RECENT LABOUR MARKET TRENDS IN THE FOOD CROP SECTOR IN SRI LANKA

G. M. Henegedara

Hector Kobbekaduwa Agrarian Research and Training Institute,
114, Wijerama Mawatha,
Colombo - 07,
Sri Lanka.

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Hector Kobbekaduwa Agrarian Research and Training Institute
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FOREWORD

With the expansion of global economic activities through international trade and the rapid development of information and communication technology (ICT), labour assumes greater importance as a more dynamic factor of production. Studying labour market with respect to economic factors thus becomes important in this regard.

Therefore, the study aims to bridge the research gap in labour market in Sri Lanka focusing mainly on the domestic labour market in the food crop sector. Thus, the study highlights the recent trends with special reference to labour demand, supply, productivity, mobility and emerging issues that need to be addressed by policy makers vigilantly.

I would like to thank the Sri Lanka Council for Agricultural Research Policy (CARP) for funding this valuable study that contributes enormously to policy making. Finally, I thank Dr. G. M. Henegedara, the coordinator of the study and other supporting staff involved in this exercise.

V. K. Nanayakkara
Director
02.07.2008

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Finally, I would like to pay my tribute to the farmers in the study areas who trusted us and provided all the valuable information for the success of the study.

Dr. G.M. Henegedara
Research Fellow

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Abstract

The study intends to find out the recent changes in the labour market in the food crop sector of Sri Lanka with special reference to factor mobility, labour migration and the impact of using new technology as labour-saving methods. The overall objective of the study is to investigate the new trends of the labour market in terms of labour utilization, labour productivity and mobility within the domestic and global economic environment. More broadly, the study examines the demand and supply pattern of labour, productivity, efficiency, wage rates and labour displacements.

The study was conducted in four districts covering paddy, vegetable, kurakkan and maize cultivation in irrigated and rain-fed areas.

The report consists of eight chapters, covering main topics mentioned in the study objectives. The chapter one explains the background, objectives, methodology and the scope of the study and the chapter two presents the recent trends in the labour market in Sri Lanka. The chapter three explains the socio-economic background of the sample population with the chapter four detecting the labour utilization pattern with respect to demand and supply, wage rates, etc. The chapter five examines labour productivity, efficiency of labour utilization and technology adoption as labour-saving methods. Labour mobility is discussed in the chapter six and emerging issues and the potential linkages are discussed in the chapter seven. The chapter eight is the summary, conclusions and the recommendations that need to be addressed by the policy makers.

As observed in the study objectives, the labour absorption in agriculture has registered a gradual drop, indicating the adoption of farm mechanization as a labour-saving method. The consequent labour displacements in this sphere have caused a change in the mobility of labour from the rural to the urban areas and overseas. They have also moved into the industrial and service sectors. The demand for labour is linked with such specific factors as experience, gender, awareness of cultivation, efficiency, honesty and the age. However, the supply of labour is conditioned by the availability of family labour and shared labour. The wage rate, determined by such factors is favourably weighted towards the skilled labour rather than the unskilled. The labour productivity in crop production is relatively higher in irrigated areas than in rain-fed locations.

Six issues were identified as key factors to be addressed by the policy makers; labour displacements from paddy cultivation, changing labour supply pattern, trend of using new technology and machinery, increasing wage rates, changing cultural and value systems linked with farming and increasing labour mobility.

Finally, the study suggests some policy recommendations for policy makers to be addressed from macro and micro policy perspectives. Training, capacity building and support services are the most important policy instruments recommended for reaching a win-win situation.

Chapter One

Introduction

Labour as an integral part of the economy and one of the key production factors in the non-plantation agriculture sector in Sri Lanka, accounts for nearly 50 per cent of the total production cost of paddy and more than 60 per cent in case of the production cost of other field crops (OFCs), while representing nearly 30 per cent of the total labour force of Sri Lanka. Relative to other production factors, the value of labour has changed in the recent past due to technological innovations and knowledge based economic practices spread over the world. Thus, the labour productivity and production efficiency have increased through education, training and innovative research and technology development. Hence as a more dynamic factor, the demand and the supply pattern of labour has changed all over the world manifesting some implications in labour utilization in the agricultural sector. These implications are commonly related with increasing labour productivity and labour value, frequent labour mobility from agriculture to other sectors, low labour absorption in agriculture and subsequent seasonal unemployment in the rural sector and poverty. More similar to the subsistence farming systems in other developing countries, same phenomenon is observable in the Sri Lankan agricultural sector as highlighted by the following factors:

1. A rapid increase in labour wages in the rural labour market - Labour wages in the non-plantation agriculture sector have increased by more than 200 per cent during the 1990/91-2003/04 period. According to the estimates of the Department of Agriculture, wages for paddy farming activities in major irrigated areas in Anuradhapura district have changed from Rs. 66.00 (1990/91) to Rs. 333.00 (2003/04), while the corresponding increase was from Rs. 50.00 to Rs. 302.00 in rain-fed areas in the Kandy district. Thus, labour value has increased in the recent past mainly due to the labour shortage during the cultivation and harvesting periods. This situation has further worsened due to abandonment of using (unpaid) family labour and the local labour exchange method i.e. *attam*[1].

2. Decrease of the labour absorption in paddy dominated non-plantation agriculture - As a consequence of technological innovations and increase of labour productivity through education, extension services, mechanization and other technological advancements, the labour absorption in agriculture has decreased remarkably in the recent past. Thus, labour absorption in rain-fed areas of the Kandy district has decreased from 105 days/acre to 50 days/acre, while in the irrigated areas of the Anuradhapura district has marked a drop from 43 days/acre in 1990/91 to 37 days/acre. According to the estimates by the Central Bank of Sri Lanka (2003), annual addition to the labour force in 2003, was 7.61 million numbering 559,000 more than that of the previous year. However, labour absorption in the agricultural sector has increased only from 33.1% in 2002 to 35% in 2003. When comparing with industrial and service sectors, service sector is still dominating in absorbing

[1] *attam* - a mutual labour exchange method followed by small group of farmers for farming activities such as ploughing, transplanting, harvesting, etc.

labour force. The service sector accounts for nearly 43 per cent of the labour force and the industrial sector nearly 22 per cent. Thus, it is clear that the agricultural sector is not capable enough to absorb surplus labour unless it diversifies the production system (nor enhance the production efficiency through reducing the cost of production).

3. Increase in the labour productivity in the non-plantation agricultural sector - Owing to technological advancement and farm modernization, the labour productivity has increased remarkably. According to the estimates of the Department of Agriculture, labour productivity of paddy farming in major irrigation schemes in the Anurahapura district has increased from 35 per cent (1990/01) to 47 per cent (2002/01) and from 12 per cent to 25 per cent in rain- fed areas of the Kandy district indicating positive improvements in labour productivity. However, net returns from paddy cultivation are still low except in some major irrigation schemes.

4. Labour becomes the dynamic factor indicating that surplus labour in agriculture has moved from this sphere to other sectors and foreign countries. According to the estimates by the Central Bank of Sri Lanka (2003), migrant labour to the Middle East countries provides nearly 30 per cent of the national savings of the economy, while the rural sector acts as the prime source of providing labour to industrial and service sectors. As a consequence, many agricultural areas are experiencing labour shortages and high labour wages during the harvesting period.

The impact of the above characteristics creates serious implications for the non-plantation agricultural sector. The rapid increase in labour wages causes an increase in cost of production, as the labour component accounts for more than 50 per cent of the production cost of paddy and OFC, wielding a negative impact on profitability and returns at farm level. Secondly, it could lead to unemployment, under employment or seasonal unemployment, and to the subsequent effect of rural poverty and labour migration. Though improving labour productivity is a positive factor for the sustainable economic development, it seems that in Sri Lanka, the enhancement of productivity has not effectively contributed to improve the total welfare of the society like in many other newly developed countries. Nonetheless, improvement of labour productivity could facilitate to trim down the cost of production and consequently increase the net returns. This has not materialized yet. In the meantime, the labour migration from the rural areas to the urban areas and their preference for greener pastures abroad have caused a shortage in skilled and productive labour in the rural sector giving rise also to socio-environmental issues in the urban areas.

1.1 Objectives

The overall objective of the study is to investigate the recent trends in labour market in Sri Lanka, with special reference to the changing labour productivity and mobility in the non-plantation agricultural sector.

Specific objectives are:

1. To assess the labour requirement (demand) and availability (supply) pattern in paddy, OFC and vegetable farming sectors (in terms of key indicators such as age, gender, education, skill, experience, wages, etc.).
2. To investigate the trends in labour utilization and labour productivity in terms of technology adoption, mechanization and variation of labour share in the total cost of production.
3. To study the factors related to labour mobility from agriculture to other sectors and rural to urban and overseas.
4. To find out the new market trends in labour utilization in terms of backward and forward linkages related to the food crop sector.
5. To suggest suitable policy recommendations that would help to improve labour productivity and to solve labour related problems.

1.2 Research Methodology

The methodology of the study was based on a comprehensive analysis of primary and secondary information on the subject area concerned. Collection of primary data was based on conducting a fact-finding survey and participatory rural appraisal (PRA) method. The survey was designed to gather basic information in relation to socio-economic factors, labour demand/supply, wage rates, productivity and mobility. Some PRA techniques were applied to collect the opinions of the labourers on changing labour value, productivity and factors affecting unemployment and outgoing migration within the sector. Secondary information, mainly based on annual labour reports, academic research and paper articles was widely used to ascertain the factors that influenced to change the labour market in the past.

1.2.1 Study Areas

The fact-finding survey, designed to collect field level data, was mainly based on the areas where the major crops were paddy, OFCs and vegetables. The extent of cultivation, water availability and agro-climatic factors were considered as the key determinants in selecting the sample locations. Accordingly, the study locations were selected from the dry zone and the rain-fed areas to represent irrigated and rain-fed farming. Thus, the stratified random sampling method was followed to select the locations and farmers, cultivating various crops relevant to the study, namely paddy, kurakkan/maize and beans. The sample size of each location was decided to represent 10 per cent of the total growers or 40 farmers growing the respective crop in the selected villages. The table 1.1 shows the distribution of the study sample according to agro-climatic conditions, source of water supply and the type of crops.

Table 1.1: Distribution of the Study Sample

Crop	Rain-fed Areas		Irrigated Areas		Total
Paddy	Rambukkana	50	Hingurakgoda	50	100
Kurakkan and Maize	Ududumbara	40	Galenbindunuwewa	40	80
Beans and Cabbage	Pallepola	40	Welimada	40	80
Total		130		130	260

1.2.2 Crops

The table 1.2 presents the districts, extent and production of selected crops cultivated in the irrigated and rain-fed areas.

Paddy
The crop statistics published by the Department of Agriculture (2004), reveal that the Polonnaruwa and Kegalle districts accounted for 21.8 per cent and 2.5 per cent of the annual rice production of Sri Lanka in irrigated and rain-fed areas, respectively.

Vegetables
In Badulla and Matale districts where the vegetables were chosen for the study, beans and cabbages are cultivated predominantly both in the rain-fed areas and irrigated areas.

Pulses
For pulses, kurakkan and maize, grown both under the rain-fed and irrigation conditions came under the purview of the study. Accordingly, two villages from Anuradhapura and Kandy districts were selected. Anuradhapura district accounted for 42 per cent of total kurakkan production and Kandy district accounted for 3.7 per cent of the kurakkan production. For the study, kurakkan was the only choice, but maize too had to be included as both crops were grown together by many farmers.

Table 1.2: The Extent and Production of Crops Selected for the Study

District	Crop	Extent (ha)	As a % of the Total Extent	Production (000mt)	As a % of the Total Production
Polonnaruwa	Paddy	103,045	11.0	440	21.8
Kegalle	Paddy	16,696	1.8	50	2.5
Anuradhapura	Kurakkan	1,984	32.0	2.730	42.3
Kandy	Kurakkan	194	3.1	0.236	3.7
Badulla	Beans	3,644	47.2	24.472	60.0
Matale	Beans	671	8.7	2.220	5.4

Source: Department of Census and Statistics (2005)

1.2.3 Data Analysis

Data analysis was based on basic statistics and graphical presentations derived from computer software. Descriptive analysis based on mean, mode and frequency distribution was followed to analyze the socio-economic characteristics of the sample sites.

Frontier production analysis was used to observe the efficiency of using production factors under irrigated and rain-fed paddy farming areas. Basically, frontier production function (FPF) measures the efficiency against the best farmer. It estimates the maximum output obtainable with given inputs used and enables the measuring of technical efficiency of the farm as the vertical deviation of the farm specific output from the frontier output.[2] Thus, in order to find out the efficient level of labour usage, frontier production function was fitted to paddy output (kg of paddy) considering that the production as a function of land size, cost of fertilizer, and cost of labour days, cost of chemicals and seeds and cost of farm power. The efficient production frontier was estimated for both irrigated and rain-fed paddy farmers separately, counting only direct factors related to paddy production as in the stochastic frontier production function.

1.3 Rationale of the Study

Sri Lanka, as a country with a labour-intensive economy, studying labour trends becomes the focal point of macro-economic issues because labour is mainly related with the livelihood of people involving in plantation and non-plantation agriculture. Accordingly, labour can be considered as a vital production factor that determines the efficiency of all the other production factors despite its contradictory and alarming impact on macro-economic issues. An analysis on this subject would help in the formulation of necessary policy measures in future.

1.4 Scope of the Study

The study reflects a detailed examination of the recent changes in the agricultural labour market in Sri Lanka. However, the main focus of the study is limited largely to the non-plantation agricultural crops such as paddy, vegetables and pulses. Thus, the analysis will highlight the impact of economic and technological changes on the labour market as a strategic way of changing production, productivity and socio-economic factors in the rural agrarian sector. As mentioned above, the study will cover agro-climatic situations with wider reflections on the irrigated and the rain-fed conditions as well as commercial and subsistence farming practices.

[2] As proposed and developed by Aigner, Lovel and Shemidt (1977) and Meeusen and Van den Broeck (1977), stochastic frontier production function specified for cross-sectional data, have two components, one to account for random effects and another to account for technical inefficiency.

1.5 Limitations of the Study

As in many other socio-economic studies, this study also has faced certain limitations that relate to the data collection, its interpretations and qualititative analysis. Basically three limitations were recognized in this regard.

1. Inconsistency of formal and informal labour rates prevailed in the plantation and non-plantation agricultural sectors.
2. No systematic methods were used to assess the amount of family labour utilized in paddy and vegetable farming sectors.
3. Discrepancy of various labour payment systems followed by farmers such as meals, drinks, tea, harvest, etc.

Chapter Two

Labour and Employment Status in Sri Lanka: A Brief Overview

This chapter provides a brief overview of the labour and employment status in Sri Lanka with special reference to the macro-economic aspects such as the labour force, the employment and unemployment rates, labour productivity and wage rates, relationship between poverty and employment and unemployment. Thus, the section 2.1 explains the main characteristics of the labour force in Sri Lanka showing the total labour force, employed persons and unemployed persons. The section 2.2 presents the concept of labour productivity and wage rates in the informal sector in Sri Lanka. The section 2.3 highlights the relationship of employment, unemployment and poverty and the section 2.4 summarizes the status of employment and the labour market in Sri Lanka.

As revealed by some labour economists, the labour market in Sri Lanka is also characterized with dualistic features, which includes primary and secondary sectors within the same economy (Watchal, 1984). The primary sector contains the privileged members of the labour force employed in the formal sector with relatively good working conditions, higher pay, job security, administrative protection, promotions based on skill development and the level of education. Employees of the state, the private and the co-operative sectors belong to this group, while the secondary sector consists of informal labour that supplies more labour than skills. Employees in rural and non-plantation agricultural sector in Sri Lanka, form the informal sector, though the sector itself characterizes some semi- formal features.

2.1 Labour Force

Regardless of the nature of labour supply mentioned above, the labour force of the country was estimated as the sum of the employed and unemployed persons aged 10 years and above, and able and willing to work (Sri Lanka Labour Force Survey, 2006). Accordingly, it was estimated that 7.6 million persons constituted the labour force as economically active population in 2006, comprising of 4.8 million (64%) males and 2.7. million (36%) females. On the other hand, persons mainly engaged in studies, household duties, retired or old, disabled persons, etc. were defined as economically inactive population (Sri Lanka Labour Force Survey, 2006). According to same survey results in 2006, 7.2 million persons of the working age population were in the group of economically inactive comprising of 31 per cent of males and 69 per cent of females.

The share of employment in the agricultural sector, which includes the agriculture, forestry and fishing sub-sectors accounted for 32 per cent of the labour force in 2006. The labour force participation rate was around 51.2 per cent and it was a slight increase compared to 48.3 in 2005 (Department of Census and Statistics, 2007). The table 2.1 and fig. 2.1 show the labour force distribution over the past ten years indicating an upward trend in the total labour force during the period 1994-2006. It also registers an improvement in employed persons from 5,281,000 in 1994 to 7,105,000 in 2006.

Figures related to the unemployment also decreased from 798,000 to 493,000 during the respective period.

Table 2.1: Trends in Labour Force, Employment and Unemployment in Sri Lanka: 1994-2005

Item	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Household Population '000 (Aged 10 and Above)	12,494	12,736	12,831	12,864	12,882	13,169	13,564	13,870	14,201	15,649	16,586	16,855	14,834
Labour Force ' 000	6,079	6,106	6,242	6,229	6,661	6,673	6,827	6,773	7,145	7,654	8,061	8,141	7,599
Employed '000	5,281	5,357	5,537	5,580	6,049	6,083	6,310	6,236	6,519	7,013	7,392	7,514	7,105
Unemployed ' 000	798	749	705	649	611	591	517	537	626	641	669	627	493

Source: Sri Lanka Labour Force Surveys, Department of Census and Statistics

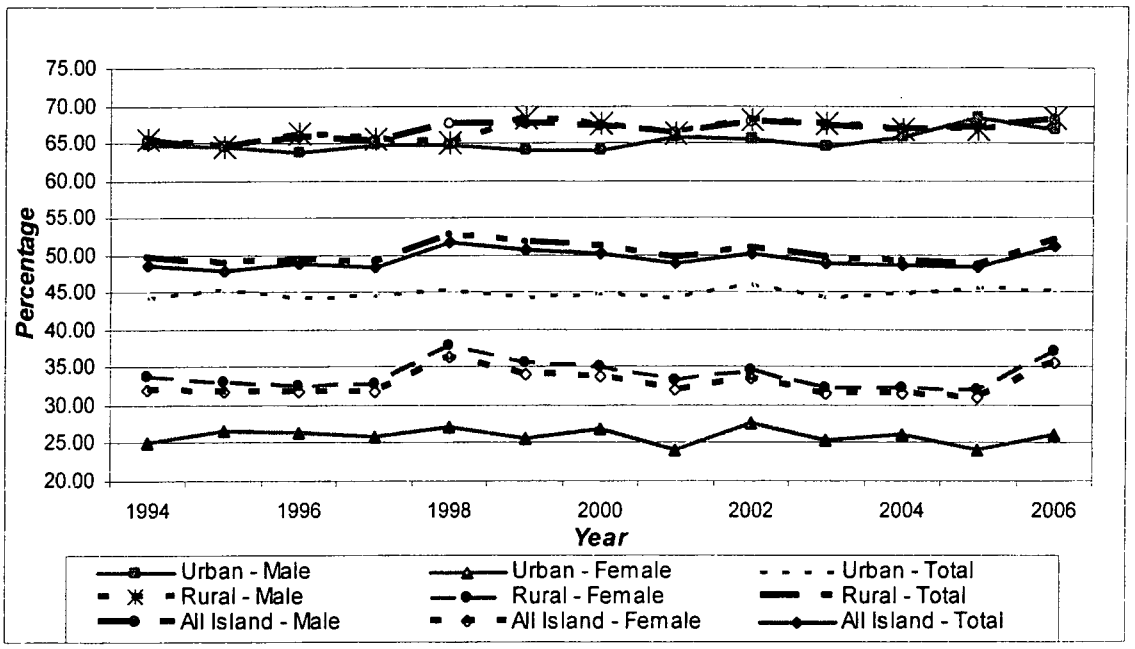
Labour force participation rate, which based on gender and urban-rural sectors indicates that male participation rate in both areas is relatively higher than female participation, which is around 25 per cent in urban areas and 32-37 per cent in rural areas (table 2.2). It implies that the rural female labour participation is relatively higher than the female participation in the urban areas. This shows labour force participation rate both in terms of gender and urban-rural areas.

Table 2.2: Labour Force Participation Rate by Sex and Urban-Rural Areas

Sex and Sector	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Urban - Male	64.80	64.40	63.80	64.70	64.70	64.10	64.00	65.80	65.50	64.60	63.50	NA	66.70
Urban - Female	25.10	26.60	26.30	25.90	27.10	25.70	27.00	24.10	27.70	25.40	26.90	NA	26.20
Urban - Total	44.30	45.40	44.40	44.60	45.20	44.20	44.90	44.30	46.00	44.40	44.80	NA	45.30
Rural - Male	65.50	64.40	66.30	65.50	64.90	68.30	67.60	66.30	68.20	67.60	66.50	NA	68.40
Rural - Female	33.90	33.10	32.60	32.80	37.90	35.60	35.00	33.30	34.50	32.40	32.60	NA	37.10
Rural - Total	49.80	48.80	49.40	49.10	52.70	51.80	51.20	49.60	51.00	49.60	49.20	NA	52.10
All Island - Male	65.40	64.40	65.90	65.40	67.50	67.70	67.20	66.30	67.90	67.20	66.00	67.10	68.10
All Island-Female	32.00	31.70	31.70	31.70	36.40	34.10	33.90	31.90	33.60	31.40	31.80	30.90	35.70
All Island–Total	48.70	47.90	48.80	48.40	51.70	50.70	50.30	48.80	50.30	48.90	48.60	48.30	51.20

Source: Sri Lanka Labour Force Surveys, Department of Census and Statistics
NA- Not available

Fig. 2.1: Labour Force Participation



Source: Sri Lanka Labour Force Surveys, Department of Census and Statistics

2.1.1 Employment

According to the Department of Census and Statistics (2005), employment was defined as the services of one who worked for pay, profit or family gains (unpaid) for one hour or more during the week preceding the special Labour Force Survey in 2005. Those employed temporarily, absent from work due to illness, bad weather or labour disputes were also considered as employed in this regard. Therefore, employment rate in the non-tsunami areas was 92.5 per cent of the total working age population in the country in 2005. Even if the tsunami affected areas are included in the labour force, there would not be much difference in the total employed persons (Central Bank of Sri Lanka, 2005). The table 2.1 shows the trends of variation in the number of employed persons during the consecutive period.

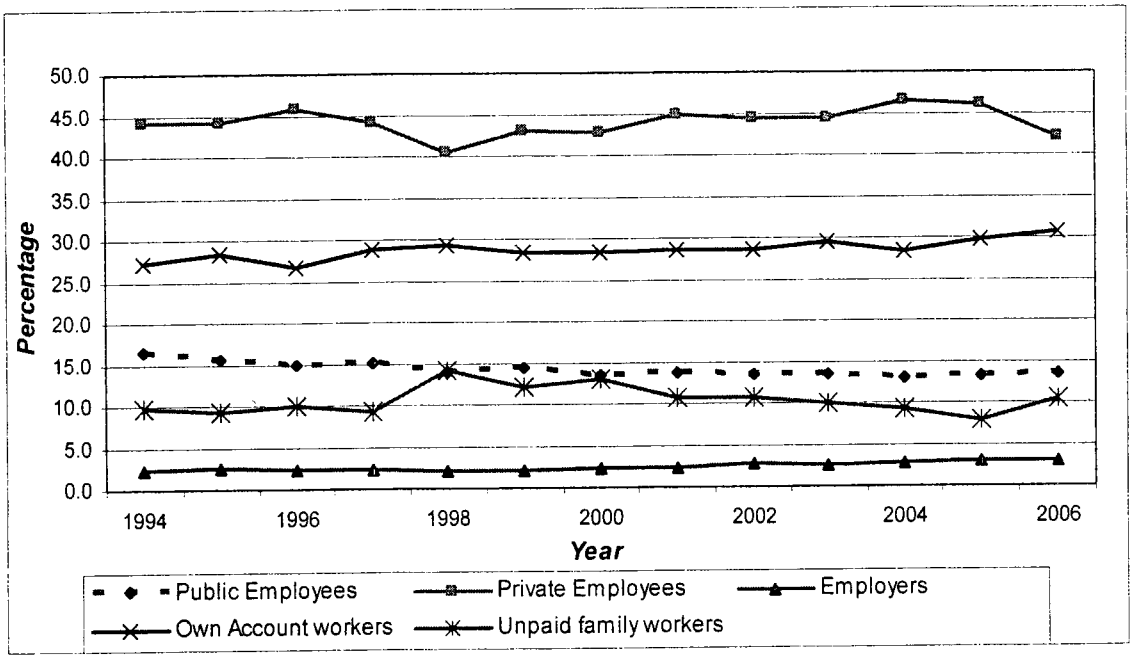
According to employment status classified by the Central Bank of Sri Lanka, more than 46 per cent of the employees are engaged in private sector jobs indicating the importance of this sector in generating employment. Nearly 30 per cent of the employees are own account workers, while about 13.5 per cent are engaged in the public sector. According to table 2.3 and fig.2.1, the number of public sector employees has gradually dropped since 1995. However, the government policy of expanding the public sector employment through the graduate recruitment programme has made a slight contribution for the increased share in this sector in 2004.

Table 2.3: Percentage Distribution of Employment Status (1994-2005)

Employment Status	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Public Employees	16.4	15.6	15.0	15.1	13.9	14.5	13.4	13.8	13.4	13.5	13.0	13.3	13.4
Private Employees	44.3	44.3	45.8	44.3	40.5	43.1	42.9	44.8	44.5	44.4	46.4	46.1	42.1
Employers	2.3	2.5	2.3	2.3	2.0	2.0	2.3	2.3	2.8	2.6	2.9	3.1	3.1
Own Account Workers	27.2	28.3	26.8	28.8	29.4	28.3	28.4	28.5	28.6	29.6	28.3	29.7	30.8
Unpaid Family Workers	9.8	9.4	10.0	9.4	14.2	12.2	13.0	10.6	10.7	9.9	9.4	7.9	10.5

Source: Sri Lanka Labour Force Surveys, Department of Census and Statistics

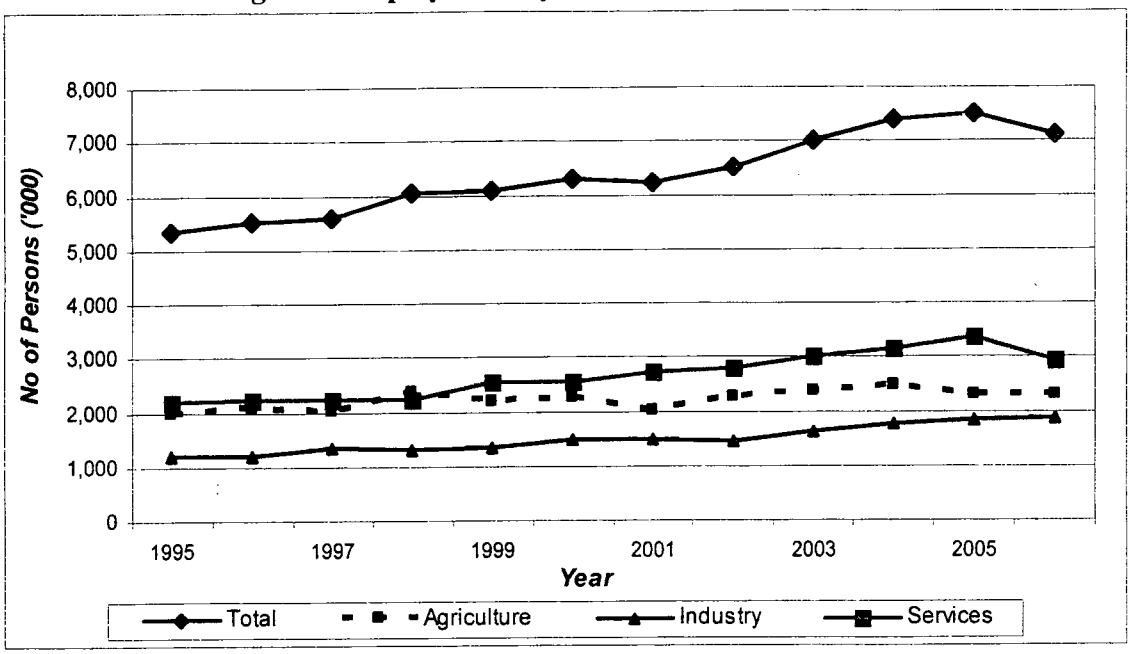
Fig. 2.2: Percentage Distribution of Employment Status (1994-2005)



Source: Sri Lanka Labour Force Surveys, Department of Census and Statistics

When we consider the employment distribution in relation to main economic activities such as agriculture, industries and services, the share of employment in the services and the industrial sectors have increased, while the agricultural sector has marked a decrease. As such the share of employment in this sector, which includes the forestry and fisheries has also declined from 34.1 per cent in 2004 to 30.7 per cent in 2005 (see table 2.4 and fig. 2.3).

Fig. 2.3: Employment by Main Economic Activity



Source: Annual reports, Central Bank of Sri Lanka

Table 2.4: Employment by Main Economic Activity (In Thousand Persons)

Year	Total	Agriculture	%	Industry	%	Services	%
1995	5,357	1,967	37	1,188	22	2,202	41
1996	5,537	2,072	37	1,219	22	2,247	41
1997	5,607	2,032	36	1,355	24	2,221	40
1998	6,049	2,378	39	1,326	22	2,230	37
1999	6,082	2,208	36	1,330	22	2,544	
2000	6,310	2,274	36	1,491	24	2,545	40
2001	6,235	2,033	33	1,491	24	2,711	44
2002	6,519	2,248	35	1,459	22	2,813	43
2003	7,013	2,384	34	1,611	23	3,017	43
2004	7,394	2,475	33	1,781	24	3,138	43
2005	7,518	2,306	31	1,843	24	3,369	45
2006	7,105	2,287		1,890		2,928	

Source: Sri Lanka Labour Force Surveys, Department of Census and Statistics

2.1.2 Unemployment

Unutilized proportion of the labour force due to the lack of employment opportunities and low absorption capacity of the economy could be regarded as unemployment. Underemployment, hidden employment and part time employment were not considered here as unemployment. The trend of unemployment during the past 10 years is presented in table 2.1 and fig. 2.1, while the unemployment distribution according to gender and sectors is tabulated in table 2.5. The table 2.6 and fig. 2.4 indicate the unemployed population according to the level of education. Despite a gradual decline in the overall unemployment in Sri Lanka during the past ten years, an increase is observable among the educated categories particularly with qualifications of GCE (A/L) and above.

Table 2.5: Unemployment Rate by Sex and Sectors

Sex and Sector	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Urban - Male	10.80	12.10	9.50	7.90	7.20	7.80	6.50	6.30	6.50	7.10	6.10
Urban - Female	23.90	20.90	18.80	19.50	15.90	13.30	11.50	11.10	12.70	12.90	13.70
Rural - Male	9.40	8.30	8.30	7.50	6.40	6.50	5.70	6.20	6.60	5.90	6.00
Rural - Female	19.30	18.30	17.90	16.00	13.80	13.00	11.50	11.50	13.00	13.20	12.70
All Island - Male	9.70	9.00	8.20	7.70	6.50	6.70	5.80	6.20	6.60	6.00	6.00
All Island - Female	20.10	18.70	17.70	16.10	14.00	13.00	11.10	11.40	13.00	13.20	12.80

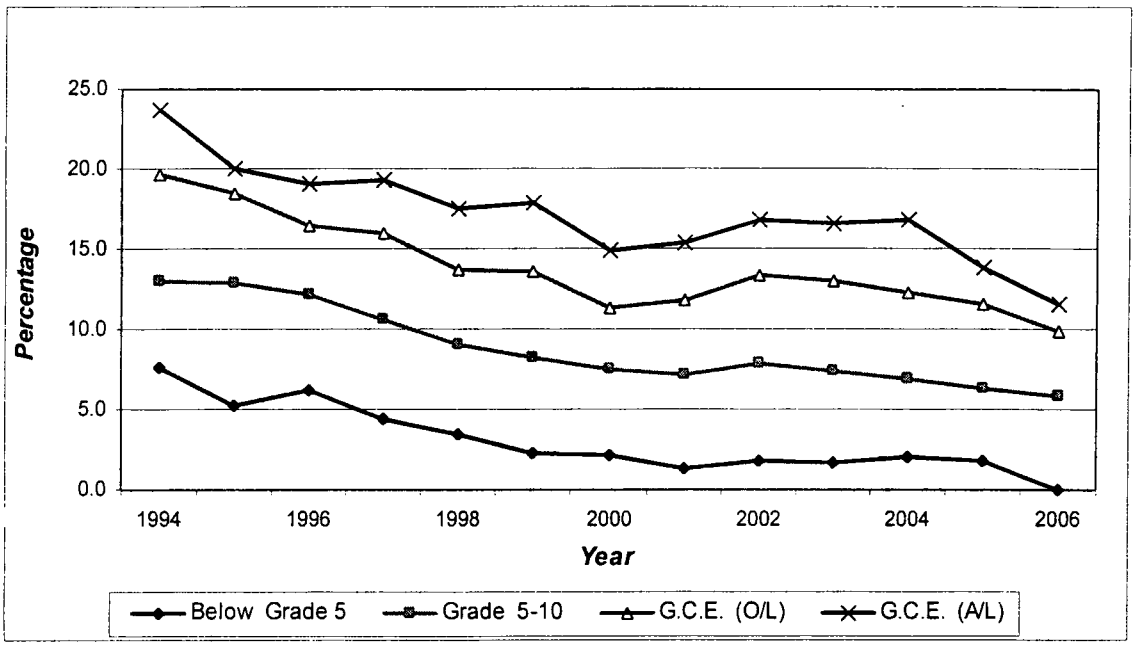
Source: Sri Lanka Labour Force Surveys, Department of Census and Statistics

Table 2.6: Unemployment by Level of Education

Year	Level of Education			
	Below Grade 5	Grade 5-10	G.C.E. (O/L)	G.C.E. (A/L)
1994	7.6	13.0	19.6	23.7
1995	5.2	12.8	18.4	20.0
1996	6.2	12.2	16.4	19.0
1997	4.4	10.6	15.9	19.3
1998	3.4	9.0	13.7	17.5
1999	2.3	8.2	13.6	17.9
2000	2.2	7.5	11.3	14.9
2001	1.3	7.1	11.8	15.3
2002	1.8	7.9	13.3	16.8
2003	1.7	7.4	13.0	16.5
2004	2.0	6.9	12.3	16.8
2005	1.8	6.3	11.5	13.8
2006	-	5.8	9.9	11.6

Source: Central Bank of Sri Lanka

Fig. 2.4: Unemployed Population by Level of Education



Source: Sri Lanka Labour Force Surveys, Department of Census and Statistics

2.2 Labour Productivity

Labour productivity measures the amount of produced output with a given amount of labour. Therefore, it is measured in terms of output per worker or output per man-hour. According to the annual report of the Central Bank of Sri Lanka (2005), the labour productivity is estimated on the basis of annual value addition per employee. Thus, the labour productivity per person in Sri Lanka for 2005 was estimated as Rs. 286,000/= and it has increased to Rs. 296,000/= in 2006. As shown in the table 2.7, labour productivity has increased tremendously after 2004 due to the expansion of the economy. It also shows that the productivity varies according to the different sectors such as agriculture and industries and service sectors. The highest productivity was reported in the service sector and personal productivity of the agricultural sector was less than half of the service and industrial sectors (Annual Reports, 2005 and 2006, Central Bank of Sri Lanka).

Table 2.7: Labour Productivity, Rs. '000 per Person

Sector	2001	2002	2003	2004	2005	2006
Agriculture	83.3	73.6	74.0	70.8	117.5	112.4
Industry	155.2	168.4	161.2	161.3	305.5	132.3
Services	163.4	160.8	163.7	169.1	392.3	424.6
Productivity	135.3	131.5	132.6	134.0	286	294.2

Source: Annual Reports 2005 and 2006, Central Bank of Sri Lanka

2.2.1 Wage Rates

Daily wage rates are the price of labour paid by users for various labour activities. Though the price of labour, relating to the skilled labour or the educated employee in the formal sector is determined mainly on the labour demand and agreements between the employer and employee, wage rate is the sphere of agriculture and related labour activities are determined on the availability of labour and supply conditions. So, the nominal wage rates in the agricultural sector comprise the prices paid for the agricultural labour for manual work related to plantations and paddy farming. However, the current wage rates in plantation (tea, rubber and coconut) and small industrial sectors are decided by the wage boards of the Labour Department.

Table 2.8: Variation of Annual Average Wage Rates (Nominal) in Plantation Sector and Paddy Farming Sector During 1995-2005 Period

Crop Sector	1995		2006*		Difference as a percentage	
	Male	Female	Male	Female	Male	Female
Tea	115.00	84.00	333.00	234.00	218.00	150.00
Rubber	113.50	92.00	335.00	249.00	221.50	157.00
Coconut	174.00	-	411.00	-	237.00	-
Paddy	134.50	103.50	375.00	289.00	240.50	185.50

Source: Central Bank of Sri Lanka
* provincial

The table 2.8 shows that the wage rates in all sectors have increased more than 100 per cent during the respective period indicating a higher increase in the plantation sector than in the paddy farming sector. It also reflects a variation of wage rates between male and female workers with the latter being paid nearly two thirds of what their male counterparts get. Both these rates have doubled during the past ten years.

Wage rates for non-farm work such as carpentry and masonry are relatively very attractive. The table 2.9 shows the variation of wage rates over the past ten years indicating an increase over 155 per cent in the occupations of masonry and carpentry trades, with wide differences between agricultural labour and skilled labour. The noteworthy feature of the difference is that the wage rate increases in non-agricultural sector are higher than those of the agricultural sector. Masonry and carpentry work provide the most well-paid jobs in the rural sector making a high demand from both rural and urban sectors.

Table 2.9: Daily Wage Rates for Non-Farm Work (Masonry and Carpentry)

Sector	1995	2005	Difference as %
Master Carpenter	233.64	598.85	156.3
Skilled Helpers	169.07	440.02	159.3
Unskilled Helper	132.21	352.38	166.5
Master Mason	226.97	593.5	161.5
Skilled Helpers	167.77	431.07	156.9
Unskilled Helper	131.30	350.9	167.2

Source: Annual Reports, Central Bank of Sri Lanka

2.3 Employment, Unemployment and Poverty

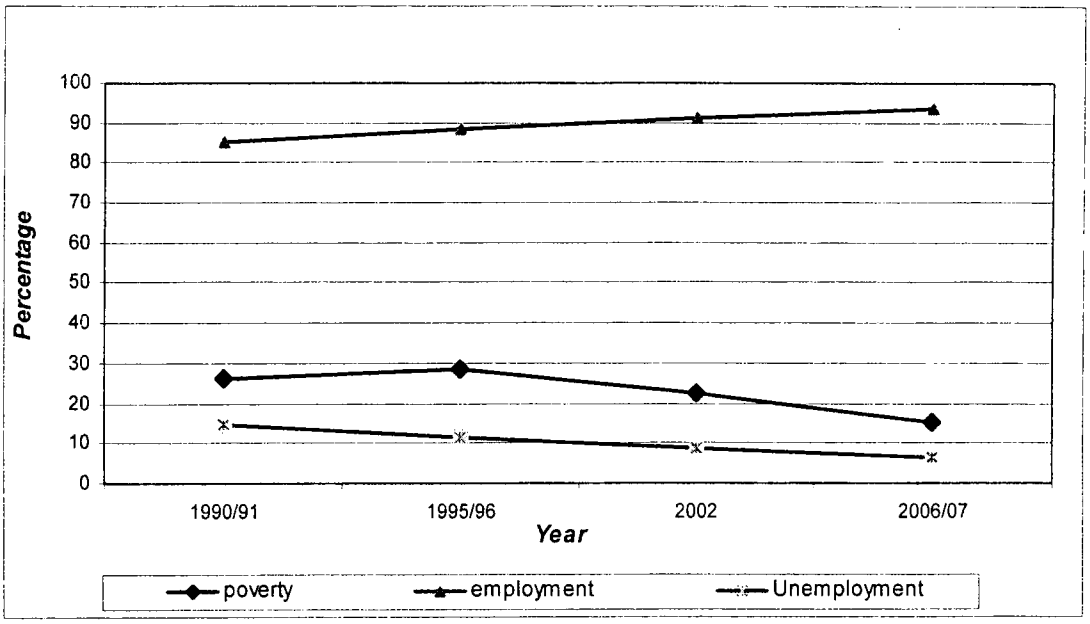
Since individual income presupposes the efficient utilization of human capital or involvement in effective employment, level of employment and unemployment has become a crucial factor in determining poverty (Watchal, 1984). Accordingly, if we analyze the variation of trend of these indicators in the past 15 years, a close relationship could be seen in the reduction of poverty and the increase of employment or a drop in the unemployment rate (see table 2.6 and fig. 2.5). The poverty measures were based on Head Count Index (HCI), which defined by the Department of Census and Statistics (DCS) as percentage of population below the official poverty line. As a result, HCI values derived from the food and non-food consumption information of Household Income and Expenditure Surveys (HIES) conducted by the DCS for 1990/01, 1995/96, 2002 and 2006/07 periods and updated correspondingly. The updated values of official poverty line that based on real total food and non-food expenditure per month per capita for the respective periods were estimated as Rs. 475.00, Rs. 833.00, Rs. 1,423.00 and Rs. 2,223.00 respectively. According to the table 2.10 which is based on the information of the HIES, the values of HCI at national level have decreased significantly during the respective periods from 26.1 in 1990/91 to 15.2 in 2006/07 (Household Income and Expenditure Surveys, Department of Census and Statistics).

Table 2.10: Relationship between Poverty, Employment and Unemployment

Indicator	1990/91	1995/96	2002	2006/07
Poverty Head Count Index	26.1	28.8	22.7	15.2
Level of Employment	85.3	88.7	91.2	93.5
Level of Unemployment	14.7	11.3	8.8	6.5

Source: Household Income and Expenditure Survey (2002) and Sri Lanka Labour Force Surveys, Department of Census and Statistics

Fig. 2.5: Poverty, Employment and Unemployment



2.4 Summary

The recent trends and developments in the labour market in Sri Lanka, give rise to the following factors:

1. Labour force has increased over the past ten years with an increase in the employed and a drop in the unemployed.
2. Labour participation rates of both males and females in the rural and urban areas substantially increased in the past ten years.
3. Private sector has become the main source of generating employment in the country and it accounts for nearly 46 per cent of the total employments provided. The state sector has dropped to the third place in this regard and nearly 30 per cent accounted for own or self-employment.
4. Employment opportunities in the agricultural sector have decreased remarkably in contrast to the increase in the industrial and the service sectors.
5. According to statistics, the rate of unemployment has decreased but it has spread among some educated categories like those with GCE (O/L) and GCE (A/L).
6. Compared with that in industries and the service sectors, the labour productivity in the agricultural sector has marked an increase, following the rise in total production and labour-saving methods.
7. Wage rates in both the agricultural and the non-agricultural sectors have increased more than 150 per cent in the past ten years. However, the increased wages for non-agricultural work is a significant feature revealing the fact that skilled labour is better paid.
8. As shown in the fig. 2.5, the poverty has come down substantially in the past due to the increase of the employed persons and the decrease of the unemployed persons.

Chapter Three

Socio-Economic Background

The chapter three discusses briefly the socio-economic status of the sample households. As such it indicates the characteristics of small farmers involved in commercial and subsistence farming of paddy, vegetables and pulses in the rain-fed and the irrigated farming areas, namely Hingurakgoda, Rambukkana, Welimada, Pallepola, Ududumbara and Galenbindunuwewa. The essence of the socio-economic analysis is an overview of some vital indicators such as gender distribution, household membership, age, level of education and source of employment, income and so on. This information is very useful to understand the ability and availability of agricultural labour in the respective areas.

In contrast to the national gender percentage of 49: male and 51: female, the male population in many study locations exceeds the female population, 52 as male and 48 as female. The proportion of male population is considerably higher in Hingurakgoda and Ududumbara areas, while in Welimada area, the female population is far higher. But the situation has a slight variation in other study locations (table 3.1).

Table 3.1: Distribution of Household Members by Sex

Sex	Hingurak-goda %	Rambuk-kana %	Welimada %	Pallepola %	Galenbin-dunuwewa %	Ududum-bara %	Total %
Male	55.8	51.5	45.9	50.3	51.5	56.3	52.2
Female	44.2	48.5	54.1	49.7	48.5	43.7	47.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

It is to be mentioned here that the total number of household members of the sample area indicates only the availability of the person, but not their readiness for employment activities. Therefore, further investigation was done on the age distribution of households. Accordingly, the table 3.2 reveals that a significant segment of the population (more than 75 per cent) is below 51 years of age. Of the total population, nearly 11 per cent of the household members belong to the 0-10 age category and approximately 22 per cent are teenagers. About 26 per cent of the household members are in the 21-35 age group, while 21 per cent account for the 36-50 age category. Hence, the elderly population above the 51-65 age category and above 65 years represents 21 per cent of the total members. Accordingly, nearly 50-60 per cent of the total could be considered as the employable population.

Table 3.2: Distribution of Household Members by Age Groups

Age Group	Hingurak-goda %	Rambuk-kana %	Welimada %	Pallepol-a %	Galenbindu-nuwewa %	Ududum-bara %	Total %
0 – 10	7.6	11.5	18.5	7.6	17.5	6.9	11.4
10 –20	17.8	13.9	19.2	23.6	24.6	29.9	21.5
21 – 35	31.5	28.5	26.0	22.3	23.4	23.6	26.0
36 – 50	17.8	15.8	18.5	27.4	24.0	21.8	20.8
51 – 65	17.3	22.4	12.3	14.6	8.8	13.8	15.0
Above 65	8.1	7.9	5.5	4.5	1.8	4.0	5.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

With regard to level of education, a significant portion of the farmers, overall 76 per cent have reached the secondary level of education; exact figures for Ududumbara and Pallepola being 45 per cent and 68 per cent respectively (table 3.3). This indicates the percentage of a large number of farmers fairly educated to understand and adopt new productivity enhancing technologies and cultivation practices. It was only from Ududumbara and that too was negligible, as only 5 per cent did not attend school, out of the total population, it was reported.

Table 3.3: Household Distribution by Level of Education

Level of Education	Hingurak-goda %	Rambukkana %	Welimada %	Pallepola %	Galenbindu-nuwewa %	Ududum-bara %	Total %
No schooling	-	2.5	-	-	-	5.0	1.3
Primary	22.5	10.0	10.0	32.5	5.0	50.0	22.2
Secondary	77.5	87.5	90.0	67.5	90.0	45.0	75.7
Tertiary	-	-	-	-	5.0	-	0.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

The table 3.4 shows the total labour force and its variation according to the sample locations. Almost 83 per cent of the total household members in all locations belong to the labour force and it varies from 76 per cent (Welimada) to 89 per cent (Ududumbara). However, only 55 per cent of the labour force was employed and nearly 5 per cent was reported as unemployed and seeking for jobs or not interested in jobs. According to the table 3.4, the student population representing 22 per cent of the household population is also of importance. The students, the discouraged workers and others numbering nearly 20 per cent of the household members depend on others. These figures vary slightly by study locations. The Crude Activity Rate, which represents employed and unemployed persons of total sample, is 60 per cent and the Net Activity Rate that indicates employed and unemployed persons of labour force is 71 per cent. However, the average economic dependency ratio has gone up to 81 per cent with a wider variation of 61 per cent in Hingurakgoda and 126 per cent in Rambukkana areas.

Table 3.4: Labour Force and Activity Related Measures

Activity	Hingur-akgoda %	Rambuk-kana %	Welimada %	Pallepola %	Galenbind-unuwewa %	Ududu-mbara %	Total %
(a) Labour Force	84.3	80.6	76.0	87.9	80.7	89.1	83.3
(b) Employed	61.9	44.2	54.8	63.7	60.8	46.0	55.3
(c) Unemployed (Seeking)	5.1	5.5	1.4	3.2	0.0	7.5	3.9
(d) Unemployed (Housewife)	2.0	2.4	0.0	0.0	0.0	0.0	0.8
(e) Schooling	15.7	20.0	20.5	22.9	28.1	27.0	22.3
(f) Discouraged Workers	10.2	9.1	19.2	7.6	11.1	5.2	10.2
(g) Others	5.1	18.8	4.1	2.5	0	14.4	7.5
Crude Activity Rate	69.0	52.1	56.2	66.9	60.8	53.4	60.0
Net Crude Activity Rate	81.9	62.8	72.6	75.5	73.2	58.5	70.8
Economic Depen-dency Ratio	61.5	126.0	82.5	57.0	64.4	117.5	80.7

Crude Activity Rate (%) $= \frac{(b) + (c)}{\text{Total Sample Population}} \times 100$

Net Crude Activity Rate (%) $= \frac{(b) + (c)}{\text{Labour Force}} \times 100$

Economic Dependency Ratio (%) $= \frac{(c) + (d) + (e) + (f) + (g)}{\text{Total Employed Persons (b)}} \times 100$

As shown in table 3.5, the cultivation is the prominent mode of employment among the sample population with a share of 74 per cent of the farmers, followed by private sector employment and government employment. This is the common scenario in the rural areas. Nearly 19 per cent is involved in employments in the private and the government sectors and a small number of respondents in self-employment (table 3.5).

Table 3.5: Type of Main Employment Engaged by the Household Members

Source of Employment	Hingurak-goda %	Rambuk-kana %	Welimada %	Palle-pola %	Galenbind-unuwewa %	Ududum-bara %	Total %
Cultivation	67.2	53.4	87.5	84.0	90.4	58.8	74.4
Self-Employment	4.9	4.1	2.5	5.0	0.0	5.0	3.6
Agriculture Hired Labourer	0.8	1.4	0.0	0.0	0.0	0.0	0.4
Non-Agricultural Hired Labourer	0.8	2.7	0.0	0.0	0.0	0.0	0.5
Government Employment	10.7	16.4	2.5	4.0	7.7	10.0	8.4
Private Sector Employment	12.3	12.3	7.5	6.0	1.0	26.3	10.4
Foreign Employment	1.6	9.6	0.0	1.0	1.0	0.0	2.0
Others	1.6	0.0	0.0	0.0	0.0	0.0	0.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Of the total respondents, only 13 per cent reported that they were involved in some secondary employment. Agriculture sector services related to labouring, trade and hiring labour were the prominent sources of secondary employment for nearly half of the respondents. Self-employment activities were reported as the second important secondary source of employment with an involvement of nearly 42 per cent of the respondents. Except in Welimada and Pallepola areas, where the vegetables are cultivated, nearly 17 per cent of the respondents reported that provision of agricultural labour as the secondary source of income, while 13 per cent of the respondents said that their source was non-agricultural labour. It was observed that the demand for non-agricultural work such as carpentry and masonry was on the increase during the off-farm period (table 3.6).

Table 3.6: Type of Secondary Employment Engaged by the Household Members

Main Employment	Hingurk-goda %	Rambuk-kana %	Welimada %	Palle-pola %	Galenbind-unuwewa %	Ududum-bara %	Total %
Cultivation	36.4	14.3	28.6	0.0	15.4	66.7	26.8
Self-Employment	54.5	28.6	71.4	100.0	23.1	33.3	42.3
Agricultural Hired Labour	4.5	19.0	0.0	0.0	53.8	0.0	16.9
Non-Agricultural Hired Labour	4.5	33.3	0.0	0.0	7.7	0.0	12.7
Private Sector Employment	0.0	4.8	0.0	0.0	0.0	0.0	1.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 3.7: Classification of Households by Size of Annual Income from the Employments

Income Groups (Rs.)	Hingurk-goda %	Rambuk-kana %	Welimada %	Palle-pola %	Galenbind-unuwewa %	Ududum-bara %	Total %
<= 36,000	0.0	32.5	16.7	0.0	0.0	22.5	11.7
36,000 <= 60,000	2.5	7.5	33.3	12.5	0.0	40.0	15.2
60,000 <= 90,000	5.0	10.0	23.3	40.0	2.5	17.5	16.1
90,000 <= 120,000	25.0	7.5	3.3	22.5	30.0	2.5	15.7
120,000 <= 180,000	12.5	20.0	10.0	2.5	45.0	10.0	17.0
> 180,000	55.0	22.5	13.3	22.5	22.5	7.5	24.3
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

The survey results also indicate that the income disparity is high among the sample population. As shown in table 3.7, about 43 per cent of the respondents receive an income of less than Rs. 100,000/= per annum. Among the respondents, 11 per cent receive less than Rs. 36,000/= per annum and 15 per cent between Rs. 36,100/= and Rs. 60,000/= per annum. Thus, those who receive less than Rs. 36,000/= per annum could be regarded as the most vulnerable groups in the study areas. The majority of this category was reported only from Rambukkana, Welimada and Ududumbara areas. Even those who receive between Rs. 36,100/= to Rs. 60,000/= per annum also came from the same areas indicating the uncertainty in subsistence oriented rain-fed farming of paddy, vegetables and kurakkan. The third income categories that receive Rs. 90,000/= and above per annum were reported mainly from Hingurakgoda, Galenbindunuwewa and Pallepola areas. Compared to other locations, income disparity in Rambukkana area is higher. Similar disparities in Uddumbara area also reflect the uncertainty of rain-fed farming. Conversely, one fourth of the population in Hingurakgoda, Rambukkana, Pallepola and Galenbindunuwewa areas receive more than Rs. 180,000/= per annum.

Chapter Four

Factors Related to Labour Supply and Demand

The chapter four reviews the factors that influenced the determination of demand and supply of the labour market in the non-plantation agricultural sector in Sri Lanka. The chapter consists of four sections. The section 4.1 highlights the main source of labour availability in the agricultural sector and its utilization in the cultivation of different crops such as paddy, vegetables and pulses. The section 4.2 describes the factors that accounted for the demand and supply of hired labour in the labour market and reasons for not using hired labour in some instances. The section 4.3 describes the emerging issues in the hired labour market and the final section depicts the determination of wage rates in the study locations.

4.1 Labour Utilization

According to the labour utilization pattern in the study areas, two types of models could be identified particularly with respect to paddy, vegetables and pulses farmed in Sri Lanka.

1. High labour-intensive farming practices related to paddy, pulses and vegetable farming in rain-fed areas.
2. Labour-saving farming practices related to irrigated paddy and maize farming areas.

As shown by the survey results, the pattern of labour utilization in paddy, vegetables and pulses grown in both irrigated and rain-fed areas was entirely based on four labour supply methods such as family labour, hired labour/contract labour and mutual labour sharing methods i.e. *attam* and *kaiya*. Thus, small-scale subsistence paddy farming in Rambukkana area and kurakkan and vegetable farming in Ududumbara, Welimada and Pallepola areas were labour-intensive and highly based on family labour. But, irrigated paddy and maize farming in Hingurakgoda and Galenbindunuwewa areas were low labour intensive and mostly based on hired labour and contract labour supplemented with machinery. Compared to paddy and maize farming, the vegetable farming is highly labour-intensive as the demand varies according to operational activities. The table 4.1 highlights the total labour requirements for cultivating an acre of paddy and other crops according to labour supply methods such as family, *attam*, hired and contract labour.

Table 4.1: Labour Requirements and Source of Labour for Paddy and Other Crops

Crop and Location	Labour Requirement (Total Man Days/Acre)	Source of Labour (man days)			
		Family Labour	Hired Labour	*Attam* Labour	Contract Labour
Paddy					
Hingurakgoda	33	11.7	11.0	0.1	10.2
Rambukkana	49	18.4	14.9	6.4	9.1
Beans					
Welimada	131	81.9	46.7	0.1	3.1
Pallepola	85	73.5	1.7	1.7	-
Cabbage					
Welimada	121	74.8	0.2	0.2	10
Pallepola	111	91.0	5.9	5.9	-
Maize					
Galenbindunuwewa	29	22	5.1	5.1	-
Kurakkan					
Ududumbara	66	38.3	13.5	13.5	-

Unlike paddy and maize cultivation in irrigated areas, vegetable farming and paddy farming in rain-fed areas are still labour intensive due to two reasons: paddy farming in rain-fed areas is entirely based on small plots that have physical constraints in using farm machinery. Vegetable cultivation is still predominantly practised by small-scale growers and it hinges on family labour. Consequently, the labour requirement for the vegetable cultivation remains unchanged though it has marked a decline in the cultivation of paddy in irrigated areas due to adoption of labour-saving methods. Labour-saving methods operated in Hingurakgoda were the use of tractors for ploughing and combine harvesters for harvesting, threshing and winnowing. As shown by John Farrington and Fredrick Abeyratne (1982), the mean labour requirement for cultivating an acre of paddy land accompanied by using tractors in irrigated paddy fields in Polonnaruwa district was 64 man-days in 1982 and it has reduced almost half in 2006 indicating that 33 man-days as required labour-days (table 4.1). Consequently, it shows that labour absorption in paddy cultivation in irrigated areas has declined, while it remains unchanged in paddy farming and vegetable cultivation in rain-fed areas. Compared to kurakkan farming in rain-fed areas, maize farming in irrigated areas requires less labour due to the use of tractors for land preparation and threshing. As a result, the labour absorption in the maize cultivation has also declined substantially.

4.1.1 Family Labour

Household family members; men, women and children working together is a common feature of family labour in every study area. Family labour supply is not limited to eight hours as in the case of hired labour and they work more hours, with no concern for leisure hours. It was observed that family labour was utilized for light work such as weeding, fertilizing and harvesting which does not entail skilled labour or hard work.

4.1.2 Hired Labour

In the hired labour utilization, individuals or a team were hired for an assigned work to be completed with a given time frame or for a given task. Contract labouring system, too followed the same pattern. However, the contract system was adopted for same specific assigned task such as ploughing and harvesting, or for a quantified target agreed on a price.

With regard to the paddy cultivation, the rate of hired labour utilization is higher in irrigated commercial cultivation at Hingurakgoda, than in the small-scale subsistence farming practices at Rambukkana. According to table 4.2, nearly 75-90 per cent of the farmers at Hingurakgoda reported using hired labour for cultivation activities such as plastering bunds, broadcasting, harvesting, threshing and winnowing, while it was below 50 per cent for some activities such as leveling, fertilizer application and pest and disease control. The nature of farming activities in large-scale paddy farming in Hingurakgoda area compels the farmers to make use of hired labour as they agree to use irrigation water during the water allocation period. Since there are such obligations under rain-fed farming in Rambukkana area, a low percentage of farmers used hired labour except for harvesting (table 4.2).

Table 4.2: Use of Hired Labour for Farming Activities in Irrigated and Rain-fed Paddy Farming Areas in Hingurakgoda and Rambukkana

Cultivation Activity	No. of Farmers Utilized for Hired Labour (%)	
	Hingurakgoda	Rambukkana
Preparation of Nursery	0.0	28.6
Clearing Bunds and Canals	72.5	37.5
Ploughing	40.0	70.0
Plastering Bunds	72.5	40.0
Leveling	40.0	47.5
Broadcasting	92.5	18.2
Planting	0.0	80.0
Weed Controlling	0.0	34.5
Fertilizer Application	34.2	30.0
Pest and Disease Controlling	40.0	40.0
Water Management	0.0	25.0
Harvesting	92.5	82.5
Threshing and Winnowing	90.0	72.5
Transport from Farm to Home	84.6	53.8

But, it seems that hired labour requirements and its utilization are somewhat diverse in vegetable growing areas, where labour requirement is high, depending on different kinds of activities. Therefore, vegetable cultivation mainly relies on family labour except for some operations like weeding and harvesting. Moreover, this cultivation is carried on as a small-scale activity and the farmers are able to meet the labour requirements by themselves. However, it seems that when vegetable cultivation becomes more commercialized, the farmers tend to use hired labour. This situation could be seen in market-oriented vegetable growing areas at Nuwara Eliya and

could be seen in market-oriented vegetable growing areas at Nuwara Eliya and Welimada. According to table 4.3, labour utilization at Pallepola area is limited to family labour, whereas farming in Welimada area relies on hired labour.

Table 4.3: Use of Hired Labour for Vegetable Farming Activities in Welimada and Pallepola

Cultivation Activity	No. of Farmers Utilized for Hired Labour (%)	
	Welimada	Pallepola
Preparation of Nursery	3.3	0.0
General Land Preparation/ Canals	90.0	30.8
Ploughing	63.6	0.0
Leveling	86.7	15.0
Preparation of Beds and Ridges	90.0	17.5
Seeding/Planting	80.0	12.5
Fixing Support	56.7	0.0
Weeding (manually)	0.0	-
Weeding/Earthing up	83.3	20.0
Fertilizer Application	6.7	10.0
Pest and Disease Controlling	3.3	2.5
Water Management	10.0	0.0
Harvesting	96.7	50.0
Transport from Farm to Home	73.3	0.0

The use of hired labour for pulses such as kurakkan and maize at Ududumbara and Galenbindunuwewa remains at a very low level. According to table 4.4, only a small per centage of the farmers utilized hired labour in both locations. As a very traditional village, in Ududumbara, the farmers used hired labour for land preparation and harvesting, accounting for nearly 20 per cent of the requirement. But, maize farmers at Galenbindunuwewa rarely used hired labour except for weeding. It was observed that use of labour sharing methods (*attam*) is more common in Ududumbara and Galenbindunuwewa areas as a method of minimizing cost.

Table 4.4: Utilization of Hired Labour for Kurakkan and Maize Cultivation in Ududumbara and Galenbindunuwewa Areas

Cultivation Activity	No. of Farmers Utilized for Hired Labour (%)	
	Ududumbara	Galenbindunuwewa
Preparation of Nursery	-	-
General Land Preparation/Canals	20.0	7.5
Ploughing	15.0	-
Leveling	7.5	-
Preparation of Beds and Bridges	12.5	-
Seeding/Planting	17.5	12.5
Weeding (manually)	12.5	-
Weeding/Earthing up	7.7	37.5
Fertilizer Application	2.5	12.5
Pest and Disease Controlling	-	-
Water Management	2.5	-
Harvesting	22.5	7.5
Transport	-	5.0
Drying/Threshing	-	7.5

The field data indicates that utilization of hired labour varies from crop to crop and area to area. The dependent factors are availability of hired labour and family labour, size of the lands, commercial orientation of cultivation and the farmers' understanding of using technological alternatives.

4.1.3 Contract Labour

It was found that paddy farmers in both irrigated and non-irrigated areas had employed the contract labour system for carrying out some cultivation activities that needed completion of assigned targets within a given time frame by individuals or a group. Such activities included cleaning bunds/canals, planting, harvesting and threshing, for which the contractor agreed upon the target, time frame and payments. Thus, the payments (charges) for contract labour are conditioned by the activity and it varies area wise, depending on whether it is irrigated or rain-fed farming. The table 4.5 shows activities and payments in Hingurakgoda and Rambukkana areas, where contract labour system was used on a large scale. It was observed that farmers in Hingurakgoda area used to provide lodging, meals, betel, beedi, soap and health care for contract labourers during the period they stayed for work.

Table 4.5: Average Charges Paid for Contract Labourers in Hingurakgoda and Rambukkana Areas

Cultivation Operations	Method/ Unit	Paddy Cultivation Area (Rs./Acre)	
		Hingurakgoda	Rambukkana
Cleaning Bunds/Canal	Per Acre	1,175	-
Plastering Bunds	Per Acre	850	-
Planting	Per Acre	-	3,380
Harvesting	Per Acre	5,000	2,712
Threshing	Per Acre	-	2,000

The contract labourers usually come from outside areas, mainly due to the unavailability of jobs in these local areas. There is a middleman in providing contract labour, who works as a link between the contract labourers and the farmers who required their service. The farmers in Hingurakgoda area pay Rs. 200/= to the middleman for provision of contract labour for any nature of activity.

4.2 Factors Considered for Demand and Supply of Hired Labour

Factors influencing the determination of demand and supply of labour were assessed identifying key indicators that were followed for selecting labourers for different operational activities of the paddy, vegetables and pulses farming. The farmers give special consideration to certain factors when selecting hired labour for cultivation activities. These factors are mainly experience, gender and knowledge in cultivation, efficiency, honesty, age and ability. Considerations, which satisfy the quality and requirements of farmers, were taken into account as the key factors. Knowledge about the subject, experience and gender are the key determinant factors in the formal labour market that determine the wages and salaries for individual labour. Similarly the rural agricultural labour market also determines on these key factors. It was found that labour demand and supply varied according to various operational activities and the nature of farming i.e. commercial or subsistence farming. Therefore, the farmers' opinions on determining the labour demand and supply were assessed by ranking above factors, according to the total number of farmers who used hired labour for different activities.

Table 4.6 (1): The Key Factors Considered for Demand and Supply of Labour for Paddy Farming in Hingurakgoda and Rambukkana Areas

Key Factors Considered for Labour Demand and Supply	Hingurakgoda		Rambukkana	
	No. of Respondents	Ranking Value	No. of Respondents	Ranking Value
Experience	97	2	110	1
Gender	192	1	46	5
Knowledge	69	4	77	3
Efficiency	74	3	84	2
Honesty	22	5	30	7
Age	08	8	15	8
Ability	09	7	31	6
None	15	6	47	4
Obedient	-	-	02	9

Each farmer is free to indicate more than one answer

The table 4.6 (1) shows factors considered to be important by the farmers for labour supply and value in different activities at Hingurakgoda and Rambukkana. Ranking value, which determines the number of farmers responded, varied from area to area depending on the requirements and the availability. Thus, the farmers at Hingurakgoda, used to consider gender as the key factor in selecting hired labour than the experience as mentioned by Rambukkana farmers. This happened mainly due to the fact that labour requirement in irrigated areas is gender specific i.e. ploughing and harvesting by men and transplanting by women. However, since rain-fed paddy farming is practised mainly by using family labour, farmers consider experience as the key factor because they require experienced labours for some specific tasks such as ploughing, puddling and leveling. Subject/work knowledge and efficiency were also considered prominent factors. Efficiency was defined better performance as expected by farmers. Generally, in all locations, the women workers were used in specific activities such as planting, weed controlling, harvesting and broadcasting. The men workers are preferred for difficult tasks.

Table 4.6 (2): The Key Factors Considered for Demand and Supply of Labour forVegetable Farming Areas at Welimada and Pallepola

Key Factors Considered for Labour Demand and Supply	Welimada		Pallepola	
	No. of Respondents	Ranking Value	No. of Respondents	Ranking Value
Experience	189	1	14	3
Gender	67	3	33	1
Knowledge	79	2	6	4
Efficiency	27	6	4	5
Honesty	41	5	-	-
Age	17	7	-	-
Ability	48	4	1	6
None	13	8	21	2
Obedient	-	-	-	-

Even in vegetable cultivation, the factors associated with paddy farming were given foremost consideration by the farmers {table 4.6 (2)}. A small segment of farmers does not consider any factor when selecting labour for cultivation activities. The positions are the same in most of the locations. However, the factors such as honesty, age, ability and obedience are either not considered or given a lesser importance in most of the locations as reflected in tables 4.5 and 4.6. The analysis does not include Ududumbara and Galenbindunuwewa since kurakkan and maize cultivations were mainly based on shared labour and family labour.

Though the age is not taken into consideration as a key factor as mentioned in the above tables, it was reported that the majority of farmers in sample locations prefer hired labour aged between 31-50 years. However, most of the farmers in Pallepola location prefer the group aged between 51-70 years due to their experience and knowledge. The corresponding figures for Rambukkana and Galenbindunuwewa are 21-30 years.

4.3 Availability of Hired Labour

The labour shortage is largely experienced during *maha* season as almost all the farmers both in the irrigated and the rain-fed areas are geared up for cultivation. It was also observed that the hired labour availability varied according to seasons and areas cultivated. Consequently, hired labour shortage is remarkably witnessed in paddy farming areas at Hingurakgoda and vegetable farming areas at Welimada. However, no labour shortage was reported in other study locations which mostly depended on family and *attam* labour. It implies that small-scale paddy and vegetable cultivation still could be pursued with family labour and mutual labour sharing methods available in typical villages. On the other hand, the availability of hired labour depends mainly on factors such as farming practices and availability of employment opportunities in surrounding areas and in urban areas, where job opportunities were available in the industrial and the service sectors.

Of the reasons behind the non-availability of hired labour, the decrease in the hired labour population tops the list. This is mainly due to the reluctance of the youth to work as labourers in the field. As a result of low income, the social acceptance and attitudes, willingness for brown colour jobs is declining. In addition the availability of job opportunities in garment industries in rural and urban areas and in the foreign job market, has worsened the situation. The other reason reported at Hingurakgoda is that the increase in government social security benefits such as Janasaviya and Tsunami aids discourages the people from working as labourers. After the Tsunami disaster, the Government and the non-governmental organizations provided material and financial assistance to Tsunami affected areas and the labourers who migrated from these locations to the farming areas during the harvesting and cultivation period preferred to stay back. Labourers from Batticaloa and Kalmunai areas normally come to work in Polonnaruwa and Mahaweli paddy fields. But after the Tsunami, a drastic decline was observed in this respect. The table 4.6 depicts reasons for the decline in the use of hired labour in farming areas.

Table 4.7: Factors Related to Decline in Use of Hired Labour in the *Maha* Season

Reasons	No. of Farmers as a Percentage		
	Hingurakgoda	Rambukkana	Welimada
Decrease Hired Labour Population	70.0	61.5	64.0
Engaged in Other Employments	40.0	84.6	36.4
Younger Generation Dislike to be Hired Labour	15.5	15.4	9.0
Discourage to Work Due to Government Subsidies	12.5	-	-

Pallepola, Ududumbara and Galenbndunuwewa areas were not included because demand for hired labour is insignificant.

It was also found that non-availability of hired labour, does not have any serious implications except in the case of a few farmers at Hingurakgoda who reported a consequent increase in the cost of production and delays in cultivation operations. However, if hired labour is going to be a problem, in the future, it would be more so in irrigated farming areas.

4.4 Reasons for Not Using Hired Labour

Of the total number of farmers interviewed in all study locations, only 35 per cent of the farmers hardly used hired labour, whereas all the farmers in Hingurakgoda and Welimada areas resorted to this practice. The farmers do not use hired labour mainly to minimize the cost and to increase the return. For instance, the farmers at Pallepola and Galenbindunuwewa used to practise family and *attam* labour as a method of cost minimizing that would help them to remain in small-scale vegetable and maize farming even at breakeven point, that returns equal to production cost. Thus, it is clear that the use of hired labour is the most crucial factor in determining economic viability of vegetable and maize cultivation in Pallepola and Galenbindunuwewa areas. Though the use of labour sharing methods have been abandoned in many areas of the country, still it is being practised in a very few villages where family and *attam* labour is available due to coherent social links in traditional villages. According to table 4.8, a significant number of farmers at Pallepola and Ududumbara purposely avoid the use of hired labour due to lack of funds, while the farmers at Hingurakgoda follow suit in order to reduce the cost of farming.

Table 4.8: Reasons for Not Using Hired Labour

Reasons	Percentage of Farmers Responded in Each Locations				
	Hingurak-goda n=6	Rambuk-kana n=13	Pallepola n=15	Galenbin-dunuwewa n=23	Ududum-bara n=24
Reduction in the Cost	83	77	27	9	50
Availability of *attam* and Family Labour	83	62	13	74	75
Contract Labourers are More Efficient	17	-	6.7	-	-
Lack of Funds	-	-	80	-	29
Difficult to Find Hired Labourers		7.7	7	-	-

4.5 Wages

According to the economic definition, wage is an income received by a person for the entire range of hours worked by him. Labour supply is inelastic, which indicates low response of labour supply even when wage rates increase. As mentioned in the section two, though wage rates of the country have increased over 160 per cent in the past 10 years, the number of working hours has not increased as conceptualized in wage theories. It indicates that the increase in the labour rates in Sri Lanka in the past ten years is mainly due to the inflationary effects, other than the increase in labour supply.

Usually eight working hours are considered as a working day and wage rates are determined more on a daily basis than on an hourly basis. Since the wage rates depend on the amount of work to be completed per working day, they also vary according to gender and age, assuming that men perform better than women and children. Consequently, a slightly higher wage rate is payable for a male workers than for the female workers and the children. According to the survey, a higher rate of wage level was observed for paddy farming at Hingurakgoda, within the range of Rs. 300/= to Rs. 350/= per man-day for a male labourer. Likewise, the highest labour wage rate persisted at Welimada and Pallepola for vegetable farming. Female wage rate was almost four fifth or 80 per cent of that for males. According to table 4.9, it seems that labour rates vary according to different farm activities. Thus, the rates for cleaning bunds and threshing are somewhat higher than for activities such as application of fertilizer, pest/disease control, water management and harvesting. A high wage rate was also recorded for maize cultivation in Galenbindunuwewa ranging between Rs. 300/= to Rs. 390/= per man-day for male workers. However, Rambukkana reported a lower wage rate ranging from Rs. 238/= to Rs. 300/= and Rs. 250/= to Rs. 390/= with the supply of meals. Thus, determination of wage rate is conditioned by the provision of meals and entrusted work. The difference of the wage rates between the males and females varied from Rs. 75 to Rs. 150, with the female workers entrusted with specific and easy jobs like weeding, transplanting and harvesting. On the other hand, it was observed that male–female wage difference was related with efficiency and the productivity of the duties performed.

Table 4.9: Average Daily Labour Rates (Rs.) in Hingurakgoda and Rambukkana Paddy Farming Areas

Type of Paddy Cultivation Operations	Hingurakgoda				Rambukkana			
	Male		Female		Male		Female	
	With Food	Without Food	With Food	Without Food	With Food	Without Food	With Food	Without Food
Preparation of Nursery	300	350			250	250		
Cleaning Bunds and Canals	318	347			250	250		
Ploughing	323	340				250		
Plastering Bunds	318	350			250	283		
Leveling	312	350			250	250		
Broadcasting	320	357			300	350	200	
Planting	300	350			244	300	230	238
Weed Controlling					275		200	
Application of Fertilizer	316	340			200	200		
Pest and Diseases Controlling	323	357						
Water Management	315	350						
Harvesting	316	352	250	300	238	260	222	242
Threshing and Winnowing	321	353			250	290	250	
Transport					250	250		

Variation of wage rates in the vegetables, kurakkan and maize cultivation in other study locations is presented in tables 4.9 and 4.10 indicating wage differences according to different activities and gender wise. According to table 4.10, the average daily wage rate for many farming activities in Welimada area is around Rs. 300/= but it ranges from Rs. 250/= to Rs. 350/= in Pallepola area indicating a slight increase for some activities such as preparation of beds and earthing up. The wage rate difference between the male and female workers is nearly Rs. 100/= in both areas.

Though the majority of the farmers in Ududumbara and Galenbindunuwewa areas did not use hired labour, the prevailing labour rates in both areas were considered in order to see the variation within different faming practices in maize and kurakkan farming. As shown in table 4.11, relatively low wage rates were paid in Ududumbara area where the farmers still predominantly use family labour for their small-scale farming.

Table 4.10: Average Daily Labour Rates (Rs.) in Welimada and Pallepola Vegetable Growing Areas

Type of Operations	Welimada				Pallepola			
	Male		Female		Male		Female	
	With Food	Without Food	With Food	Without Food	With Food	Without Food	With Food	Without food
Preparation of Nursery								
Genaral Land Preparation /Canals	304				300	344		
Ploughing	300							
Levelling					350			
Preparation of Beds and Ridges	305		200		310	350		
Seeding/Planting	305		202				163	212
Fixing Support	310							
Weeding (manually)			201					
Weeding/Earthing up	325		200		283	333	160	210
Application of Fertilizer	350				275	300	175	225
Pest and Diseases Controlling	317				250	300		
Water Management	304							
Harvesting	300		205		281	328	166	207
Transport	300							

Table 4.11: Average Daily Labour Rates (Rs.) in Ududumbara and Galenbindunuwewa Kurakkan and Maize Growing Areas

Type of Operations	Maize Cultivation				Kurakkan Cultivation			
	Galenbindunuwewa				Ududumbara			
	Male		Female		Male		Female	
	With Food	Without food	With Food	Without food	With Food	Without Food	With Food	Without food
General Land Preparation /Canals	300	350			225	250		
Ploughing					250			
Preparation of Beds and Ridges					238	250		
Seeding/Planting	333	383	275	325	238	250	163	200
Weeding (manually)					250			200
Weeding/Earthing up	331	381	275	325	275	300	160	
Application of Fertilizer	340	390	275	325			175	
Harvesting							166	200
Transport								
Drying/Threshing	325	375	250	300				

All in all three important features could be identified with respect to labour rates in all locations:

1. The average daily labour rate for a male worker (without meal) is Rs. 300/= and it varies from Rs. 225/= to Rs. 350/=.
2. It is customary to provide meals in all study locations, resulting in an addition of Rs. 50/= to the labour rates. However, the provision of food depends on the agreement and the type of activities assigned. Farmers believe that provision of food stimulates the worker and subsequently increase the labour productivity.
3. Though women play a key role in farming activities, they provide hired labour only for some specific work such as weeding, transplanting and harvesting. The current rates paid for women are not worthwhile even if they provide a similar workload as male workers, indicating a sort of exploitation of women labour in the rural farming sector.

The wages for the labourers have an impact on the changing cost of production and net return. It also influences the living condition of the labourers. Hence, the levels of wages for hired labour become a crucial factor in paddy and vegetable cultivation in Sri Lanka. Nearly 80 per cent of the farmers felt that present level of labour wages is reasonable though it is unbearable. It was observed that wage rates in some neighbouring villages are marginally higher than those of the study villages, especially in Hingurakgoda and Welimada areas.

4.6 Summary

Labour-intensive and labour-saving methods were common to farmers in all study locations. Labour-intensive methods were in operation mainly in the rain-fed farming areas and labour-saving methods related with technology and machineries were followed mainly in the irrigated and the commercial farming areas.

Labour supply was based on four methods such as family labour, hired labour, contract labour and *attam* or shared labour. Family and shared labour were used mainly in rain-fed farming systems, while irrigated and commercial farming areas depended more on hired and contract labour. Shortage of hired labour during the cultivation and harvesting time has become the severest problem of irrigated areas, resulting in an increase in the use of machinery. Among the reasons for unavailability of hired labour, a drop in the hired labour population tops the list, the cause of which is the reluctance of the youth to work as labourers in the farming sector.

The demand and supply for labour was determined mainly on a few factors such as experience, gender, knowledge in cultivation, efficiency, honesty, age and the ability of the providers of labour.

The average daily wage rate for a labour worker (without meal) is Rs. 300/= and it varies from Rs. 225/= to Rs. 350/= in accordance with female labour and locations. It is customary to provide meals in all areas which causes a slight change in the labour wage rate.

Though women play a key role in farming activities, the current wage rates paid for them are not compatible with the workload they put in, which is in many instances similar to that of their male counterparts.

Chapter Five

Labour Productivity

The chapter five deals with the theme of labour productivity, which highlights the efficiency or the factor productivity. The factor productivity of paddy, vegetable and pulses farming could be measured in terms of the production factors utilized i.e. land, labour, capital, technology, etc. Since the study focuses mainly on labour productivity, it is measured by estimating the total returns from farming, calculating the amount of labour or the total man-hours used for receiving the output/return. So assuming that the other inputs such as the land and capital are fixed, any improvement in the labour productivity due to application of technology is taken into consideration because the effects of technological improvements are instrumental in improving the labour productivity. Though the productivity factor has been discussed thoroughly in macro-economic analyses, hardly any exercise has been attempted to assess the impact of technology on improving labour utilization, especially in the domestic farming sector. Therefore, the analysis of the labour productivity in this chapter centers mainly on factor productivity. Thus, the section 5.1 presents labour productivity of all the farmers both in terms of output per worker and the output per man-hour. It highlights variation of labour productivity according to paddy, vegetable and pulses farming. The section 5.2 shows efficiency of labour utilization in paddy farming. The section 5.3 describes changes in labour utilization due to the adoption of technology for farming. The final section 5.4 presents factors that contributed to the low adoption of new technology for some crops.

5.1 Labour Productivity

The labour productivity, based on the total output or the return per worker and the output per man-hours indicates the significance of labour utilization in different farming activities. Thus, the labour productivity was measured by counting total output by total man-days utilized for cultivating one farm unit of paddy, vegetables, maize and kurakkan under the irrigated and the rain-fed farming areas (see table 5.1). Since the required amount of labour is based on the farm machineries used by the farmers, the labour productivity is not simply determined on the labour. Therefore, the labour productivity was estimated as combine factor of labour-machinery used as means of improving efficiency.

Table 5.1: Labour Productivity in terms of Output per Worker and Output per Man-Hour

Crop and Area	Season	Output per Worker kg/Man Days	Output per Man Hour kg/Man Hour
Paddy Cultivation			
Hingurakgoda	*Maha* 2005	58.46	7.31
	Yala 2005	60.46	7.56
Rambukkana	*Maha* 2005	29.98	3.75
	Yala 2005	30.23	3.78
Beans Cultivation			
Welimada	*Maha* 2005	28.35	3.54
Pallepola	*Maha* 2005	30.90	3.86
Cabbage Cultivation			
Welimada	*Maha* 2005	85.61	10.70
Pallepola	*Maha* 2005	60.70	7.59
Maize Cultivation			
Galenbindunuwewa	*Maha* 2005	87.41	10.93
Kurakkan Cultivation			
Ududumbara	*Maha* 2005	3.96	0.49

The table 5.1 highlights few salient features of labour productivity in cultivating paddy, beans, cabbage, maize and millet.

1. Labour productivity of paddy cultivation

   Compared to the rain-fed paddy farming areas at Rambukkana, the labour productivity of paddy cultivation is higher in Hingurakgoda area, where the cultivation is entirely based on major irrigation. Output per worker at Hingurakgoda is 58 kg and 60 kg for *maha* and *yala* 2005 respectively in contrast to nearly 30 kg per worker in Rambukkana area. This variation occurred due to the fact that the irrigated farming based on farm machinery in Hingurakgoda tended to increase the productivity than by the observance of manual rain-fed practices at Rambukkana. Likewise, output per man-hour is around 7 kg at Hingurakgoda, compared to 3.7 kg at Rambukkana. Accordingly, it implies that irrigated paddy farming, which is supplemented with the usage of machinery, has registered an increase in the labour productivity. It is also important to note that potential yield in irrigated areas is over 100 bushals due to extensive farming practices in those areas.

   If we consider the financial value of labour output per man-hour, multiplying it by Rs. 15/ as the average market price for a kg of paddy, then a farmer at Hingurakgoda receives Rs. 105/= per hour in contrast to Rs. 45/= per farmer at Rambukkana. If the labour productivity per worker is assessed on the same basis, a labourer at Hingurakgoda could receive at least Rs. 900/= per day in contrast to Rs. 300/= at Rambukkana. But, the actual wage rates in both areas are lower than this value. According to current wage rates, a labourer at Hingurakgoda receives only one third of the total productivity of a worker. However, this estimate is not

realistic under the situation where farmer/worker is greatly depended on the new technology and farm machineries as labour-saving methods.

According to farming practices observed in Hingurakgoda and Rambukkana areas, the total labour requirement for cultivating an acre of paddy land has declined over the past. Thus, the total labour-days required to cultivate an acre of irrigated paddy land at Polonnaruwa have declined from 52 man-days in 1990/91 *maha* season to 33 man-days in 2004/05 *maha* season, mainly due to the adoption of labour-saving methods and farm machinery which included tractors, threshing machines and combine harvesters for the main cultivation activities such as land preparation, harvesting and threshing. Consequently, the total labour requirement has dropped by nearly 40 per cent than required earlier. Use of weedicide and pesticide has also affected this situation.

2. Labour productivity of vegetable cultivation varied according to crops cultivated. In Welimada and Pallepola areas, the cabbage cultivation demands a higher labour productivity than for beans (table 5.1). This variation is same in an assessment of productivity per man-hour. However, the output per man-hour is relatively higher in cabbage cultivation in Welimada (10 kg) than the 7 kg in Pallepola area. Therefore, high labour productivity of cabbage is associated with high potential yield of the crop than the other vegetables. The financial value of productivity per hour when assessed, multiplying it by market prices (Rs./kg) for cabbage and beans, it is nearly Rs. 300/= for Welimada and Rs. 210/= for Pallepola. It implies that there is no big difference in existing labour rates.

3. Labour productivity of cultivation of pulses also varied according to crops cultivated. It indicates that labour productivity in maize cultivation in Galenbindunuwewa area is more viable than the subsistance oriented kurakkan cultivation in Ududumbara area. Output per man-hour was also higher in the maize farming area indicating 10 kg per hour in contrast to 3 kg in kurakkan farming in Ududumbara area.

The table 5.1 shows that labour productivity is relatively higher in irrigated paddy, vegetable and maize growing areas than in the rain-fed paddy, vegetable and millet growing areas, for the reason that the irrigated farming is more extensive and commercial oriented than rain-fed farming and consequently, a tendency prevails for using labour-saving methods in irrigated areas. Adoption of technology is easier in irrigated extensive farming, prompting the farmers to resort to machinery and technology in an attempt to cut costs.

5.2 Efficiency of Labour Utilization

The efficiency of labour utilization was assessed concentrating on the most efficient farmers who got higher yields by allocating resources (inputs) more efficiently and cost effectively. This analysis was done only for paddy cultivation because no significant changes were observed in labour utilization in other crops. The analysis was based on the production function that reflects the input-output relationship. Basically, three

production factors: labour, material cost and farm power were considered as the main inputs. According to the Frontier Analysis, 100 was estimated as the highest efficient level. Thus, the table 5.2 shows efficient and low efficient farmers who got the highest yield above 90 per cent and average yield of 50 per cent of efficient level. The table 5.2 further reflects the variation of efficiency according to *yala* and *maha* seasons and the irrigated and the rain-fed conditions in Hingurakgoda and Rambukkana areas.

Table 5.2: The Efficiency of Resource Allocation in Rice Production in Irrigated and Rain-fed Areas in Hingurakgoda and Rambukkana

Resource Allocations/Acre	Hingurakgoda		Rambukkana	
	Yala	*Maha*	*Yala*	*Maha*
Farmers Receive More than 90%				
Labour Man-Days per Acre	32.7	27.99	44.9	42.0
Production per Acre/Bushal	108.6	103.0	99.1	77.8
Material Cost per Acre	Rs. 5,592	Rs. 5,371	Rs. 4,260	Rs. 4,532
Farm Power Cost per Acre	Rs. 6,704	Rs. 6,288	Rs. 4,666	Rs. 4,558
Farmers Get Less than 50%				
Labour Man-Days per Acre	38.12	35.90	-	-
Production per Acre/Bushal	59.80	42.20	-	-
Material Cost per Acre	Rs. 5,796	Rs. 5,000	-	-
Farm Power Cost per Acre	Rs. 6,858	Rs. 5,527	-	-

According to table 5.2, the efficient labour requirement in irrigated paddy growing areas varied from 27.99 man-days in 2005/06 *maha* to 32.7 man-days in 2005 *yala*. It has increased up to 42-44.9 man-days respectively for *yala* and *maha* for the same respective years in the rain-fed paddy growing areas at Rambukkana. When we compare the efficient labour requirement for irrigated areas (27.99-32.7 days) with the total labour requirements per acre (33 days) as mentioned in table 4.1, there is no big difference except slight changes depending on the seasons. But, it indicates that at least 33 man-days are required for maintaining an efficient resource combination with existing machineries and farming practices. With regard to rain-fed farming, there is a considerable difference between efficient and required man-days indicating that 42-44 labour days are required for efficient level of rain-fed paddy farming. This situation occurred due to small-scale rain-fed paddy farming is still more labour-intensive, because smallholdings were hindered by some constraints in using machineries.

5.3 The Effects of the Adoption of Technology

As we discussed so far in the chapter four and section 5.1, the adoption of technological instruments has increased the production efficiency both in terms of reducing labour cost and increasing output. Introduction of technological innovations since the Green Revolution, have greatly influenced to increase the efficiency of paddy and vegetable cultivation because of the substitution of tractors for manual work such as land preparation, ploughing, threshing and winnowing and combine harvesters for harvesting and threshing. The introduction of this machinery saved labour requirements substantially. As a result, it was able to save 13-16 man-days by using tractors for land

preparation and nearly 10 man-days by using the combine harvester. The impact of new machinery on small-scale rain-fed vegetable farming is insignificant.

New combine harvesters and threshing machines were heavily used by farmers in Hingurakgoda area to minimize cost and to overcome the difficulty in finding labour. It was observed that farmers could save both time and cost by using combine harvesters. The table 5.3 shows how harvesting cost has changed as a result of using various farm machinery i.e. tractor, agro-tech threshing machine and combine harvesters. Farmers' interest, education and knowledge about the new technology are of great advantage in the mobilization of these machines.

Of the three options mentioned in the table 5.3, using the combine thresher is the lowest cost method compared to the tractor and the combine harvester. It shows that the tractors and threshing machines are more labour intensive than the newly introduced combine harvester. Thus, 14 labour-days are required for harvesting and threshing by tractor and nearly 10 labour days, by the combine thresher. However, the combine harvester required only 2 labour-days and within one hour it could harvest and thresh one acre of paddy land. It totally reduced 8 man-days required for harvesting, but it requires 5 labour days for drying and fanning after threshing, because it is necessary to dry and fan properly to maintain the quality of paddy. So, if one excludes the cost of Rs. 2,100/= incurred for drying and fanning by the combine harvester, it becomes the most convenient system for saving money and time. However, it was reported that farmers had to spend nearly Rs. 880/= for coir wire that needed to bind the paddy plants to stop them falling from down the harvester. It was observed that many farmers had shown their interest in using the combine harvester mainly due to its convenience as a labour-saving method.

Table 5.3:Variation of Harvesting and Threshing Costs According to Adoption of Various Farm Machineries

Machine/activity	Rs./Acre
By Using Tractor	
Harvesting by Labour (350*8)	2,800.00
Threshing by Tractor	1,000.00
Labour (350*6)	2,100.00
Fanning by Tractor (Rs./hour)	350.00
Other (Food/Tea for Labourers)	1,600.00
Total	7,850.00
By Using Combine Thresher	
Harvesting by Labour (350*8)	2,800.00
Threshing by Machine	2,700.00
Other (Food/Tea for Labourers)	1,000.00
Total	6,500.00
By Using Combine Harvester	
Harvesting by Combined Harvester	6,500.00
Helper	350.00
Drying and Fanning	2,100.00
Total	8,950.00

5.4 Labour-saving

As a result of difficulties in finding labour during the cultivation and harvesting period, the farmers used to follow labour-saving methods such as broadcasting though it is not efficient in receiving a high yield. Compared to vegetable and pulses farming, this situation is visible in paddy farming areas like Hingurakgoda, where irrigated paddy farming is extensively related with water issues and cropping calendars. Labour-saving was mainly achieved through broadcasting and transplanting. The farmers at Rambukkana still resort to transplanting as an effective cropping system to increase productivity, but farmers at Hingurakgoda follow broadcasting yet because investing on labour during the season is costlier than the return they get from transplanting. The table 5.4 reflects savings of labour according to change of cultivation method i.e. broadcasting and transplanting.

Table 5.4: Labour-saving according to Transplanting and Broadcasting

Area/Operation	2005 *Yala*		2005/06 *Maha*	
	No. of Farmers	Man-Days/Acre	No. of Farmers	Man-Days/Acre
Hingurakgoda				
Transplanting	-		1	12.50
Broadcasting	40	2.43	40	2.49
Rambukkana				
Transplanting	33	11.00	35	10.70
Broadcasting	8	5.60	7	3.12

Labour-saving also relates to winnowing, threshing and harvesting and a moderate labour-saving from after care, application of fertilizer and weed control. At Rambukkana, the labour-saving was achieved in threshing and ploughing, while at Welimada, a small number of farmers saved labour in ploughing and application of fertilizer. The table 5.3 shows labour-saving activities adopted by farmers in Hingurakgoda, Rambukkana and Welimada areas. Except for the farmers at Hingurakgoda, who used combine harvesters, the farmers at Rambukkana used tractors and small threshing machines for ploughing and threshing. Vegetable and pulses growers who did it on a small-scale hardly used labour-saving methods. It was also revealed that the use of the combine harvester had helped to reduce loss/damages of paddy processing by nearly 12 per cent, instead of 1% per cent, as in the case in the use of tractors and manual practices.

5.5 Factors Affecting the Low Adoption of New Technology for Some Crops

Even though the technology becomes the most crucial factor in changing the production efficiency, it seems that use of new machinery is very limited in vegetable, paddy and kurakkan farming under rain-fed conditions. The factors for low use of new technological instruments are related to both physical and economic considerations. Small-scale vegetable and rain-fed paddy farming is based on small land plots and constraints do not permit the use of the tractors and combine harvesters even if the farmers are interested. On the other hand, many small producers involved in rain-fed paddy and vegetable farming lack the relevant resources and they are not economically

better off to use new machinery even though their land can have physical access for such operations.

5.6 Summary

Labour productivity is relatively higher in irrigated paddy, vegetable and maize growing areas than in the rain-fed paddy, vegetable and millet growing areas. This is an outcome of the extensive irrigated farming, which is commercial oriented leading to labour-saving methods and adoption of technological instruments in irrigated areas.

According to the statistical analysis, the efficient labour requirement in the irrigated paddy growing areas varied from 28 man-days in 2005/06 *maha* to 33 man-days in 2005 *yala*. But, it increased up to 42-45 man-days in rain-fed paddy growing areas at Rambukkana in the respective period.

The introductions of machinery saved labour requirements substantially. Consequently, it was able to save 13-16 man-days by using tractors for land preparation and nearly 10 man-days by using the combine harvester. The impact of new machinery on vegetable farming is still insignificant under small-scale rain-fed farming conditions.

Chapter Six

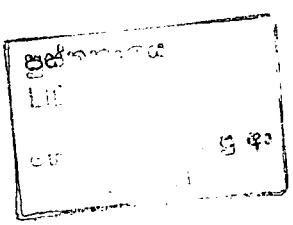
Labour Mobility

The chapter six highlights labour mobility in study areas with special reference to incoming and outgoing migration as well as the sectoral migration. Both incoming and outgoing migration are crucial factors of labour supply in the farming sector. Incoming migration to the farming areas is a testimony to the demand for labour and the fact that available labour in the area is insufficient to fulfill the need of the farmers. On the other hand, outgoing labour migration indicates excess supply of labour in the area or the paucity of enough employment to the people within the area. However, under the fast global economic expansion, it is worthwhile to note that factors related to labour mobility are not confined alone to the demand and the over supply of labour. It also has a bearing on the attraction of urbanization, industrialization and the diversity of the service sector. Labour mobility from the agricultural sector to the service and industrial sectors also takes place due to limited employment opportunities in the agricultural sector, which lacks avenues of attractive earnings. Thus, the labour mobility means labour movements from one area to other areas or from the agricultural sector to the other sectors in search of permanent or temporary employment. The chapter six consists of three sections. The section 6.1 describes incoming migration, while section 6.2 presents the out going migration. Final section describes the labour mobility within the sectors.

6.1 Incoming Migration

As discussed in the chapter four, the demand and supply of labour in the study areas were dependent mainly on the nature of cultivation and the availability of family labour, reflecting an increasing tendency of using hired labour in the irrigated paddy farming and commercial vegetable growing areas. Accordingly, incoming labour mobility is visible in the farming areas with a sufficient demand for outside labour or in locations where labour requirements cannot be met within. In contrast to rain-fed farming areas such as Rambukkana, Pallepola and Ududumbara, this situation predominates in Hingurakgoda and Welimada areas, where irrigated and commercial farming is widespread. Four types of migrant labour groups could be seen in these areas:

1. Labourers moved regularly from the neighbouring areas, during the land preparation and harvesting period, for work on daily wage basis or contract basis as agreed with the farmers.
2. Labourers migrated as individuals or a team from Kurunegala, Matale and Dambulla areas as friends or relatives of the respective farmers during peak periods, especially for land preparation or harvesting. They used to stay at the farmers' houses or close to the paddy field and worked on daily wage basis except for some activities, performed on a contract basis.
3. Labourers also come as a team from distant areas such as Kalmunai, Akkeraipattu and Batticaloa, through a middleman in the area, who acts as the local agent of providing labourers by charging Rs. 200/= per team from a farmer. As a team,



they used to work on contract basis as agreed with the farmers. As mentioned in table 4.5, the average wages paid for contract labour vary according to activities. These labourers settle down in a temporary abode and work in surrounding farms until the end of the cultivation season. Some farmers provide lodging, meals, betel and health care facilities during their stay.

4. Labourers are also collected from the sporadic labour markets, particularly in Nuwara Eliya city area where unemployed estate labourers are available. These unemployed persons gather in one location seeking employment and those who need their services can make their choice, from among this group to be paid on a daily wage basis. On the other hand, people who require labour come to this place and take a number of persons they need to their farms on a daily wage basis.

Types 1-3 are practised in Hingurakgoda area and types 1 and 4 practised in Welimada area. Wage rates paid to these migrant labourers depend on diverse factors such as meals supplied and the nature of operations (table 4.9). One of the notable features associated with incoming migration is that the number of migrants who come from distant areas has reduced remarkably, for two reasons:

1. Migration from Kurunegala, Matale and Dambulla areas has declined because of excess labour of cultivation areas and the service activities of the urban areas which attract them.
2. Secondly, the sudden effect of Tsunami and the post-rehabilitation at Kalmunai and Batticaloa areas have caused a drop in the migration of labour from those areas.

As mentioned in the earlier chapters, since rain-fed farming is heavily dependent on family and shared labour, no clear signs for incoming migration in Pallepola, Rambukkana and Galenbindunuwewa areas were observed. But, labour mobility in Welimada area is somewhat active due to the movements of local workers within the area.

6.2 Outgoing Migration

Outgoing migration is defined as a process of leaving people from villages to other areas or overseas in search of greener pastures. According to the survey and field observations, three types of outgoing migration patterns could be identified in the study areas.

1. Farmers who are skilled in masonry, carpentry and factory work move to outside areas seeking employment in the city and outside villages. Labour movements occur, especially during the off farm period, on the basis of daily wage rates and contract systems. Existing wage rates received by the farmers in all the study locations show that non-agricultural labourers receive reasonably higher rates than their counterparts in the farming sector prompting the skilled farmers to move out even during the on farm period.

2. Movements of young labourers from villages to urban areas. Acute unemployment among the youths has created a tendency on their part to move from the rural areas to the urban sector. Both male and female young labourers leave farming for non-farm activities in urban areas, in the spheres of garment manufacture, trade and allied services.

3. Overseas migration. As in many other rural areas, a substantial number of labourers of both sexes migrate to the Middle East and other countries as housemaids and skilled labourers. It was observed that nearly 5 per cent -10 per cent of the village labour force migrates to foreign countries seeking greener pastures.

Outgoing migration has both positive and negative effects so far as village development is concerned. It positively helped to fetch foreign currencies, while negatively pulled out the human resources away from the village to the city.

6.3 The Sectoral Labour Movements

As observed in all study locations, scenario of labourers moving out for non-farm activities is strongly visible because farming is by no means an attractive occupation to enjoy a better life in the rural areas. Consequently, the farmers who cannot migrate to other areas find solace in the village by engaging themselves in some sort of self-employment such as retail shops, hiring three-wheelers, brick making and garment manufacture. The majority goes for hiring three wheelers, tractors or retail business. Despite the increase of labour wages for both skilled and unskilled categories, labour still prevails a problem in many areas.

6.4 Summary

The labour mobility is a process of labour migration from the outside to the village and vice versa. It is also linked with such factors as moving out to cities or countries abroad. Even within the sectors, the mobility of labour assumes a dominant scale tempting the labourers to prefer the industrial and service sectors where the things are moving rather fast.

Chapter Seven

The Emerging Issues and Potential Linkages

This chapter highlights two issues. The section one describes emerging issues in the labour market that occurred due to the adoption of technology, commercial farming and global economic development. The section two presents potential labour linkages that could be developed as new avenues.

7.1 Emerging Issues

As mentioned else where in the report, the rural labour market in Sri Lanka has been changing from its static status to a more dynamic status that could easily be mobilized on demand and supply conditions of the market. Thus, the value of labour has appreciated as a human resource over the other production factors. Following the adoption of new technology, the labour productivity and its efficiency have increased, resulting in a decreasing trend of labour absorption to the agricultural activities. In these circumstances in the rural labour market, labourers are moving away from agriculture sector to other sectors and other areas. On the other hand, in spite of this mobility, labour is still a scarce resource in the irrigated paddy farming areas. This has paved the way for a rapid increase in labour wage rates making it one of the most expensive factors in domestic agriculture. This new phenomenon reflects a few issues that need to be addressed by policy makers. It includes the following aspects:

7.1.1 Change of Labour Intensity in Paddy Cultivation

As shown in table 4.1 and section 5.3, the labour requirements for paddy and maize cultivation in irrigated areas have decreased sharply with the use of labour-saving methods and new machinery. The decrease is not predominant in paddy, kurakkan and vegetable farming in the rain-fed areas but the quantity of required labour has reduced nearly by 40 per cent in the irrigated paddy farming areas at Hingurakgoda. As shown in table 5.3, the cost and number of labour-days required for threshing and harvesting has decreased considerably in using combine thresher and combine harvester instead of using tractor. Thus, the required labour-days has decreased from 15 to 8 days when using combine thresher and 15 man-days to 1 man-day when using combine thresher. Recent trends in using combine thresher or combine harvester occurred due to unavoidable factors such as high pressure for completing farm work within short period as farmers agreed upon crop calendar and the consequence effect of labour shortage during the peak period of harvesting. Courses for the labour shortage relates with some explicit factors such as decrease of using family labour due to low interest of younger generation for farming and inadequate labour supply during peak period. The general trend in labour utilization for paddy, vegetable and maize/kurakkan is that it has dropped in many areas in the past ten years indicating that labour displacement is higher in paddy farming sector.

Though time series data is not available for vegetable and rain-fed paddy farming areas selected for the study, the available data related to paddy and maize farming in some districts indicate that the labour diminution is around 40 per cent and 19 per cent respectively in Kurunegala and Gampaha areas (Department of Agriculture). Thus as shown in table 7.1, the labour requirements for maize have declined by nearly 33 per cent in Monaragala and Anuradhapura areas. However, there is no significant change in the irrigated paddy growing areas in Polonnaruwa as in the rain-fed areas, mainly because of mechanization is higher in Polonnaruwa area even in early 1990s. The general trend of labour displacement or reducing labour intensity in the paddy-farming could be seen as a gradual effect of continuation of farm mechanization that initiated even in early 1980s (Farrington and Abeyratne, 1982).

Table 7.1: The Trends of Labour Utilization in Some Selected Areas

Crop and District	1994 *Yala*	2004 *Yala*	Difference (%)
Paddy			
Kurunegala (Rain-fed)	58	34	41
Gampaha (Rain-fed)	43	35	19
Polonnnaruwa (Irrigated)	35	35	0
Maize			
Monaragala	51	34	33
Anuradhapura	53	35	34

Source: Department of Agriculture

7.1.2 Changing Labour Supply Pattern

As discussed in chapter six, the labour supply pattern in the irrigated paddy farming and the commercial vegetable growing areas have witnessed changes. Thus, as in the case of other goods and service markets, sporadic labour markets have emerged in the above areas linking both demand and supply parties. Such labour markets would help to reduce seasonal unemployment in the rural areas. Also it indicates a new tendency for marketing skilled and unskilled labour. This system still prevails at a very informal level and it could be developed as formal labour markets through agents.

7.1.3 Technology and Labour Use

The introduction of new combine harvesters greatly influenced the reduction of labour utilization for harvesting and threshing of paddy. Percentage wise the drop was nearly 25 at Hingurakgoda. Since labour is the most crucial production factor, instrumental in decreasing the cost of production of paddy, the use of machinery greatly helped to increase the efficiency and decrease the cost. However, the reducing labour intensity of paddy cultivation has given rise to unemployment and poverty among the labourers leading to an increase in outgoing migration from those areas.

7.1.4 Wage Increases

As shown in chapter 2 and 4, the wage rates of the labourers in the agricultural and non-agricultural sectors have increased tremendously over the past ten years. Except for farm power, this wage increase is higher compared to the increase of the cost of other production inputs. During 1990/91 *maha* to 2003/04 *maha* periods, the cost of labour has increased by more than 200 per cent in both the irrigated and the rain-fed areas in contrast to less than 200 per cent for other inputs (Department of Agriculture). This is an outcome of the increase of wage rates, which in certain areas amounted to over 300 per cent. It was observed that wage rates for both skilled and unskilled labour are increasing rapidly both in urban and semi-urban areas.

7.1.5 Changing Cultural and Social Value System Linked with Farming Practices

Paddy as the staple food of the nation, has links with various cultural and social norms, which have been practised by farmers from the ancient times. These practices were mainly related to traditional customs followed by land preparation, harvesting and processing, with the help of family labour or shared labour as a group. Once the new machines were introduced such as the combine harvester and the combine thresher, some rites and rituals such as those associated with the preparation of threshing floor (*kamatha*), rituals observed and offerings made to invoke the blessing of gods have begun to fade away. These observances underscored the significance of the spirit of togetherness in the village, which is now fast disintegrating. The age-old strong social value systems are collapsing.

7.1.6 Increasing Labour Mobility

As discussed in section six, the spatial and sectoral labour mobility is on the rise as increase of labour value spreads over the international market. So now it is clear that labour demand does not depend merely on local factors, it has its implications with the demand from other countries.

7.2 Potential Opportunities

The backward and forward linkages relating to the rural labour market in Sri Lanka are discussed in this section. Thus, the potential employment opportunities related to the cultivation process are discussed under backward linkages and the potential opportunities related to production, processing and marketing as forward linkages.

According to the field observations, the backward job opportunities are available in cultivation process, relating to the use of farm machinery, input supply and support services. More prominently, the potential jobs are available in view of the newly introduced machinery i.e. the combine thresher and the harvester, which generate a wider range of job opportunities in marketing/supply, after services and provision of spare parts. It was observed that nearly 100 combine harvesters and threshers were

available in Hingurakgoda area alone and still there is no proper system to provide after services except some agents appointed by the respective companies. Therefore, the servising and repairing of machines and provision of spare parts could be identified as the most promising ventures that could create employment in the area. It was also found that new requirements have emerged as supplementary services to the combine harvesters. For instance, the use of coir wire has increased in the area because the farmers need nearly 10 kg of core wire for binding paddy plants before the use of the harvester. So providing coir wire during the harvesting time can be an activity that can provide new avenues of employment for the jobless youths. Since use of farm machinery in vegetables, maize and kurakkan cultivation is hardly observable, no such opportunities may arise in that sphere.

With regard to forward linkage job opportunities, a lot of potentials are seen in the post-harvest activities such as processing, milling, packaging and marketing. Though, the paddy/rice milling for the most part is done through the medium and large-scale mills, opportunities still remain untapped in the area of launching cottage level small-scale paddy mills which will enable the farmers to get a good price for their milled paddy rather than selling them raw at a lesser price. Some of the demonstrations introduced in this regard by the Rice Processing and Post Harvest Technology Institute in Anuradhapura are successful as a low cost investment for the paddy farmers. Therefore, introducing cottage level paddy processing units could create new employment opportunities. At the same time, arrangements should be made to promote processing industries of vegetables and pulse products.

Both backward and forward industries have not been properly established in any of the study locations though Local and Regional Development Authorities have identified the potentials. The high risk involved and the absence of support services to promote small-scale producers and the rather unenthusiastic approach of the public sector in this regard have given rise to this unsavory situation.

Chapter Eight

Summary Conclusions and Recommendations

The empirical evidence emanated from the study reveals some positive signs in changing labour market of the food crop sector in Sri Lanka. In essence, changes relate with efficient and effective labour utilization pattern that connected with the new technological innovations and non-farm employment opportunities emerged in the non-plantation agricultural sector. Thus, considering the time series data and survey information gathered from paddy, vegetable and pulses growers in the irrigated and the rain-fed areas, the study concludes summarizing major findings with some policy recommendations.

8.1 Conclusions

Labour force of Sri Lanka has increased more than 30 per cent in the past ten years (1994-2005) registering an upward trend in the number of employed and a drop in the number of unemployed. Labour participation of both males and females in rural and urban areas marked a substantial growth.

Despite a drop in unemployment in the past, underemployment and hidden unemployment are prevalent especially in the rural areas where farming activities are seasonal. Unemployment among the educated categories, particularly among those with GCE (A/L) qualifications and above is prevalent because of incompatibility between the educational qualifications and the requirements of the job market.

The private sector has become the main source of generating employment of the country and it accounts for nearly 46 per cent of the total employment provided. The state sector drops to the third place in this regard, creating nearly 30 per cent of jobs as self or own employment. Nearly 31 per cent of the labour force is involved in the agricultural activities directly and indirectly. But, the employment opportunities in the farming sector mark a gradual drop due to the labour-saving methods, resorted to and the consequent limited labour absorption in the sphere of agriculture. However, the labour productivity of the agricultural sector has increased with the upward trend of the total production and the increased use of labour-saving methods.

The noteworthy feature of the study sample is that around 80 per cent of the total household members of the respondents belong to the labour force though it varies slightly between study areas. However, nearly 55 per cent of the labour force is employed. The students, who form the second major category of population, account for 22 per cent. The crude activity ratio, which is ascertained by dividing the employed and the unemployed persons by the total population is 60 and the economic dependency ratio is nearly 81 per cent showing the high reliance of the unemployed, the students, the dejected workers and the others who are employed persons.

Cultivation is the prominent mode of employment of the sample population with 74 per cent as farmers, followed by those engaged in private sector employment and government employment, accounting for 19 per cent. Only a very small number of respondents are involved in self-employment.

Labour is becoming a more crucial factor in determining the profitability of the domestic agriculture. Labour demand and supply depend mainly on the skills and the experience of the labourers and accordingly a high wage rate is offered to the skilled labourers. Labour demand is determined by some specific factors such as gender, knowledge in cultivation, efficiency, honesty and age but the labour supply depends on the availability of family and shared labour. Hired labour supply is extensively high in the irrigated paddy farming and the commercial vegetable growing areas and the supply is linked with semi-formal labour marketing arrangements.

Agricultural labour wage rates indicate three prominent features. It shows a wider range of variation depending on farming areas, cultivation activities, gender, age and meals provided to the labourers. Secondly, wage rates have increased by nearly 300 per cent in the past ten years. The increase has been brought about because of the labourers moving away from agriculture to other sectors and the subsequent labour scarcity during the cultivation season. But, the wage increase is insignificant in terms of relative price increase of consumer goods and other input prices. Thirdly, wage rates of rural women are not really assessed though she plays an important role in all the farming activities. Compared to male rates, the existing wage rates for women are low, nearly a two third of the male wage rate.

The labour productivity, which is measured in terms of output per worker and output per hour, is relatively higher in irrigated paddy, vegetable and maize growing areas with nearly 60 kg per paddy farmer, 70 kg per commercial vegetable grower and 87 kg per maize farmer (irrigated). But, the productivity is almost half of the above figures in rain-fed paddy, vegetable and millet growing areas. This situation is mainly because of the fact that irrigated paddy farming and commercial vegetable farming are mostly based on farm machinery and labour-saving methods unlike in the subsistence type farming. Use of farm machinery for cultivation activities is turning out to be the main labour-saving method reducing 15 per cent of the total labour requirements for paddy cultivation.

The efficient labour utilization was assessed considering the most efficient farmers who got high yields by allocating resources (inputs) more efficiently and cost effectively. Thus, the efficient labour requirements for irrigated paddy growing areas vary from 28 man-days in 2005/06 *maha* to 33 man-days in 2005 *yala*. The corresponding figures are 42-45 man-days respectively for *yala* and *maha* in the rain-fed paddy growing areas. When we compare efficient labour requirement for irrigated areas (28-33 days) with the total labour requirements per acre (36 –40 days), there is no big difference except slight changes according to seasons. But, it indicates that at least 33 man-days are required for maintaining an efficient resource combination. With regard to the rain-fed farming, there is a considerable difference between efficient and required man-days indicating

that 42-44 man-days are required for efficient level of farming in rain-fed paddy growing areas.

Use of farm instruments has increased the production efficiency both in terms of reducing the labour cost and increasing the output. Introduction of technological instruments has greatly influenced to increase the yield and return of paddy and vegetable cultivation, particularly with the substitution of tractors for manual work such as land preparation, ploughing, threshing and winnowing and combine harvesters for harvesting and threshing. Use of tractors saved 13-16 man-days in land preparation and the use of the combine harvester saved nearly 15 per cent of labour needed for harvesting and threshing. The combine thresher is the most efficient machine in this regard. However, the impact of introducing new machinery on vegetable farming is still insignificant.

As a result of difficulties in finding labourers during the cultivation and harvesting period, the farmers used to follow labour-saving methods such as broadcasting, though it is less efficient than transplanting. This situation is visible in irrigated paddy farming areas, where paddy farming is extensively based on water issues and cropping calendars. Labour-saving was mainly achieved through broadcasting.

The labour mobility is very active in irrigated paddy growing areas and commercial vegetable growing areas. Labour mobility could be seen in terms of incoming and outgoing migrations and sectoral migration. Four types of incoming migrations were reported from the study locations: (1) Labourers who moved regularly from neighbouring areas, (2) Labourers who moved as individuals or a team from distance locations, (3) Those who came as friends or relatives of the respective farmer, (4) Labourers who gathered at sporadic labour markets in Nuwara Eliya area. Likewise, three types of outgoing migrations occurred in the study areas: (i) Labourers left for outside areas seeking employments there, (ii) Labour movements from villages to urban areas, (iii) Migration to overseas.

The labour mobility within the production sectors also occurred indicating their moving away from agriculture to the service and the industrial sectors in large numbers. So the opportunities for spatial and sectoral labour mobility increased the labour value in the rural agricultural sector.

Having observed the overall changing situation of the labour market in Sri Lanka, six issues were recognized as the important factors to be considered by policy makers: (i) Reducing labour intensity in paddy cultivation, (ii) Changing labour supply pattern, (iii) Trend of using new technology and machinery, (iv) Increasing wage rates, (v) Changing cultural and value system linked with farming (vi) Increasing labour mobility.

Some potential employment opportunities were identified as backward and forward linkages of paddy, vegetable and pulse farming. These opportunities were linked with input supply, support services technology development, processing and milling. It is

necessary to develop these potentials by implementing coherent plans focused on agricultural and area development activities in the rural agricultural sector.

8.2 Recommendations

On the basis of the summary conclusions presented in the study, the following recommendations are suggested as remedies to overcome constraints in human resource development of the rural agricultural sector in Sri Lanka. In essence, these recommendations are based on macro aspects that need to be addressed at national level and micro aspects at village level.

Since the labour demand and the supply in the formal sector are mainly based on the academic qualifications and the experience of the job seeker, opportunities should be increased to enhance the skills and capacities of rural youth to suit the current requirements of the private and the public sectors. Though many job oriented training courses are being conducted by the private sector, the benefits of these courses rarely reach the rural community due to many reasons such as financial difficulties, language problems and distance from the urban areas. Therefore, some incentive package should be introduced targeting to improve the quality of rural labour with a broader perspective of absorbing them to urban and foreign job markets. Such a programme would essentially contribute to decrease unemployment and subsequently eliminate rural poverty.

The micro level policies aiming at specific problems of the rural areas should pivot on the use of local resources and the capacity development of the rural communities. Such programmes should be essentially focused on the issue of labour displacements from agriculture and need to identify the potential jobs that come up from the adoption of technology and distribution of production inputs.

The impact of technological innovations on changing the domestic agricultural sector is unavoidable but its influence should be positive and viable both in terms of economic and social aspects. Though the influence of using new machines or technological innovations is effective to increase the production efficiency, the consequent effects of low labour intensity in agriculture create some social problems that lead to unemployment and rural poverty. Therefore, necessary arrangements should be introduced to balance the increasing efficiency of farming and the subsequent effects on labourers' displacements, that emerge as externalities. Such a policy should be based more on the total welfare of the people than the sectoral improvements.

Efficient farming practices based on low cost and labour-saving methods should be followed to increase the production efficiency of paddy and vegetable farming. Therefore, additional labour in the agricultural sector should be absorbed to other sectors through necessary training and support services. Farmer training for product development and self-employment would be imperative as an essential activity of employing the rural poor.

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