conscript their tenants and debtors for transplanting and harvesting. In Chiang Mai cooperative labour is mainly reciprocal exchange labour in nature.

Due to the fact that family labour, exchange labour and hired labour are interrelated, the role of family labour is certainly affected by those factors determining the use of the other two types of labour use as well.

Classification of labour use by stages of production for glutinous and non-glutinous rice cultivation in the rainy season are presented in Tables 5.10 — 5.12. From these three tables, we can see that the dependency on family labour was greatest at the stage of land preparation and harvesting, respectively for both areas of study. These three tables also show the relative roles of exchange and hired labour.

### *Exchange Labour*

Exchange labour is a form of traditional labour commonly found in the rural sector, especially in rice cultivation. It is a reciprocal exchange of labour mobilised during peak seasons of activities. In Chiang Mai Valley's transplanting cultivation the two labour intensive stages of transplanting and harvesting still depend to a considerable degree on exchange labour. Exchange labour in this region is essentially an informal reciprocal transaction between individual households with no fixed group. The customary exchange agreement is that one household asking for hands from other households is obliged to return to them exactly the same amount of labour power which is measured basically in mandays. Since the agreement is precisely reciprocated the host provides no reward for the labour power received but he traditionally must make provision for food and drink. This has been regarded as socially important for labour exchange in this region.

Even though it is principally an individual arrangement, exchange labour in the Chiang Mai Valley region may be regarded as a network consisting of a number of operating households, ranging from two to fifteen. The participating households are normally either neighbours or of the same kin, or have their operating plots near each other.

The significance of exchange labour in rice cultivation in the two agricultural areas of our study at various stages of production can be looked at by referring back to Tables 5.10-5.11. Figures in Table 5.10 show that for glutinous rice production the dependence on exchange labour in the low agricultural growth area was greatest in the stage of harvesting, while in the high agricultural growth area it was greatest in the stage of transplanting. However, for non-glutinous rice cultivation Table 5.11 shows that the dependence on exchange labour was highest in the stage of transplanting in both areas. For the non-glutinous rice production in the dry season Table 5.12 shows that the dependence on exchange labour was highest in the stage of harvesting in the high agricultural growth area but not for the low agricultural growth area. It should be noted that there are only four samples of non-glutinous rice production in dry season in the low agricultural growth area.

TABLE 5.10

Types of Labour Use for Glutinous Rice in Rainy Season Classified by Activities

Activities	(1) Low Agriculture (%)			(2) High Agriculture (%)		
	Family	Hired	Exchange	Family	Hired	Exchange
Seeded	4.9	0	0	6.9	0	0
Land Preparation	23.9	22.6	1.6	21.5	15.9	7.2
Tranplanting	12.1	45.9	30.9	11.3	26.0	39.2
Harvesting	17.0	15.6	40.7	18.5	30.3	31.5
Threshing	10.4	13.3	25.2	9.2	18.2	<sup>1</sup> 16.4
Building/hauling	11.0	10	14	10.3	6.7	3.2
Weeding	5.0	0	0	3.4	0.5	0.6
Others	15.7	1.6	0.2	18.9	2.4	1.9
Total	100.0	100.0	100.0	100.0	100.0	100.0

Notes: (1)N = 87; (2) N = 80

TABLE 5.11

Types of Labour Use for Non-Glutinous Rice in Rainy Season  
Classified by Activities

Activities	(1) Low Agriculture (%)			(2) High Agriculture (%)		
	Family	Hired	Exchange	Family	Hired	Exchange
Seeded	4.1	0	0	7.3	0	0
Land Preparation	25.6	65.2	0	25.3	10.9	7.5*
Transplanting	10.4	0	36.4	11.4	22.1	38.6 "
Harvesting	15.9	34.8	31.2	13.7	36.1	36.3
Threshing	8.2	0	32.4	7.4	8.5	0
Building/hauling	12.4	0	0	9.7	8.5	0
Weeding	4.7	0	0	3.4	0.2	0
Others	18.7	0	0	21.8	0	0
Total	100.0	100.0	100.0	100.0	100.0	100.0

Notes:(1)N = 7; (2) N = 17

**TABLE 5.12**  
Types of Labour Use for Non-Glutinous Rice  
in Dry Season Classified by Activities

Activities	(1) Low Agriculture (%)			(2) High Agriculture (%)		
	Family	Hired	Exchange	Family	Hired	Exchange
Seeded	7.6			5.9		
Land Preparation	22.4			17.5	18.5	12.7
Transplanting	12.2	100.0	16.8	13.2	25.6	37.5
Harvesting	17.1		41.6	18.1	32.1	30.4
Threshing	9.5		41.6	12.8	18.3	13.5
Building/hauling	11.4			10.4	4.8	5.1
Weeding	4.2			4.3	0.3	0.8
Others	15.6			17.7	0.2	
Total	100.0	100.0	100.0	100.0	100.0	100.0

Notes: (1) N = 4; (2) N = 40

For the overall use of exchange labour in the two areas, this accounted for about 30 per cent of total labour requirements for rice cultivation in the low agricultural growth area, while it accounted for only about 12 per cent of total labour input in the high agricultural growth area. The decreasing importance of exchange labour is generally accounted for by the increasing importance of hired labour.

It is also interesting to note that in the Chiang Mai Valley region, this reciprocal exchange of labour is normally arranged among households which are nearly equal in status. This could be because an exchange relationship between households in different land tenure categories is liable to result in violation of the contract by the richer household. There is some evidence indicating that richer households tend to increasingly rely on hired labour. A comparison of labour resource allocation patterns in our two agricultural areas also reflects this point. Households in the high agricultural growth area employed higher percentage of hired labour in their rice production than those in the low agricultural growth area.

### *Hired Labour*

Hired labour is sometimes regarded as a substitute for exchange labour, and normally higher use of hired labour is observed where exchange labour cannot be found. The increasing importance of hired labour and the decline in exchange labour are clearly linked and in the case of Thailand have been triggered by an

increased monetisation of the farm sector rather than by large scale landlessness. In our study, the average rate of hired labour use in the high agricultural growth area was about 32 per cent of total labour input, as compared to about 5 per cent in the low agricultural growth area.

Table 5.13 shows the use of hired labour for glutinous rice cultivation in the rainy season in the two areas of study, classified by stages of production. The demand for hired labour was highest in the two labour intensive stages of transplanting and harvesting. In the low agricultural growth area the use of hired labour was highest at the time of transplanting. Nearly 50 per cent of hired labour were engaged at this stage. In the high agricultural growth area, however, the dependence on hired labour use was greatest in the stages of transplanting and harvesting (26 per cent and 30 per cent of total hired labour use for the two activities respectively). Table 5.14 - 5.15 show the use of hired labour at various stages of non-glutinous rice production in the rainy season and dry season respectively. In the rainy season, in the low agricultural growth area the use of hired labour was greatest in the stage of land preparation. About 65 per cent of total hired labour was used in this stage. In the high agricultural growth area the rate of hired labour use was highest at the time of harvesting in both seasons. It accounted for 36 per cent and 32 per cent of total hired labour use in all the stages in the rainy and the dry season, respectively.

**TABLE 5.13**  
Hired Labour Use for Glutinous Rice  
in Rainy Season Classified by Activities

Activities	Low Agriculture		High Agriculture	
	Man-days	Per cent	Man-days	Per cent
Seedbed	0		0	
Land Preparation	88	22.6	480	15.9
Transplanting	179	45.9	782	26.0
Harvesting	61	15.6	913	30.3
Threshing	52	13.3	549	18.2
Building/hauling	4	1.0	202	6.7
Weeding	0		15	0.5
Others	6	1.6	72	2.4
Total	390	100.0	3,013	100.0

We may conclude that the use of hired labour in Chiang Mai region is still moderate as compared to elsewhere, especially in the central region of Thailand where the orientation towards petty commodity production came much earlier.

**TABLE 5.14**  
Hired Labour Use for Non-Glutinous Rice  
in Rainy Season Classified by Activities

Activities	Low Agriculture		High Agriculture	
	Man-days	Per cent	Man-days	Per cent
Seebed	0		0	
Land Preparation	15	65.2	64	10.9
Tranplanting	0		130	22.1
Harvesting	8	34.8	213	36.1
Threshing	0		131	22.2
Building/hauling	0		50	8.5
Weeding	0		1	0.2
Others	0		0	
Total	23	100.0	589	100.0

It should also be noted that since hired labour has been regarded as complementary to exchange labour among farmers in the Chiang Mai region it is sometimes difficult to distinguish the former from the latter. Hired labour is preceived as a kind of help, especially when wage is paid in kind. The traditional form of payment by paddy is still widely prevalent among households in the Nothern region. Hired labour in this region is mainly drawn from lower strata households inside the village, or from adjacent villages.

**TABLE 5.15**  
Hired Labour Use for Non-Glutinous Rice  
in Dry Season Classified by Activities

Activities	Low Agriculture		High Agriculture	
	Man-days	Per cent	Man-days	Per cent
Seebed				
Land Preparation			176	18.5
Tranplanting	20	100.0	243	25.6
Harvesting			305	32.1
Threshing			174	18.3
Building/hauling			46	4.8
Weeding			3	0.3
Others			2	0.2
Total	20	100.0	949	100.0

Another interesting point to note for Chiang Mai's hired labour is that the daily wage rate of one *thang*<sup>1</sup> of unhusked paddy for one man-day of labour is the common practice and has remained unchanged for many decades regardless of changes in paddy price. Wages paid in cash is also practised but not as widely. The daily wage rates were much lower than the legal minimum wage rate of 61 baht per day. The wage rates in the two areas of our study are presented in Table 5.16. The average wage rates for male labour in the two agricultural areas was only 42.90 baht. In the low agricultural growth area it was only 32.40 baht compared with a slightly higher 45.60 baht in the high agricultural growth area. The average rates for female labour were even lower than those for males. It was only 25 baht per day in the low agricultural growth area and 28.30 baht per day in the high agricultural growth area.

## Summary and Conclusion

Review of literature on unemployment in rural Thailand reveals that open unemployment rate in the rural sector of Thailand is still low regardless of different methods used in measuring unemployment rate. However the issue concerning the degree of underemployment in rural Thailand still remains controversial. While doubts concerning the seriousness of the problem of underemployment have been expressed, the controversy may partly stem from the seasonal nature of employment inherent in agricultural production. Thus depending on when and how a survey is conducted, reported rates of unemployment can vary markedly. The labour force normally expands in response to heavy demands for labour in on-farm activities during the rainy season by drawing on females and children who in the great majority of cases are not engaged in dry season off-farm employment by choice. The tightness in rural labour markets in the rainy season is also reflected in long work hours during the peak seasons. The long peak season work weeks tend to counterbalance the shorter work weeks in the dry season. Annual work hours are therefore not very different from the standard work norms.

The controversy over the seriousness of underemployment also may stem from different definitions of unemployment used in various studies. Yet, labour force participation rates for both males and females in Thailand are among the highest in Asia (71 per cent in 1981).

Due to the seasonal nature of agricultural production, rural labour force in Thailand is known to spend a considerable amount of time on non-farm activities. These activities are significant sources of secondary earnings for small and landless farmers during the slack agricultural seasons. Non-farm income contributes to more than 60 per cent of total household earnings in the Northern region of Thailand.

1. One *ilwii* is approximately 10 kilogrammes.

The lack of a year round labour surplus on farm is also indicated by the need for outside-family labour in peak seasons of production. The contribution of hired labour to total production has increased quite evidently in many parts of rural Thailand. However, in the case of Thailand the increasing importance of hired labour has been triggered by an increased monetization of the rural economy rather than by large scale landlessness. The percentage of households whose main source of income is wage labour is still low. The highest rate of landless labour in rural Thailand is found in the more commercialized Central Plain and the South. But even in these areas agricultural employees account for only a small percentage of the total labour force. The NSO's 1978 Agricultural Census Report for Chiang Mai reported that the number of agricultural holdings without land accounted for only less than 2 per cent of total agricultural holdings in Chiang Mai.

TABLE 5.16  
Average Daily Wage Rates

Wage (Baht/Day)	Agricultural		Total
	Low	High	
Male			
Mean	32.4	45.6	42.9
S.D.	9.9	19.5	
Sample	22	84	106
Female			
Mean	25.0	28.3	27.4
S.D.	7.7	10.2	
Sample	29	81	110

Note: S.D. = Standard Deviation.

In our comparative study on farm employment between the low agricultural growth area and the high agricultural growth area in *Amphoe* Chom Thong district of Chiang Mai it was found that labour force participation rates were relatively high in both areas. Since in low agricultural growth area farm activities are more limited in the dry season, we found that unemployment was significantly higher than in the high growth area only in the dry season. As expected, households in the high agricultural growth area earned higher income than households in the low agricultural growth area. Higher opportunity for non-farm employment in the high agricultural growth area may also contribute to this wide income gap between the two areas as indicated by the fact that households in the high agricultural growth area earned higher income from both farm and non-farm activities than households in the low agricultural growth area.

Our study of employment in the area local industrial centre in *Amphoe* San Kamphaeng showed that employment in the area was much more stable



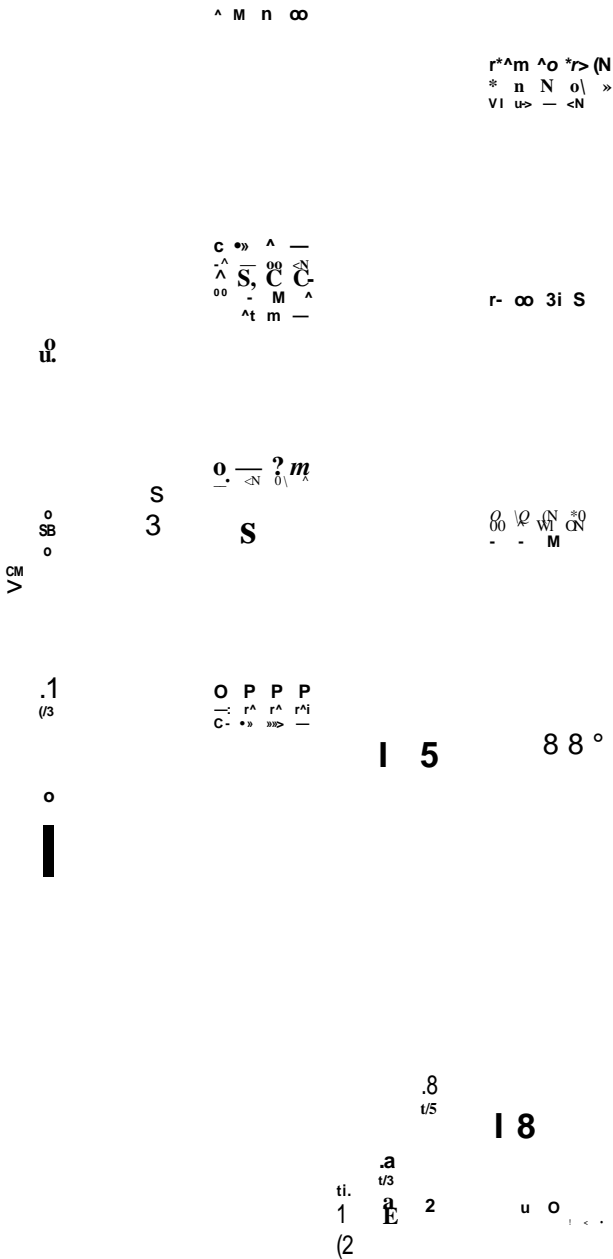
throughout the year than in the two agricultural areas studied in *Amphoe* Chom Thong. In fact only small variations in employment in different times of the year was observed. Important local industries in this area include weaving, sewing, wood work and umbrella making. Quite a high proportion of those who were normally employed in these local industries returned to work on the farm during the peak seasons of transplanting and harvesting during July/August and November/December respectively. The harvesting time also coincides with the slack season of some activities in the local industries such as umbrella making and wood work during which activities have to slow down due to high humidity during the rainy season.

On the pattern of labour use in the farm sector, it is generally observed that types of labour mobilised, and the wage that they are allocated to the stages of production depend on a number of socio-economic variables. Availability of family and non-family labour, land tenure status, social conventions and the degree of agricultural development are important determining factors. In our study of farm households in the two agricultural areas in *Amphoe* Chom Thong it was found that family labour still provided the most important source of labour supply in both areas. The dependence on non-family resources was greatest at the stages of bundling and threshing. The employment of hired labour was found to be higher in the high agricultural growth area than in the low agricultural growth area. The latter area was found to be still more dependent on exchange labour. Since hired labour has been regarded as complementary to exchange labour among farmers in the Chiang Mai region it is sometimes difficult to distinguish the former from the latter. Hired labour is still perceived as a kind of help, especially when wage is paid in kind which is the more common practice of wage payments among farmers in this region. Hired labour in this region is mainly drawn from households in lower income strata households inside the village, or from adjacent villages.

Our comparative study of the villages in Northern Thailand, however, seems to point out that this pattern of use of hired labour and its overall significance in the total labour use may be heightened with the gradual infusion of commercialisation in agriculture and the growth of non-farm activities in the region.

Table 1  
^  
\*  
s

	Local	Agricultural		Total
		Low	High	
<b>Sample (Percentage)</b>				
<b>Labour Force</b>				
Employed	475 (34.6)	444 (32.4)	453 (33.0)	1,372(100.0)
Unemployed	420(100.0)	352 (100.0)	354(100.0)	1,126 (100.0)
	347 (82.6)	317(90.1)	310 (87.6)	974 (36.5)
	73 (17.4)	35 (9.9)	44(12.4)	152 (13.5)
<b>Main Occupation</b>				
Agriculture	97 (28.0)	311 (98.1)	282 (91.0)	974 (100.0)
Non-agriculture	227 (65.4)	4(1.3)	26 ( 5.2)	247 (25.4)
Employees				
Others	23 (6.6)	2 (0.6)	12 (3.8)	37 (3.8)
<b>Main Occupation</b>				
None	347 (100.0)	317 (100.0)	310(100.0)	974 (100.0)
Agriculture	230 (66.3)	236 (74.4)	209 (67.4)	675 (69.3)
Agri-employee	90 (25.9)	3 (0.9)	5(1.6)	98 (10.1)
Non-Agri-employee	1 (0.3)	42 (13.3)	30 (9.7)	73 (7.5)
Commerce	10 (2.9)	32(10.1)	35 (11.3)	77 (.79)
Others	14 (4.0)	4(1.3)	28 (9.0)	46 (4.7)
	2 (0.6)		3(1.0)	5 (0.5)



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