Rural Non-Farm Employment : A Static and Dynamic Study of Inter-State Variations

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DECLARATION

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This is to certify that this dissertation entitled "**Rural Non-Farm Employment: A Static and Dynamic Study of Inter-state Variation**" submitted by Alok Kumar, in partial fulfilment of the requirements for the award of the degree of M.Phil of this University, has not been previously submitted for any degree of this or any other University. This is his own work.

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CONTENTS

INTRODUCTION

Economic growth has long been associated with certain distinct and necessary and predictable changes in occupational structure. A high average level of real income per head is always associated with a high proportion of the working population engaged in secondary and tertiary activities and low real income per head is always associated with a high proportion of the working population engaged in primary production. As growth process proceeds there is transfer of working population away from agriculture to other sectors. India provided one exception to this general rule with its remarkable stability in occupational structure until 196Øs even though massive development efforts had been made especially after independence. It is not that Indian economy has not been growing. There has been steady rise in GDP and per capita income and this growth process has reflected itself in changing contribution of various components to GDP with steady decline in the contribution of primary sector from 58.3% of GDP in 195Ø-51 to just 34% in 1987-88 while the share of secondary sector and tertiary sector grew from 15.1.% to 26.3% and 26.6% to 39.7% respectively over the same period 195Ø-51 to 1981-88 (table 1). But this change in relative importance of contribution of various components to the GDP is not reflected in occupational structure. This misalignment between production and occupational structures constitutes, according to V.K.R.V. Rao (198Ø) both the problem and paradox of Indian

economic development and has led to the controversy about the linkage between growth and employment.

In the last two decades , however , a certain shift away from agriculture in occupational structure has been witnessed in most parts of India. This result, supported by both census and NSS data (Table II, III) runs counter to the earlier pre-independence belief which asserted the changelessness of the structure of employment in the past and the unlikelihood of a change in the near future. In the first half of this century, there was no change in the proportion of the work-force engaged in primary sector. The proportion of the work-force engaged in primary sector was 71.7% in 1901 which remained virtually same at 72.1% in 1951. (Table II). Between 1951 and 1971 again no change in occupational structure was witnessed, the proportion of work-force engaged in primary sector remaining at around 72%. But between 1971 and 1981 a small decline in the proportion of work-force engaged in primary sector from 72.1% in 1971 to 68.8% in 1981 was witnessed. This declining trend is also confirmed by N.S.S. data on the percentage of non-agricultural workers in rural work-force. The percentage of non-agricultural work-force rose from 16.7% in 1977-78 (32nd round) to 18.6% in 1983 (38th round) to 20.5% in 1987-88 (43rd round).

This shift in occupational structure has raised a serious debate about whether declining share of agriculture in employment reflects maturing of positive growth forces

in the economy or whether it is a result of demographic pressure coupled with adverse trends in agrarian sector with growing inability of agriculture to further absorb expanding labour force.

The association between economic development and change in occupational structure in favour of non-agricultural sector involves (i) rapidly rising labour productivity in agriculture which allows more surplus to be produced within agricultural sector to feed expanding non-agricultural population and, leads to release of labour-force from agricultural sector in order to meet labour-requirements of non-agricultural sector and (ii) rapidly expanding non-agricultural sector. A symbiotic relationship between agricultural and non-agricultural sectors develops with agricultural sector furnishing surplus to be invested in non-agricultural sector, releasing of labour from agricultural sector which loosens labour-supply constraint on non-agricultural sector, and higher labour productivity in agriculture leading to higher agricultural income and following Engel's law greater proportion of agricultural income being spent on non-agricultural commodities.

On the other hand, expansion in non-agricultural employment maybe due to purely distress factors, excess of labour force unable to find work in agriculture moving towards non-agricultural sector for work. In other words non-agricultural sector acts like a residual sector where excess of labour-force looks for and occasionally finds employment. This trend, if it is true, runs counter to the

earlier held view where agricultural sector is residual sector - where part of labour-force unable to find work in non-agricultural sector turns to agricultural sector for employment, one of the manifestations of this phenomenon being massive disguised unemployment in agriculture. This inter-change of status between agricultural and non-agricultural sector, with non-agricultural sector becoming the residual sector raises two questions. Firsly, what are the factors or structural changes within agricultural sector which have occured leading to change of status of agricultural sector. Secondly, where is the non-agricultural sector absorbing the excess labour when it is expanding none too rapidly.

The present study focusses on trends in occupational structure of rural work-force or more precisely on the rural non-farm activities, and thereby hopes to throw light on the question of whether the recent trend in diversification of employment is related to economic growth or to distress factors.

The rural non-farm activities have emerged as a major source of employment to rural work-force in third world countries providing employment to 20% to 30% of rural labour-force (World Bank 1978). With economic growth the growth in non-farm employment shifts from rural to urban areas. But, in the early stages of development rural areas and towns provide more non-farm employment than do urban areas. The importance of non-farm activities in providing employment and

poverty -alleviation is further boosted by the fact that it provides employment to many small and landless farmers during the slack season. Construction and irrigation works are common examples, maintenance and repair jobs which can be postponed until the slack season are also important as are a number of processing, servicing and commercial activities that expand after the harvest.

The non-farm activities are closely linked with agriculture. They allow peasants access to important inputs like H, Y, V, seeds, fertilisers, agricultural implements etc. which are critical for maintaining and enhancing agricultural productivity. At the same time transport and communication services link urban consumption centres with surrounding agricultural areas and allow farmers to market increasingly larger share of their produce. Further by providing non-agricultural goods to rural people it enlarges their consumption basket and thus increases their welfare.

Finally, by providing employment to rural labour force within the rural area itself it can play an important role in containing large-scale rural - urban migrations and thus contribute towards easing urban congestion and reduce the pressure on scarce urban infrastructural facilities.

Given its importance it is quite important to analyse the factors which facilitate or retard the growth of rural non-farm activities and account for its regional variations. Three types of hypothesis have been put forward regarding the growth of rural non-agricultural activities which also have

a bearing upon the regional variation in the levels of such activities. The first hypothesis, known as inferior-good hypothesis (Hymer & Resnick 1969) visualises a shrinkage of the rural non-farm sector as the economy grows because it produces inferior goods and services whose demand is likely to fall with the rise in rural income. The second hypothesis which is based on demand and supply interlinkages between rural farm and non-farm sectors visualises expanding non-farm sector as agriculture prospers. The third type of hypothesis is known as the 'residual sector hypothesis' and it treats non-farm activities as residual which act like a sink and which are joined by that part of the rural labour force that is unable to find employment in agriculture.

The present study looks at the factors which account for the level as well as the change in rural non-farm employment and tries to unravel factors behind inter-state variations in the level of rural non-farm employment. In this process, it critically examines the various hypotheses put forward in the light of the most recent data available on rural employment/unemployment (NSS 43rd round 1987-88). It finds that these hypotheses can be tested properly only in a dual sector framework in which rural non-agricultural sector is sub-divided into traditional and non-traditional sub-sector. Finally, the residual sector hypothesis as formulated needs major modifications to make it more testable under Indian conditions.

Definition

It is very difficult to give a precise definition of rural non-farm activities as these activities lie on or between the boundaries of the usual rural - urban and agricultural non-agricultural activities (World Bank 1978). We can define rural non-agricultural activities as all economic activities other than crop-production and allied agricultural activities such as animal husbandary, plantation, fishing, forestry etc. undertaken in rural areas. Regarding rural and urban areas we follow the census definition which is based on the size of population of a location, occupational attributes of the population and the nature of the administrative set-up. Here rural areas include all areas outside urban areas.

The rural non-agricultural activities are quite amorphous ranging from traditional low technology activities to non-traditional high technology activities. Some are highly skill intensive while some require no skill. A part of non-agricultural activities like agro-processing activities, selling of fertilisers, maintenance of agricultural implements etc., directly stem from agriculture. A part of non-agricultural activities originate from outside, like government services. Yet another part of the non-agricultural activities like carpentry, weaving etc. is traditional and continues even today. Also the non-agricultural activities in which rural households engage are likely to be quite different at the two ends of the income -

distribution spectrum. For the low income rural households, wages from working on construction work, brick-kiln-etc. and personal services are the predominant source. For the high income rural households, manufacturing or other business activities and salaried income tend to predominate. These better activities have higher entry barriers and yield higher returns than agriculture or other non-agricultural activities.

Difficulties of Estimation

Rural households in developing countries are seldom so specialized that the work of all household members at all times of year falls in a single economic sector. Also, estimates of the labour force by economic activities generally provide a classification of workers at a point in time according to their principal sector of employment or occupation. Such estimates, therefore, are likely to underestimate the extent of non-farm activities - commonly a secondary source of income on part-time or seasonal basis - in rural areas. It is also likely that the respondents may imprecisely report themselves as cultivators even though cultivation may not constitute a major source of their livelihood nor occupy a major part of their working time.

Source of Data

We have used NSS data on rural male non-agricultural force to study the factors which affect non-agricultural activities in rural areas. To study the level to level

relationship the latest data on employment/unemployment available has been used (NSS 43rd round 1987-88) and for dynamic changes (NSS 32nd round 1977-78, NSS 38th round 1983 and NSS 43rd round 1987-88) have been used. As rural male work-force is the dominant part of the rural work-force, the results obtained, it is presumed hold good for the entire rural labour-force.

NSS data have been used because they have been found to be more reliable and comparable (Krishnamurthy 1984, Vaidyanathan 1986). NSS data give three different types of estimates which differ in absolute terms, but the relative position of different states and regions is substantially the same by all measures. But, the latest published data are available only upto the state level thereby precluding analysis of variation at a more disaggregated level.

The study has been divided into four sections. The section I outlines the quantitative dimension of rural non-agricultural employment in different states and changes in them over the eleven year period (1977-78 to 1987-88). Section II critically examines the studies undertaken so far in exploring inter-regional variations in rural non-agricultural employment and suggests some modifications in the hypotheses used. In Section III, the residual sector hypothesis is reformulated and in the light of the latest data 'interlinkage hypothesis' and 'residual sector hypothesis' are tested. Section III is followed by concluding remarks.

CHAPTER I

Quantitative Dimensions of Rural Non-Farm Employment in Different States and Changes in Them Between 1977-78 to 1987-88

The share of rural non-agricultural force in total rural labour force was 16.7% in 1977-78 which increased to 18.6% in 1983 and further to 20.5% in 1987-88 (Table III). The total change in the proportion of rural non-agricultural labour-force over the decade was a modest 3.8%. Between the two periods 1977-78 to 1983 and 1983 to 1987-88 (henceforth referred to as first period and second period respectively) the proportion changed identically by 1.9%.

The share of male non-agricultural workers in the rural male labour force rose steadily from 19.5% at all India level to 24.5% in 1987-88 (Table III). During the first period, the proportion of rural non-agricultural workers rose by 2.9% from 19.5% to 22.4% while in the second period the proportion rose by 2.1% from 22.4% to 24.5%.

There is sharp state-level variation in rural male non-agricultural employment. The share of rural non-farm male workers in India 1987-88 ranged from a high of 45.8% in Kerala to a low of 14.7% in Madhya Pradesh (Table III). In 1977-78 the top positions were held by Kerala, Tamil Nadu, Himachal Pradesh, Haryana, West Bengal and Punjab in that order. In 1983 the position remained more or less the same

with Haryana replacing Himachal Pradesh for the third position and West Bengal moving to the fourth position pushing Himachal Pradesh to the fifth position. In 1987-88 Rajasthan occupied the third position, Himachal Pradesh the fourth and Punjab the fifth with Haryana and West Bengal being pushed to the sixth and the seventh positions respectively. Throughout the period Kerala and Tamil Nadu maintained the first and the second positions respectively.

In 1977-78 the bottom positions were occupied by Madhya Pradesh, Orissa, Gujrat, Karnatka and Bihar in ascending order. In 1983 the position changed somewhat with Bihar and Rajasthan occupying the third and the fourth position respectively and Karnatka occupying the second position from the bottom. In 1987-88, Bihar and Karnatka occupied the second and the third position respectively from the bottom with Uttar Pradesh coming fourth. Throughout the entire period Madhya Pradesh occupied the bottom position.

The inter-state temporal changes in rural non-farm employment also show large variations. All the states show increase in the share of male rural non-agricultural labour-force with Rajasthan showing the greatest increase from 17.5% to 34.8% over the eleven years followed by Gujrat with the increase of 15.8% from 15.6% to 31.4%. Other states showing relatively larger changes were Orissa (10.1%), Punjab (9.1), Himachal Pradesh (8.7%) Tamil Nadu (8.2%), Haryana (6.6%) and Andhra Pradesh (6.2%). The states having lower than average changes were Uttar.Pradesh (1.3%), Karnatka (1.8%), Bihar

(3.1%) and Madhya Pradesh (3.9%). In fact Uttar Pradesh showed marginal decline (-2.1%) in the rural male non-farm employment in the second period. Roughly speaking, there seems to be some positive relationship between the level of rural male non-farm employment in a state and the change in it, with states having higher a level of rural male non-farm employment exhibiting greater rate of change in it while states having a lower level of rural non-farm employment being characterised by lower rate of change the exceptions being Rajasthan, Orissa and Gujrat. These were the states initially having less than average proportion of rural non-farm male work-force. But the large changes in rural non-farm male employment in Gujrat and Rajasthan may not be entirely due to structural changes in their rural sector but due to drought in 1987-88 which forced rural people to seek employment in activities other than agriculture.

There is also considerable variation in the change of share of rural non-farm male work-force among various states between two time periods. States like Andhra Pradesh (5.5%) Haryana (5.3%), Gujrat (5.5%), Orissa (6.4%) and West Bengal (4.6%) experienced considerably larger change in the share of rural non-farm male work-force in the first period. In all these states except Gujrat, the rate of change considerably slowed down in the second period. During the second period states like Rajasthan (15.8%), Gujrat (10.3%), Punjab (8.7%) and Himachal Pradesh (3.1%) had experienced very rapid change. These were the states which had experienced very slow change in the first period, only exception being Gujrat.

From this it follows that among the states having larger changes in rural non-farm male employment, the states which experienced higher changes in the first period experienced considerably lower changes in the second period and the states which experienced lower changes in the first period experienced higher changes in the second period, the only exception being Gujrat. But, it may be due to drought in 1987-88.

The Distribution of Rural Non-agrucultural Households by Industry

Manufacturing, transport, services, trade and construction were the primary non-farm rural activities (Table IV) and they accounted for nearly 98% of all rural non-farm activities. Manufacturing, services, trade and construction accounted for 7.1%, 6.7%, 4.9% and 4.1% of the total rural employment respectively in 1987-88. In rural India, the proportion of households depending on non-farm activities rose by nearly 2% in the second period. This rise was mainly accounted for by the increase in employment in constructional activities. The proportion of household reporting construction as the major source of income increased from 2% in 1983 to about 4.1% in 1987-88. The industry - wise break-up of non-farm rural employment in 1983 is not available, so we cannot say whether the same trend is true for all states. But, the industry-wise break-up at state level for 1987-88 is available (Table IV). From this we can say that the states which have shown a relatively

larger change in rural non-farm male employment are also characterised by a comparatively higher share of constructional activities in rural employment. Constructional activities accounted for 9.5% of rural employment in Gujrat, 8.8% in Himachal Pradesh, 16.4% in Rajasthan, 4.5% in Punjab and 4.1% in Orissa against the all India average of only 4.1% . On the other hand states having a smaller change in rural non-farm male employment also have a lower than average proportion of rural work-force engaged in constructional activities e.g. Bihar (2.1%), Karnatka (1.8%), Uttar Pradesh (2.6%) and Madhya Pradesh (1.3%).

The Nature and the Type of Work

The nature and type of work from which a household derives its major income is an important indicator of the activity pattern of household members. Of the total rural households, 10.6% were self-employed in the non-agricultural sector in 1977-78 which increased by 1.7% to 12.3% in 1987-88 (Table V). Over the same period the percentage of other labour engaged in rural non-agricultural activities increased by 2.1% from 6.9% to 9.% . But, if we observe the trend over the two periods then we find that the percentage of rural non-farm self-employed households increased much more rapidly (1.1%) in the first period compared to the second period (.51%). On the other hand, in the first period the percentage of other labour declined marginally from 6.9% to 6.6% but in the second period it grew by 2.5% from 6.6% to 9.1% . This implies that in the first period most of the

increment in non-farm employment was accounted for by the increment in rural non-farm self-employed households while in the second period other labour households accounted for most of the expansion in rural non-farm employment.

There is considerable regional variation in the percentage of self-employed households and other labour households engaged in rural non-farm activities (Table VI). The percentage of self-employed households in rural non-farm activities was the lowest in Gujrat (7.9%) in 1987-88 followed by Madhya Pradesh and Maharastra (8.6% each). Punjab had the highest percentage of non-farm rural self-employed households (16.5%) followed by West Bengal (15.9%) and Kerala (15.5%). Rajasthan (21.5%), Kerala (17.7%) and Gujrat (16.2%) had the highest percentage of rural households employed as other labour. Madhya Pradesh had the lowest percentage of other labour households (4.1%) in rural areas followed by Uttar Pradesh (5.5%), Bihar (6.4%) and Karnatka (7.1%).

If we look at the temporal change we find trends rather mixed with some states showing marginal decline in the percentage of non-agricultural self-employed rural households and some showing marginal decline in the rural other labour households, though no state shows a decline in both in the second period. Bihar (-24%), Gujrat (-4.4%), Himachal Pradesh (-Ø.7%) and Orissa (-.4%) were the states which experienced marginal decline in percentage of non-agricultural self-employed households. On the other hand Haryana (-5.4%) and

West Bengal (-.5%) experienced decline in the proportion of other labour households over the same period.

Possession of Land

If we look at the table (VII) we find that the participation in non-agricultural work varies inversely with the size of land owned by the households. Nearly 31% of the households owning land up to .4 hectere were engaged in non-agricultural activity. The percentage fell sharply to 17.7% for the households owning land between .4 to 1 hectare. Only 7.6% of the households owning land between 2 and 4 hectares and 5% in case of households owning land equal to 4 hectare and above were engaged in non-agricultural activities.

If we look at the possession by land of households engaged in non-agricultural activities as self-employed or other labour (table VIII), we find that households having larger land holding are mostly engaged in agricultural activities and in case of dependence on non-agricultural activities are mostly engaged as self-employed. This is understandable because for being self-employed one may need certain minimum amount of capital and technical skill and education which only richer rural households may be able to afford. On the other hand due to the lack of these things poorer rural households are forced to offer their labour-power for hire. This may be the reason for the much sharper fall in the percentage of households engaged as other labour compared to percentage of rural households engaged as self-

employed with the increase in the size of land possessed by the households. Of the households possessing land up to 1 hectare, 11.4% of rural households were engaged as self-employed in non-agricultural activities and 9% as other labour and for the households possessing land between 1 to 2 hectares, 5.6% were engaged in self-employment and 3.2% in other labour. This percentage declined to 4.1% in case of self-employed in non-agricultural activities and to 1.9% in case of other labour for the households possessing land between 2 to 4 hectares. For the households possessing land in excess of 4 hectares 3.1% were engaged as self-employed and only 1.6% of households as other labour. Due to the non-availability of data we cannot say anything about the employment pattern of rural households according to possession of land at the state level.

The inverse relationship between the size of landholding and dependence of households on non-agricultural activities indicate diversion of households with small or no land holding towards non-agricultural activities due to distress factor. To augment their income such households had to work as agricultural or other labour. But, the evidence suggests that more and more agricultural labour is hired only during the peak season and there is a decline in the proportion of households engaged in crop production which hire labour casually and regularly (Table IX) . In 1983, 49% of agricultural households hired agricultural labour, 22.% of households hired labour only during peak season, 2Ø% of them

hired labour casually and 7% hired regular labour. Though, in 1987-88, 54% of agricultural households hired labour nearly 31% of agricultural households hired labour only during peak seasons, 16% of them hired labour only casually and 7% regularly. This means that now a greater part of labour hired in agriculture has to look for non-agricultural employment during off season. This fits well with the rise in the proportion of other labour households among non-agricultural households during the period 1983 to 1987-88. Since the bulk of such labour is unskilled, and construction work generally picks up during off-season, such labour may be finding work in constructional activities. This may be the reason for the rapid expansion in proportion of rural labour engaged in constructional activities.

Per-Capita Expenditure

Table (X) gives the distribution of rural households by monthly per-capita expenditure class. The table shows that agricultural households are more concentrated in lower monthly per-capita expenditure classes with 50% of agricultural households falling within the monthly per-capita expenditure class of Rs.125 and less while less than 40% of the non-agricultural households fall within this expenditure class. The difference is much sharper for the highest expenditure classes. The top three monthly expenditure classes (Rs. 125 and above) accounted for nearly 25% of non-agricultural households while only 16% of agricultural households fall within these expenditure classes. This means

that on an average non-agricultural households are better-off than the agricultural households and there is a positive relationship between per-capita monthly expenditure and participation in non-agricultural activities. But, for any firm conclusion we must have state-level data which are not available.

Table (XI) shows the distribution of self-employed rural households and other labour rural households according to monthly expenditure classes. It is clearly evident that self-employed households are much better-off than the labour households. There is a positive relationship between self-employed rural households and higher monthly per-capita expenditure with more and more households falling in higher expenditure classes belonging to self-employed category. This is true for both type of self-employed rural households those engaged in agricultural activities and those in non-agricultural activities. This may be due to fact that the capital and the skill required for self-employment can only be supplied by already better-off rural households.

Educational Attributes

Table (XII) gives per thousand distribution of persons of age 15 years and above by general education for each household type for rural areas. It is clear that the smaller proportion of persons engaged in non-farm activities are illiterate compared to the proportion of persons engaged in farm activities. This is true for both self-employed as well

as labour category. Nearly 57% of the persons engaged as self-employed in both farm and non-farm activities were illiterate in 1987-88 compared to nearly 74% of persons being illiterate who were employed as labour. It means that incidence of illiteracy is much higher among the labourers compared to the self-employed. Within the self-employed category, only 52% of persons engaged in non-farm activities were illiterates compared to 58% of persons engaged in farm activities. Among the labour category, 77% of agricultural laboures were illiterates compared to only 64% among other laboures. Again state level data are not available.

Earnings

The average earnings of non-agricultural workers are much higher compared to the average earnings of agricultural workers (Table XIII a,b.). The average daily earnings of male regular wage/salaried employees in agriculture was Rs. 14.58 in 1987-88 while the average earnings of the least paid non-agricultural workers (those engaged in trade) was Rs. 17.19 .

Even in the case of casual workers non-farm workers were better paid. The average daily wage of male manual non-agricultural casual worker was Rs. 15.69 compared to average daily wage of Rs. 10.82 for male manual agricultural casual wage workers engaged in cultivation. Also while the average wage of non-manual casual male agricultural worker engaged in cultivation was Rs. 15.46, non-manual casual male non-agricultural on an average received Rs. 15.86 in 1987-88.

Conclusion

1. The share of rural non-agricultural labour force in total rural labour-force had increased slowly but steadily from 70s onwards both at all India and state level.
2. There is sharp inter-state variations in the levels as well as temporal changes in the proportion of non-farm workers.
3. There seems to be a positive relationship between the level of rural male non-farm employment and rate of change in it within a state.
4. Among the states experiencing relatively larger change in the share of male non-farm workers, the states which experienced greater change in the first period showed considerably lower change in the second period and the states which experienced slower growth in the first period experienced considerably higher growth in the second period.

5. The rise in non-farm rural employment is largely accounted for by the increase in proportion of labour-force engaged in constructional activities at all India level.
6. At all India level, in the first period most of the increment in non-farm employment was accounted for by the increment in rural non-farm self-employed households while in the second period expansion in other labour

households accounted for most of the expansion in the rural non-farm employment. But, the result at the state level is mixed.

7. At all India level, the dependence on rural non-farm activities varies inversely with the size of land owned by the households.
8. There is a positive relationship between per-capita monthly expenditure and participation in non-farm activities at all India level.
9. At all India level the incidence of literacy is higher among non-farm workers compared to agricultural workers.
10. The average daily earnings of the non-farm workers is much higher than the average daily earnings of the agricultural workers.

Determinants of Non-Agricultural Employment: A Review of Existing Literature

A large number of factors have been identified in the literature to explain the concentration of non-agricultural activities in a specific region. For analytical purpose these factors can be clubbed into four broad groups:

A) Demand interlinkage between agricultural and non-agricultural sectors.

B) Production interlinkage between the two sectors.

C) Outside factors.

D) Non-agricultural activity as a residual sector.

A) Studies of household expenditure show that non-food items occupy a rising share of rural household budget as their income rises. Agricultural income itself constitutes the largest part of the the rural income and as such any variation in agricultural performance affects demand for non-agricultural goods. The rural sector demand for non-agricultural products also consists of inputs for goods and services. The first is crucial for agricultural development and prosperity as they directly affect the level of production as well as growth rate and thus level of income which in turn affects demand for manufactured goods for final consumption and capital formation and consumer services of various kinds.

Given the above discussion rural income in a region is hypothesised to have a direct impact on non-agricultural activities in rural areas through increased demand for diversified non-agricultural goods and services. But the extent to which higher rural income will lead to larger demand for rural non-farm goods and services will depend on the degree of inequality of income and the degree of exposure to the outside world. These two factors will significantly affect the preferences of rural consumers between locally produced labour-intensive products and services of local enterprises and modern and capital-intensive products and services produced by units located in urban areas. In fact the 'inferior - goods hypothesis' visualised a negative relationship between the level of rural income and the demand of goods and services produced by rural non-farm sector as it produces goods and services which are inferior in nature and more likely to be patronized by small and marginal farmers and landless workers rather than the large affluent farmers.

Also greater inequality of income and wealth implies that only a thin crust of peasantry has a cash nexus with non-agricultural sector. As a result the share of total agricultural income spent on non-agricultural goods and services is likely to be smaller. The outside exposure is further likely to mould consumer preferences in favour of urban consumer goods. So, one can visualise a negative relationship between degree of inequality in income and wealth and the level of employment in rural non-farm sector. But some studies have also visualised a positive relationship

between the degree of inequality in land holding and rural non-farm employment. The concentration of land in the hands of a few households can facilitate the growth of non-agricultural employment if the surplus generated from agriculture is invested in non-agricultural activities in rural areas. On the other hand, it may also imply more landlessness and predominance of small holdings. Non-availability of agricultural work to the landless and small cultivators can result in a distress diversification to non-agricultural activity.

Vaidyanathan [1986] visualised the level of rural non-agricultural employment to be a function of (i) the level of rural demand for non-agricultural goods and services produced locally (ii) the level of extra-local demand for rural products and services, and (iii) location, scale and technology of activities catering to these demands. The first would be dependent on agricultural prosperity of the region identified as per capita income of agricultural classes and the degree of inequality in distribution. He hypothesised that the more prosperous the region, the greater the inequality of distribution, and the greater the degree of exposure to urban life the higher will be the demand for final consumer goods and services obtained from non-agriculture and the greater will be the level of non-agricultural activity. He hypothesised a positive relationship between non-agricultural activity and the degree of inequality of rural income, because it had been found that

persons with higher income spent relatively greater share of their income on non-food items.

He used two explanatory variables, crop output per head of agricultural population (average of 1975-76 to 1979-80) and the Gini index of concentration of operational holdings (agricultural census 1971-72). He found significant positive relationship between the incidence of non-agricultural employment (NSS, 32nd round 1977-78) and crop output per head of agricultural population, but negative relationship between non-agricultural employment (NSS, 32nd round 1977-78) and inequality of operational holdings. From this he concluded that consumption interlinkages between agricultural and non-agricultural sector are strong.

S Mahendra Dev (1990) considered rural non-agricultural employment (NSS 32nd round 1977-78) to be the function of crop output per head of agricultural population (average of 1977-78), output per hectare (1975-78), Gini - coefficient of the concentration of rural assets (1971-72) and the person-day unemployment rate (NSS 32nd round 1977-78). Dev's study is more general than Vaidyanathan's because his study is based of 56 NSS regions while Vaidyanathan's study is based on the data for 22 states. He found land productivity to be significantly and positively associated with rural non-farm employment. The Gini - Coefficient of the concentration in rural assets was negatively and significantly associated with the level of rural non-farm employment. But, unlike Vaidyanathan, he did not find significant association between crop output per head of agricultural population and the level

of non-agricultural rural employment. The results, according to him, indicate that agricultural development has positive impact on the promotion of rural non-agricultural employment.

Jeemol Unni [1991] took rural non-agricultural employment to be the function of performance of agriculture, degree of commercialisation, concentration of operational holdings and Urbanisation. The agricultural performance may facilitate the growth of non-agricultural goods and services; and also the surplus generated may be invested in non-agricultural activities. However, in the initial phase, the growth of agricultural production in a region may better absorb the labour within the agricultural sector itself. In such a phase, agricultural prosperity need not result in the growth of non-agricultural activities. So, agricultural performance may have positive or negative effect on non-agricultural employment depending upon which of the above relationship dominates. Two indicators of agricultural performance were used to study the relationship between the proportion of non-agricultural workers to the total rural labour force (NSS 32nd round 1977-78) and the agricultural performance: (i) a compound rate of growth of the value of output of 19 major crops over the two triennia 1962-65 and 1975-78. (ii) Value of output of 18 major crops per hectare of gross cropped area (1977-78).

She found land-productivity to be positively and significantly associated with the male, female and total non-agricultural employment, but growth of agricultural

production was negatively associated with female and total non-agricultural employment.

She also hypothesised a positive relationship between the level of rural income and percentage of male or overall non-agricultural employment and negative relationship with the percentage of female non-agricultural workers. She used two prices for the level of rural income (i) Value of output of 18 major crops per-agricultural worker (1977-78) and (ii) percentage of population in the top three per-capita monthly expenditure groups (1977-78). She found no significant association between agricultural production per worker and the level of non-agricultural employment (NSS 32nd round 1977-78). She also obtained positive and significant association betweenm the Gini - concentration ratio of operational holdings (Agricultural census 1976-77) and proportion of rural non-farm workers (NSS 32nd round). This positive relationship may either be due to facilitating (greater surplus being invested in non-agricultural activities) or distress factors. The positive relationship between Gini coefficient and rural non-agricultural employment found by Unni needs comment because, it is completely opposed to the results obtained by Dev (199Ø) and Vaidyanathan (198Ø) who obtained negative association between the two. The negative association between the two indicates weak consumption interlinkage between the two sectors while the positive association may be due to either strong consumption interlinkage between the two sectors or distress diversification. From the above results Unni concluded that

there seemed to be strong arising on the consumption side interlinkage between the performance of agriculture and the level of non-agricultural employment. The positive relationship between Gini coefficient and rural non-agricultural employment found by Unni needs comment because, it is completely opposed to results obtained by Dev (199Ø) and Vaidyanathan (1986) who obtained negative association between the two. The negative association between the two indicates weak consumption interlinkage between the two sectors while the positive association may be due to either strong consumption interlinkage between the two sectors or distress diversification. Here, it would be appropriate to mention mention that Vaidyanathan and Dev have used data related to 1971-72 while Unni has used 1976-77 data. The data of Vaidyanathan and Dev are related to first phase of Green Revolution when output elasticity of agricultural employment was increasing , while Unni's data relates to the second phase of Green Revolution characterised by falling output elasticity of agricultural employment (we will discuss this in detail in chapter III). This may have forced excess rural labour force to look for jobs in non-agricultural sector. Hence, Unni may be getting positive result due to distress factors. rather than strong consumption interlinkage between the two, though this conclusion goes against Unni's conclusion.

Papola [1987] after studying the performance of rural industrial sector in two districts of U.P. in the 7Øs and the

early 80's, found that the performance of rural industrial sector in different states was broadly related with the levels of agricultural productivity and more closely with the growth rate of agricultural output. Rise in income levels purchasing power and to an extent the investible surplus generated by agricultural growth improved the efficiency of existing industries and led to the emergence of new and dynamic ones.

B) Production Interlinkages Between Agriculture and Non-Agricultural Sector:

A second factor associated with the growth of non-agricultural activities in rural areas is the backward and forward production linkages that the rural non-agricultural sector has with the agricultural sector. The 'Agricultural led Developement' models suggest that agricultural growth facilitates the growth of the non-agricultural sector. The direct impact of rapid agricultural growth on rural industrial output is by supplying more raw-materials (forward linkage) to agro-based industries (gur, Khandsari, tobbaco, etc) and creating demand for inputs and allied services (backward linkage) such as manufacture and repair of agricultural implements, transport, distribution of fertiliser etc. Traditional agriculture uses mostly locally produced inputs, a large part of which is derived from agriculture and allied activities. The few non-farm inputs such as making and repairing of implements are also produced by local artisans. With the introduction of modern

technology e.g. irrigation, fertilisers and mechanical equipments like pumps and tractors, the dependence on non-agricultural sector increases. Apart from that mechanisation of agricultural operations may strengthen distress factors in agriculture and lead to pushing out of labour from agriculture. This may result in higher unemployment in agriculture and,diversion of agricultural labour to non-agricultural sector. So, as a first approximation one can visualise a positive relationship between agricultural growth or productivity and non-farm rural employment. But, the extent to which rural non-farm sector will benefit is not clear. There are two reasons why it may act as an inhibiting factor on rural non-farm employment. Firstly, in the initial phase the growth of agricultural production in a region may better absorb labour within the agricultural sector itself. This is mainly due to the use of labour using technology. In such a phase, the growth of agricultural production need not result in the growth of rural non-agricultural activities.

Secondly, most of the modern inputs except perhaps machine repair services are produced by industries located in urban areas often far away from the villages where they are used. Consequently, while the growth of agricultural production generally accounts for more than poportionate increase in the demand for inputs produced by non-farm sectors, it may not lead to an increase in the demand for locally produced inputs. This tendency to use non-local inputs may get strengthened in case of higher inequality of

land-holding and exposure to outside world. The adoption of modern techniques in agriculture is quite resource intensive and there is likelihood of their being adopted by the large farmers. Thus, agricultural productivity growth may have positive or negative effect on rural non-farm employment.

Modernisation of agriculture also means commercialization of it which may significantly affect consumption and production interlinkages between agriculture and rural non-agricultural sectors. Firstly, agricultural production gets more specialized and the extent of trading-trade related activities - increases. Secondly, increased exposure to and contact with nearby towns may alter the preference of the rural populace towards urban consumer goods and inputs. Thirdly, since commercialization of agriculture extends the territorial network of exchange, the effective size of market for non-agricultural goods and services also expands. This creates greater opportunities for specialization, technical change and spatial concentration of non-agricultural production. This tendency will be further strengthened by improvement in transport and communication network. This will give birth to two opposite forces. On the one hand this may lead to increasing dependence on non-local sources for meeting demand for non-agricultural goods and services by encouraging a shift in preferences favouring urban goods. On the other hand, countering this tendency will be the fact that the volume of trade and trade - related activities will increase greatly as a result of commercialization. Apart from that, by

increasing the supply of raw - materials for processing and other agro-based industries it may have a direct effect on non-agricultural activity. In sum, the impact of commercialization on rural non-agricultural employment may be negative or positive depending upon which tendency is stronger.

Vaidynathan [1986] visualised the degree of commercialization to have a significant impact on non-farm employment, the impact may be positive or negative. He hypothesised the extent of commercialization to be an increasing function of the level of crop output per head of agricultural population, the inequality in land distribution and the percentage of area under non-foodgrains. Another important dimension of commercialization according to Vaidyanathan which was not incorporated in his study due to paucity of data was the effect of differences in the spread of modern agricultural techniques which were intensive in the use of manufactured inputs. The percentage area under non-foodcrops for 1977-78 gave mixed result in the regression analysis and he advocated further refinement in the variables on commercialization before coming to any conclusion.

Unni [1991] hypothesised that the predominance of non-food crops in the cropping pattern had a positive relationship with non-agricultural rural employment. This could have a direct impact on non-agricultural activity by supplying raw - materials for the processing and other industrial activities. Such a cropping pattern might also

imply more commercialized agriculture which could have an indirect impact on non-agricultural activity through the inter-linkages between the output, credit and labour markets. She used two specifications of the cropping pattern (i) percentage of non-food crops to total cropped area (1977-78), and (ii) the ratio of non-food crops output to total cereal output (1977-78). She found both of these proxies to be insignificantly associated with the level of non-agricultural employment (NSS 32nd round 1977-78).

Papola [1987] while examining the relationship between agricultural growth and the level, structure and growth of rural industries hypothesised both direct and indirect effects. The direct impact of rapid agricultural growth on rural industrial activity was by supplying more raw materials and creating demand for inputs and allied services. The indirect impact was through raising consumption demand and generating surplus for investment. He, however, found that the direct relationship in terms of input supplying and output using linkages were limited. The relationship appeared to be more indirect.

C) Outside Factors:

Proximity to large urban area, government policy and expenditures etc are other important determinants of rural non-farm employment. Urbanization can affect non-farm local employment in following ways. Firstly, Urban population may constitute demand for non-farm rural sector products like gur, sugar, handicraft products etc. In this way urban

population adds to total demand for industrial products. Secondly, it may happen that some part of rural workers is employed in nearby urban areas in activities like construction but residing in the village. To this extent a part of the non-agricultural workers residing in rural areas may in fact be working outside catering to extra-local demand. The size of such labour will depend on the size of urban centres relative to the rural population of the area, the distance over which commuters have to travel and the cost of commuting. The larger the nearby firms the shorter the commuting distance and the cheaper the cost, the larger is likely to be this phenomenon. Thirdly, proximity to a town may also alter the preferences of the rural populace through greater interaction and the urban goods may provide stiffer competition to rural non-agricultural product's exports to urban areas. In this way, urbanisation may be inimical to rural manufacturing. Finally, urbanisation may lead to greater commercialization of agriculture and allied activities as with the expansion in population of nearby towns, demand for food-grain vegetables and animal husbandary porducts are likely to increase. In sum the effect of urbanisation on rural non-farm activities may be positive or negative.

Government expenditure/policies are the other outside factor which may significantly affect rural non-farm employment through providing direct employment to rural workers, broad development expenditure, subsidisation and

preferential treatment to rural industries etc. Today, government is providing employment to increasingly larger number of people in rural areas. It not only increases the rural non-agricultural employment directly but also has second round effect on it through increased rural income. The government development expenditure may partly go to building up of public infrastructure which may lead to growth in aggregate non-farm manufacturing and trade employment. But, it may also improve agricultural performance and this may have a positive or a negative effect on non-farm employment. Also, government policies regarding fiscal incentive and preferential treatment to agro-processing, small-scale and cottage industries encourage non-farm activities, first, by protecting certain kinds of rural industries from large scale urban industries, and secondly, by improving their competitiveness vis-a-vis manufacturing units. On the whole government policies of such kinds are likely to have a positive effect on non-farm employment.

Unni [1991] found significant positive relationship between the percentage of urban population (NSS 1977-78) and percentage of male rural non-agricultural workers (NSS 1977-78). This may be due to, according to her, the following reasons. The rural areas may cater to the demand for non-agricultural products or services in the nearby urban areas, or some of the residents may engage in non-agricultural occupations in the nearby urban areas and commute to their work place regularly. Urbanisation can also be viewed as a proxy for availability of infrastructural facilities.

Vaidyanathan [1986] accepted that government policies/expenditure significantly affect rural non-agricultural employment, but for want of appropriate data he did not analyse it's impact on it.

D) Non-Agricultural Activity As a Residual Sector

Vaidyanathan [1986] put forward the residual sector hypothesis as an alternative to the interlinkage hypothesis between agricultural and non-agricultural sectors. According to this hypothesis, non-agricultural activities act as a residual sector so that rural workers who are not absorbed fully in agriculture spill over into non-agricultural activities. The latter acts as a sponge for the excess labour. It seems more likely in a situation where commercialization has advanced and the wage labour system has become widespread in as much as both tend to weaken the traditional social mechanisms for taking care of the unemployed/underemployed and increase the pressure on those who cannot find work in agriculture to such other avenues of employment. Such workers generally join traditional low-productivity non-farm activities such as rope or coir making, basket making etc. either as self-employed or hired worker. Since most of such workers belong to the lowest strata of the rural society, being landless and extremely poor, they have no option but to work on whatever wages they are offered. This according to Vaidyanathan, will lead in terms of conventional demand and supply analysis, to a depression

of the non-agricultural wage rate relative to the rural agricultural wage rate, if the absorptive capacity of the agriculture and of urban areas is limited. He used rural person - day unemployment rate (NSS 32nd round 1977-78) to measure the imbalance between labour supply and demand in rural areas. He hypothesised that the higher the rate of unemployment, the higher was likely to be the share of the non-agricultural sector in total rural employment and the lower the non-agricultural wage relative to that in agriculture. He found a strong association between the NSS person - day unemployment rate (NSS 32nd round 1977-78) and the percentage of rural non-farm workers (32nd round 1977-79). Such an excess labour situation should lead to fall in non-agricultural wage relative to agricultural wage; he, however, did not find such a relation at the state level.

Mahendra Dev [199Ø] also found unemployment rate to be significantly and positively associated with non-agricultural employment.

Unni [1991] used three proxies for distress diversification (i) personday unemployment rate (ii) percentage of landless labour households and (iii) incidence of poverty, all for 1977-78. All these three variables were hypothesised to be positively related to rural non-agricultural employment (NSS 32nd round 1977-78). Like the above two studies she also found strong positive association between unemployment rate and rural non -agricultural employment. But the other two proxies of distress

diversification were not found to be significant.

The strong association between unemployment rate and non-farm employment is taken only as a limited evidence in favour of residual sector hypothesis because of the following two reasons.

i) There is a strong association between land productivity and unemployment rate and

ii) There is absence of evidence of fall in non-agricultural wage relative to agricultural wage rate. The strong association between land productivity and unemployment rate is attributed to following factors:

First of all, NSS unemployment rate really captures only open and visible unemployment [Parthsarthy 1979, Unni 1991]. Such reported unemployment is likely to be higher in region where agricultural development is higher as the expectation of obtaining employment here is greater than in a agriculturally backward region. This may also be partly due to migration of workers to developed regions from backward regions. Such reported unemployment is also expected to be higher in wage - dependent households or among casual workers as opposed to self-employment persons. This is so because it is easier for casual workers to perceive and report their unemployment. In agriculturally developed regions it is easier for persons to perceive their unemployment and the possibility of obtaining work makes them report it. Unemployment rate has also been found to be higher among landless workers. The percentage of landless workers is high in agriculturally developed regions because

of low land-man ratio and inequality in distribution. Unemployment rates are also consequently higher. Apart from that unemployment rates may also be depressed in backward states if the want of work-opportunities in the off-season discourages workers away from the labour market. This is known as discouraged worker hypothesis [J.N. Sihna 1978]. This implies that workers in backward region may withdraw from the labour force on account of acute unemployment during off-season. Some evidence has been found in support of this hypothesis. In addition, the introduction of New Agricultural Technology (NAT) with the emphasis on mechanisation may push out workers from agriculture. Also NAT is known to change the employment structure in agriculture. The proportion of hired labour increases and that of family labour declines [Sadhu & Mahajan 1985]. This may reduce the scope of disguised unemployment in agriculture and lead to more open unemployment.

Due to reasons discussed above, unemployment rate may be higher in the agriculturally developed regions. To the extent that the percentage of non-agricultural workers is greater in the agriculturally developed regions, unemployment rate will be positively associated with the former. This makes interpretation of these results quite complicated.

The problem of interpretation is due to strong associations between non-agricultural employment with agricultural land productivity as well as unemployment rate and further between unemployment rate and agricultural land

productivity (these studies take land productivity as a indicator of agricultural performance which is quite doubtful) i.e. whether performance of agriculture is affecting non-agricultural employment via its interlinkages (consumption and production) or via unemployment. Perhaps closer perusal of results obtained by various studies may throw some light on it.

Vaidyanathan [1985] finds strong and significant association between rural non-agricultural employment and crop output per head of agricultual population which suggest strong demand interlinkage between the two sectors. But, other studies do not find such association, instead they find strong association between land productivity and rural non-farm employment. From this they conclude that there is strong demand interlinkage between the two sectors. However, one can raise strong objection against taking land productivity as a proxy for agricultural dynamism which we will discuss later. Secondly, Vaidyanathan (1986) and Dev (199Ø) find strong negative association between inequality of rural assets and the level of rural non-farm employment indicating weak demand interlinkage between the two sectors. But, Unni (1991) finds strong positive association between the two which can either be due to strong demand interlinkage or distress factors. Papola [1981] also finds weak demand interlinkage between agriculture and rural industrial sector. At the same time Unni [1991] finds no significant association between rural non-agricultural employment and the level of rural income indicating weak demand interlinkage. From these

results it seems fair to conclude that there is weak demand interlinkage between agricultural and rural non-agricultural sectors. Studies of effect of technological changes in agriculture on gains to different segments of rural society suggests that all the segments of society have benefitted absolutely, but the rich peasants have benefitted more than others (C.H. Rao 1972, Sadhu & Mahajan 1985). It has generally been found that they prefer modern and capital-intensive products and services produced by units located in urban areas over labour-intensive products and services of local entreprencus. This may be the cause of weakened demand inter-linkage between rural non-agricultural and agricultural sector.

All studies find weak production interlinkage between the two sectors. This may be due to following reasons. Firstly, most of the modern inputs except perhaps machine services are produced by industries located in urban areas. This tendency to use non-local inputs may get strengthened in case of higher inequality of land holdings and exposure to outside world. Secondly, regarding forward linkage the agro processing units may not be fully developed. Further in a region where they are developed they may not be providing much employment due to their being relatively more capital intensive compared to traditional rural non-farm activities.

Given the above discussion there is more than mere possibility that strong association found between land productivity and rural non-farm employment is due to strong

association between land productivity and unemployment rate and the level of rural non-farm employment.

Turning to the second objection that there is no evidence of fall in non-agricultural wage - rate relative to agricultural wage rate in case of higher unemployment, there are a variety of reasons that it will not happen. Firstly, even in terms of conventional demand and supply analysis this will not be so. As the non-agricultural sector is a residual sector, it means that rural labour-force first offers itself for employment in agricultural sector itself and thus the first impact of the excess in rural labour force will be felt on the agricultural sector itself rather than on non-agricultural sector. This will first depress agricultural wage - rate and then non-agricultural wage rate and thus fall in non-agricultural wage rate relative to agricultural wage-rate will not materialise.

Secondly, this formulation treats rural labour force as a homogeneous lot ignoring differences in skill, education etc. In fact, wage structure is universally hierarchical reflecting occupational and skill differences. Broadly speaking we can divide non-agricultural labour market in two segments upper and lower segments. The upper segment consists of skilled labour. Requirement of skill/education acts as a barrier and agricultural labour pushed out of agriculture are hardly likely to join upper segment. It is the lower segment they are likely to join and the wage - rate of this segment is likely to be depressed due to inflow of agricultural labour. But, wage-rate of this segment relative

to agricultural wage-rate may not get depressed due to certain reasons. Firstly, non-agricultural jobs may involve mobility e.g. construction works may be taking place in urban areas or away from the native village and the worker may like to get compensation for it. Secondly, wages may already be very low near or below subsistence level with very little possibility of going down further. Thirdly, agriculture wages are very often paid partly in kind like food-grains or sometimes given food. This component of agricultural wages may be undervalued because the price of foodgrains or food is likely to be low in villages generally equal to the cost of production. On the other hand, non-agricultural workers are generally paid in cash. This may also result in higher non-agricultural wages at least is nominal terms. Fourthly, in case of already low wage rate employees may not be willing to press for further reduction in wages due to fear that it will adversely affect efficiency of labour. Finally, wage rate is determined not only by demand and supply conditions in the economy, but it also depends on social and institutional factors like social conventions, traditions etc. (T.N. Krishnan 1991). Wage-structure in an economy follows an hierarchical order reflecting social customs which results in a strong tendency for wage-relatives to remain stable over the long run. Different labour markets are interrelated and that such interrelationships operate through the wage structure even in the absence of the intermarket labour mobility. Any change in the wage rate of any category of

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labour within a structure of interrelated labour markets is transmitted to other wage rates in order to re-establish wage relatives. This stable wage-relatives is due to number of factors like tendency to maintain living standards appropriate to the perceived living standards of ones own peer group to maintain their social status within the hierarchical structure, lower wages adversely affecting efficiency, necessity of agricultural operations being completed within a specified frame-work etc.

In sum, unemployment rate can be taken as a good proxy for testing of residual sector hypothesis and also depression of non-agricultural wage rate relative to rural agricultural wage rate is not required for the validation of this hypothesis.

Unemployment And Non-Farm Employment

The question remains to be answered why higher unemployment leads to higher proportion of non-farm employment. This can be attributed to variety of reasons. Firstly, part of the rural unemployed work-force may be joining non-farm activities as a self-employed or unpaid family labour and thus turning into disguised unemployed from openly unemployed. There is lot of scope of disguised unemployment in rural non-farm activities. According to NSS 32nd round 1977-78, self-employed households constitute over 95 percent of the total rural non-farm workers in most of the state. Also around 2/3rd of the household workers engaged in rural industrial activities are principally dependent on it.

Papola [1987] after surveying rural non-farm activities in Ballia and Muzzfarnagar districts (both in U.P.) found that 55 percent units in Ballia district and 76 percent in Muzzafarnagar district used no hired labour. He also found that most rural industrial enterprises were carried out as a means of family subsistence rather than business, use primarily unpaid household labour and had very small size of production and low productivity and income per worker engaged in them.

Secondly, in agriculture proportion of agricultural labour who are hired only at peak time has increased. Rest of the years they look for job opportunities in non-agricultural sector.Such labour may be leading to increase in unemployment. On the other hand casual employment has increased in non-agricultural sector. Papola [1987] found that most of the hired labour in rural industrial units were hired only for part time. Nearly 72 percent of them got employment for less than six months. A part of such unemployed labour may be be finding casual/part time jobs in non-agricultural activities.

Land Productivity As A Proxy For Agricultural Development

A strong objection can be raised against using land productivity as a proxy for developed agriculture especially in labour surplus economy like India. If we look at 'farm-size productivity debate' (sen 1962, 1964, Rudra 1968,

Bhardwaj 1974 etc.) then we find that the most plausible reason given for small-farms having higher land-productivity compared to large farms is that small-farms make more intensive use of inputs particularly labour. For any given unit of land, land productivity depends on amount of labour and capital used on it. More intensive use of either labour or capital given other factors will lead to higher productivity. In the labour surplus economy where family based system of farming predominates, there is intensive use of family labour generally upto a level where marginal productivity of labour is well below prevailing agricultural wage rate. This happens because real cost of labour for family based farmers is low. Not, only this, cheaper labour cost leads to greater use of capital due to complementarity between labour and capital [Sen 1967]. This complementarity arises due to following reasons. Firstly, a lower price of one factor will tend to increase the use of its complementary factor, the lower cost of labour will have such an effect on the use of capital also. Secondly much of the capital used particularly on smaller farms is not brought from outside but produced with direct labour in the family economy itself. Hence, the cheaper cost of labour will reflect itself directly in the cheapening of the capital goods, and the differential price advantage that the peasant farms have in the use of labour will imply such an advantage also in the use of capital. So there are reasons to belief that higher productivity per acre of the smaller farm is due to cheaper labour, acting also as capital through complementarity and

direct embodiment of that factor.

Rudra and Chattopadhya [1976] distinguish between forces that drive small farmers to undertake intensive efforts-need of survival need of basic minimum consumption in a situation of non-existence of alternative employment, thus to maximise output and the forces which permit him to do so i.e. cheapness of family labour, indivisibility of capital, superior quality of labour, better quality of management that can be applied to small farms etc. The factors which drive small farmers to more intensive use of labour, non-labour and material inputs besides trying to improve irrigation facilities and to raise higher remunerative crops with intensive cropping are much more important. Here land productivity cannot be related to efficiency of small farms but to distress factors.

In sum, a region with surplus labour where family based farms predominate, land productivity may be very high due to intensive use of labour. If we look at the empirical data about land productivity of various states there is ample evidence of that.Per hectare average value-added in Punjab and Haryana in 1987-88 were Rs. 7Ø5Ø and Rs. 5267 respectively.Compared to this average value added per hectare in Kerala, West Bengal, Bihar and Assam were Rs, 9,417, Rs. 76ØØ, Rs. 6,785 and Rs. 6653 respectively (Table XV). The latter set of states are hardly known for agricultural dynamism though partly high land productivity in Kerala and Assam may be due to plantation. Unni mentions distress

diversification due to higher agricultural productivity. But, her distress diversification is related to use of machines which displaces workers from agriculture. It follows that interpreting high correlation between land productivity and non-farm employment as evidence in favour of interlinkage hypothesis may not be correct.

To sum up the discussion there seems to be weak demand and production interlinkage between the agricultural and non-agricultural sector. Evidence in favour of distress diversification seems strong. Another significant result is that urbanisation seems to have significant positive effect on rural non-farm employment.

Vaidyanathan [1986] has also looked at changes in proportion of non-agricultural employment during the 70,s. Almost all factors which were expected to have an impact on rural non-agricultural employment had shown systematic changes over the period under consideration. The rural agricultural income, value-added per hectare, degree of commercialization, level of urbanization. Unemployment rate etc. had changed significantly. He, however, only found positive significant association between change in proportion of rural non-farm employment and change in person-day unemployment rate. This again strengthens evidence in favour of distress diversification.

Conclusion

1) There is significant positive association between land productivity and non-agricultural employment. This may be due to strong demand and supply interlinkages between farm and non-farm sector. But, other evidence suggest that demand and supply interlinkages between the two are weak. It seems more likely that interlinkage between the two is due to distress diversification.

2) The association between non-farm rural employment and inequality of operational holdings is not conclusive.

3) There is no significant association between the level of rural income and non-farm rural employment indicating weak demand interlinkage.

4) There is also no significant association between the degree of commercialization and non-farm rural employment indicating weak production interlinkage.

5) There is strong positive relationship between current daily status unemployment rate and non-farm rural employment providing good evidence in support of residual sector hypothesis.

6) Other proxies for distress diversification, incidence of poverty, rural landlessness etc, do not show any significant association with rural non-farm employment.

CHAPTER III

Frame-work of Analysis

The real question that is to be answered is whether non-farm employment is related to a prosperous regional agriculture or to the lack of on-farm work-opportunities. Broadly speaking, there are two dimensions to the growth of non-agricultural activity in rural area. The non-agricultural sector may develop in rural areas due to certain facilitating processes. These processes may emanate from either agriculture or outside it. The agriculture led growth model suggests that a sustained rise in farm-output and incomes can act as a prime mover in initiating the development of non-agricultural activities in rural areas. Other processes such as urbanisation and development of infrastructure which emanate outside agriculture, can also lead to the growth of non-agricultural activities within rural areas. Both, these processes lead to the shift of rural workers to productive jobs in the non-agricultural sector.

The second dimension to the growth of non-agricultural activities in rural areas can be termed 'distress diversification' into unproductive or low-paid non-agricultural jobs. This occurs when labour is not fully absorbed in the agricultural sector and the non-agricultural sector acts as a sponge for the excess labour. Such a spill-off of excess labour from the agricultural to the non-

agricultural sector has been put forward as the residual sector hypothesis. [Vaidyanathan 1986]. This diversification is the result of inability of agriculture to further absorb labour and demographic pressure. Since, diversification largely occurs to low and unproductive jobs the non-agricultural wages are expected to be lower than the prevailing wage rate or even below subsistence, which for reasons discussed earlier may not come about.

Residual-Sector Hypothesis Reformulated

Given the excess labour situation, there should be expansion in distress employment in both the sectors agricultural and non-agricultural. But, if there are factors operating in a sector which prvent or work-against in take of further labour, the excess labour situation will be felt more on the other sector. It is quite interesting to point out that 'movement in occupational structure away from agriculture witnessed during the 7Ø's and onwards has coincided with what is known as the 'second phase of Green-Revolution' which is characterised by falling output elasticity of employment in agriculture, increasing dominance of labour-displacing mechanical technology over bio-logical technology, fall in incidence of tenancy etc. All these developments have impaired the ability of agriculture to absorb more labour and led to reduction in disguised unemployment, one of the indicators of excess labour situation prevailing in agricultural sector. Under such

situation when the ability of the urban sector to absorb more labour is also limited, the excess of rural labour has no other alternative but to turn to rural non-farm sector for job opportunities and in case of insufficient productive labour demand in rural non-agricultural sector, distress diversification may take place in the rural non-agricultural sector.

Here it will be in order to briefly review the developments within agricultural sector from the mid 7Ø's onwards. During the 7Ø's and the 8Ø's, the rate of growth of employment has fallen drastically in rural areas and it has been much below the rate of growth of rural labour force. The rate of growth of employment in agriculture grew at the average rate of 1.37 percent between 1972-73 and 1987-88 but only by .65 percent between 1983 and 1987-88 (table XVI) Vaidyanathan [1986] noted on the basis of NSS data for 1972-73 and 1987-88, that the rate of growth of employment in agriculture was much slower than the rate of growth output indicating fall in output elasticity of employment in agriculture. This falling output elasticity of employment is also corrborated by the study made by Sheila Bhalla [1987] with the help of cost of cultivation data for 1971-72 to 1983-84. The falling tendency in output elasticity of employment is attributed to growing complementarity between biological and labour-saving mechanical technologies. The other cause may be fall in peasant production and rise in wage-labour based production. The observed inverse relationship between farm-size and land productivity and

labour intensity is attributed to particular type of production-peasant production [Patnaik 1979] and with the decline in peasant production it was expected to decline as well. Very high labour-intensity of small farms was one of the causes of over - all high labour intensity of agriculture and it is here that most of the excess rural labour found jobs as disguised unemployed. There is evidence that such inverse relationship is disappearing (Rakesh Basant 1987) Vaidynathan [1986] has found that the rate of growth of labour absorption per hectare has turned negative and also that the proportion of wage-labour has risen in every state except Kerala and Maharastra. In Kerala, however, the proportion of wage labour was already more than 50% even in the 70's. While faster pace of capitalist farming has contributed to the growth of wage labour in tehnologically leading states like Punjab and Haryana, demographic pressures and fast declining land-man ratios have increased the proportion of wage labour in technologically lagging states. Sheila Bhalla (1987) has noted one another significant development in technologically leading states in her study namely that of an increasingly larger proportion of unpaid workers from small cultivators families joining the rank of agricultural labour where they are better paid.

The introduction of various components of New Technology has also been marked by an increase in the share of hired labour relative to family labour. It implies that either the employment of family labour does not increase at

the same rate as hired labour or it falls while the hired labour employment continues to increase.

Dasgupta [1977 a, 1977 b] after analysing the data of AERC village found that adoption of HYV has led to fall in the labour-force participation rate of the village. This is largely because of the pronounced emphasis on hired labour in HYV cultivation and the withdrawal of intermittent family workers like women (largely for social reasons) and children and educated adults with lucrative job opportunities outside. He found that while the amount of work in terms of labour-days had increased such work was now being performed by a smaller number of hired workers. Thus new technology is significantly associated with an increase in employment of hired labour.

The second phase of Green Revolution is also associated with growing landlessness [Parthasarthy 1991]. The totally landless showed an increase from 9.64 percent of rural households in 1971-72 to 11.33 percent in 1982 suggesting the association of advanced technology with growing landlessness at least in technologically leading staes. In technologically lagging states it may be largely due to demographic pressure. The coefficient of concentration of operational holdings show continuously rising trend [Parthasarthy 1991] from .58 in 196Ø-61 to .59 for 1971-72 and further to .63 in 1982. The rise is much more perceptible during the second phase of Green Revolution. Also, there is evidence of rising share in the operated area of the top 1Ø percent of the holdings and a sharp fall in

percentage share of bottom 60 percent. This trend was observed both in technologically leading as well as lagging states. This must be swelling the ranks of agricultural labour.

Another notable feature of new developments is declining incidence of tenancy in agriculture. There has been significant decline in the aggregate tenancy during the 70's when the lease market shrank in all the states (Swamy 1988). Corresponding to the decline in the percentage leased in to operated area, the tenant households as a percentage of the cultivating households declined from around one-fourth of the total to 17.78 percent.

Thus the second phase of the Green Revolution is marked by decreased access to land through the lease market for the small farmers. The changes in the lease market associated with Green Revolution has contributed to the growing proletariat ~~s~~ class (Parthsarthy 1991). This is largely due to resumption of land for self-cultivation, growing competition from the middle farmers for leased land etc.

Now the question is why HYV is going hand in hand with a falling elasticity of employment with respect to output in labour surplus country like India. One reason may be as Ishikawa [1981] has argued that a 'late comer country' is likely to adopt labour-saving technology much more quickly if that technology is already developed as it may constitute the cheapest yield-increasing input combination available. As such, the 'late comers' are likely to peak at much lower levels of labour absorption.

The second cause may be rising aspirations of agricultural labour and growing conflict between agricultural labours and landlords leading to as Hayami (as quoted in Sheila Bhalla [1987]) puts it increase in 'labour-transaction cost'. Weakening social institutions like caste system which worked as an efficient mechanism of supplying docile and reliable labour, growing agrarian conflicts and increased labour demand from irrigation and new technology might induce mechanisation without creating much employment opportunities.

Other facilitating factors have been government policies like providing open or hidden subsidy for fertiliser use, electricity cheap credit for buying tractors etc., massive expansion in credit and transport and communication intrastructure etc.

To sum up, the second phase of Green Revolution has been marked by falling labour absorptive capacity of agriculture, rising landlessness, falling incidence of tenancy and rising wage-based production. The problem is further compounded by the fact, as noted earlier, that though there is a rise in the proportion of cultivator households hiring labour, greater proportion of agricultural labour is being hired only during peak periods. Thus, an even greater proportion of agricultural labour has to look for non-farm jobs during off-season. Given, this situation, rural non-farm sector has to play host to larger proportion of rural labour force.

Now, the question is where excess rural labour may be finding work in rural non-agricultural sector. Firstly, as discussed earlier a part of the excess labour work-force may be joining non-farm activities as a self-employed or unpaid family worker and thus turning into disguised unemployed from openly unemployed. This may be more true for backward states like Bihar, U.P. Madhya Pradesh etc. There are a lot of scope of disguised unemployment in rural non-farm activities. According to 32nd round (1977-78) self-employed households constituted over 95 percent of the total rural non-farm workers in most of the states. Also around 2/3rd of the household workers engaged in rural activities were principally dependent on it. Papola [1987] after surveying rural industrial units in Ballia and Mujafernagar districts in U.P. found that 55 percent units in Ballia and 76 percent in Muzafarnagar district used no hired labour. Also, the units which hired labour, hired labour mostly on part time basis. He alo found, that most rural industrial enterprises were carried out as a means of family subsistence rather than business, use primarily unpaid household labour and had very small size of production and low productivity and income per worker engaged in them.

A part of excess rural labour may be finding jobs in activities like construction. Construction is an activity which is highly labour intensive and generally construction activities pick up in off-season particularly in rural areas. As noted earlier, data shows that expansion in rural non-agricultural activities is largely accounted for expansion in

employment in constructional activities.

The movement of excess labour towards rural non-agricultural sector should have depressing effect on rural non-agricultural wages. But, this does not happen due to reasons discussed earlier. The reasons being excess labour situation is faced by both agricultural and non-agricultural sectors and a part of agricultural labour also works as non-agricultural labour during off-seasons, non-agricultural work may involve mobility and also social factors may be responsible for it.

Earlier in the first chapter we have noted an apparently anomalous feature, participation in non-agricultural activities being inversely related to size of land-holding of the rural household, but non-agricultural rural households on average are better off compared to agricultural households even though land is the main income-generating asset in rural areas. First of all it may be due to higher non-agricultural wages. So, a non-agricultural household will have higher income compared to an agricultural household if the members of households are equal in number and they get employment for equal number of days. Secondly, if non-agricultural activity is of residual nature and if surplus member of a rural households works for off-farm jobs then the income earned by that member will add to overall income of that household and that household's income will be greater compared to a rural household whose surplus member does not go for off-farm work. Such rural houseohds may be

classified as non-agricultural household if major part of their income came from non-agricultural source. Joining of non-agricultural activity by the surplus member of the household does not reduce agricultural income of that household because the surplus member was not contributing anything earlier. Also we have seen that a major part of agricultural labour is employed only during peak peirod. A part of agricultureal labour may be working for off-farm jobs during their off-period. The income of such agricultural labour is likely to be higher than the income of agricultural labour who do not look for off-farm jobs during the period they remain unemployed. Because of all these reasons, it is not surprising that non-agricultural households are on average better-off than the agricultural households.

Empirical Results

Systematic statistical analysis is necessary to probe the source of regional variations in the non-farm sector and to determine whether the growth of this sector represents inevitable structural changes accompanying economic development or greater pauperization of the rural economy to which we now turn. The method of linear regression analysis has been used to analyse the determinants of rural male non-agricultural employment. The variables used are related to factors which facilitate non-agricultural activities or to distress diversification. A static investigation of the relative magnitude of non-farm employment will precede the

dynamic examination of the growth of this sector.

Level to Level Analysis:

Per-capita rural income and per worker income in agriculture for 1987-88 have been used as a proxy for consumption interlinkage between agricultural and rural non-agricultural sectors. The expected strong relationship between the proxies and proportion of male non-farm workers in total rural labour force (43rd round 1987-88) is not substantiated implying weak consumption inter-linkage. Another proxy for rural consumption, the share of non-foodgrain items in total rural consumption expenditure (1987-88) also does not show any significant relationship with the non-farm rural employment (1987-88). These results broadly conform to the results of earlier studies.

To test the effect of degree of inequality in income and wealth on rural non-farm employment, Gini Coeficient of operational holdings of land (Agricultural census 1984-85) has been used as a proxy for degree of inequality. They are found to be positively but insignificantly associated. This is contrary to earlier results which had found strong association between the two.

The local production interlinkage has been sought to be captured by average value added in agriculture per hectare (1985-86). The association is found to be positive but insignificant. This seems to suggest that regions with high average land productivity do not necessarily feature a larger

relative size of non-farm sector. This result is in contrast to results obtained by other studies (Dev, Unni etc) who find significant and positive relationship between the two. We will comment on this later.

The proxy for commercialization - proportion of cultivated area under non-food grains to total cultivated area (1987-88) shows positive and somewhat significant (R^2 = .40) association with rural male non-agricultural employment. Nonetheless, the above two results taken together indicate weak production interlinkage between agricultural and non-agricultural sectors.

None of the proxies used for outside factors urbanisation level (1991), CMIE index of infrastructural development (1987-88), Seventh five year plan per capita expenditure (1986-87) gives any significant result.

The proxy for educational level used - percentage of educated among rural male workers (1987-88) shows significant and positive association with rural male non-farm employment. This may be due to the well-known fact that educated people generally prefer regular highly paid non-agricultural jobs. Alternatively, to the extent it acts as a proxy for infrastructural facilities, expansion in rural male non-farm employment may be due to expansion in infrastructure facilitating non-farm activities. But, the first cause seems more plausible as we have seen that there is insignificant association between infrastructural development and rural non-farm employment.

Regarding distress factors none of the proxies except

for current daily unemployment rate (NSS 43rd round 1987-88) shows significant association with the rural non-farm employment. The incidence of poverty (Head -count ratio 1987-88) is found to be negatively though insignificantly associated with non-farm employment. The negative relationship may be due to lack of demand and absence of infrastructural facilities in the region with high incidence of poverty.

The current daily unemployment rate shows significant and strong positive association with the rural non-farm employment (R^2 - .68). To further test the association between unemployment rate and non-farm rural employment a non linear regression has been fitted. There are strong theoretical reasons for visualising non-linear relationship between the two. Firstly, linear association implies that non-agricultural employment increases constantly and finally entire rural labour-force may be employed in non-agricultural activities at some very high level of unemployment. But, it clearly seems unealistic. In rural areas, agriculture will continue to provide employment to certain minimum but a sizeable proportion of rural labour force which acts as a bound on the proportion of labour force employed in non-agricultural activities. Secondly, in case of high unemployment, labour-force may not always turn to rural non-agricultural activities. It may consider the option of migrating, withdrawing from the labour force itself in face of acute scarcity of employment, joining on-farm operations

as disguised employed etc. In such a situation, linear relationship between unemployment rate and rural non-farm employment seems less plausible.

The following non-linear relationship between proportion of non-agricultural rural male employment and person day unemployment rate has been visualised.

$$Y_t = A - Be^{-rxt} \quad \ldots\ldots\ldots\ldots (i)$$

$$\{x_t \dashrightarrow \quad , \; Y_t \dashrightarrow A\}.$$

where Y_t = proportion of non-agricultural employment at time (t).

x_t = unemployment rate at time (t).

$$\frac{dy_t}{dx_t} = r\, Be^{-rxt} > \emptyset, \quad \frac{d^2y}{dx^2} = -r^2\, Be^{-rxt} < \emptyset. \qquad (2)$$

'A' is the maximum value of proportion of non-agricultural rural employment, (2) shows that the rate of change of non-agricultural employment with respect to unemployment rate is positive but the rate of rate of change in non-agricultural employment 'declines with higher level of unemployment rate. This implies that as proportion of non-agricultural employment approaches the bound, rate of change in non-agricultural employment declerates.

Taking the log of equation (1) we can rewrite it as

$$\text{Log } (A-Y_t) = \log B - rx_t \quad \ldots\ldots\ldots (3)$$

For dynamic analysis following equation has been used:

$$\log (A-Y_t) - \log (A-Y_{t-1}) = - rDx_t \quad \ldots\ldots (4)$$

where $Dx_t = x_t - x_{t-1}$

[Equation (4) can be derived from equation (1) as follows:

$$Y_t = A - Be^{-rxt}$$

$$Y_{t-1} = A - Be^{rx}{}_{t-1}$$

$$Y_t - Y_{t-1} = -\beta e^{-rx}{}_t + \beta e^{-rx}{}_{t-1}$$

$$= -\beta e^{-rx}{}_{t-1} [\ e^{-r(x_t - x_{t-1})} - 1]$$

$$\Rightarrow \frac{Y_t - Y_{t-1}}{-\beta e^{-rx}{}_{t-1}} + 1 = e^{-r(x_t - x_{t-1})}$$

$$\Rightarrow \frac{Y_t - Y_{t-1}}{Y_{t-1} - A} + 1 = e^{-r(x_t - x_{t-1})}$$

$$\Rightarrow \frac{A - Y_t}{A - Y_{t-1}} = e^{-r(x_t - x_{t-1})}$$

Taking log we have

$$\log (A - Y_t) - \log (A - Y_{t-1}) = -r(x_t - x_{t-1}).$$

In equation (3), the value of 'A' is taken to be 50, .50 is taken because among a number of values tested it gives the best fit. Given A = 50, we can say that at most half of the rural labour-force can constitute non-agricultural work-force. For this equation goodness of fit increases to (.88).

The above results show that the demand and production interlinkage between agricultural and rural non-agricultural sectors are weak. This may be due to a number of reasons. Firstly, due to inequality of income only a small part of the peasantry has cash nexus with non-agricultural sector. As a result only a smaller part of total agricultural income is spent on non-agricultural goods. Also large farmers tend to demand goods which are produced in urban areas. Secondly,

New Agricultural Technology uses modern inputs like HYV, fertilisers, tractors which are produced in urban areas in place of locally produced good and services. Finally, the rich farmers have failed to invest their surplus in rural non-agricultural activities largely because the outlets are seen to be few and precarious (Parthasarthy, 1991). This is largely because the entry point, mainly a small firm, does not seem very attractive in terms of profit rate.

Earlier we have seen that strong association between land productivity and rural non-farm agriculture may be due to strong association between land productivity and unemployment rate. Incidentally, we have found insignificant association between land productivity and unemployment rate which is in contrast to the findings of other studies (Dev, 199Ø, Unni 1991 etc.), Though there are some very good reasons (as discussed earlier) for strong association between the two, there are equally good reasons for not much strong association between the two. Firstly, the high land productivity may be due to either intensive use of labour or modern farming. In the first case due to high incidence of disguised unemployment in agriculture, there may be less open unemployment. On the other hand, if there is highly unequal distribution of land or higher incidence of casualisation, unemployment rate is likely to be high. In the second case, where higher productivity is due to use of modern methods of farming labour absorption within the agriculture may be higher or lower depending on whether land augmenting or labour displacing techniques dominate. Also, depending upon

the strength of demand and supply interlinkages, rural non-farm activities may absorb higher or lower number of workers. It implies that region with high land - productivity maybe associated with higher or lower unemployment rate.

The regions with low land-productivity may also have higher or lower unemployment rate. In such regions, agricultural sector may not be offering much employment opportunities and also rural non-farm activities may not be developed due to backwardness of agriculture. In this case, unemployment rate is likely to be higher. On the other hand, in such regions acute scarcity of employment opportunities may lead to withdrawal of workers from the labour force or migration of labour. In such case, unemployment rate in the region with low land productivity may be low. In sum, there are number of reasons for weak association between land-productivity and unemployment rate.

The outside factors like urbanisation, government expenditure and infrastructural development do not seem to have much impact on rural non-agricultural employment. This may be due to a variety of reasons. Firstly, these factors may be facilitating the growth of non-traditional non-farm sector and retarding the growth of traditional sector. Secondly, level of urbanisation is low in India, only 25 percent of people live in urban areas. Also, rate of urbanisation is also very slow. Similarly, level of infrastructural development and government expenditure is not so high as to have any appreciable impact on rural non-farm

sector.

Turning to strong association between unemployment rate and non-agricultural rural male employment, it maybe due to rising level of disguised unemployment in traditiona non-agricultural sector and unemployment and disguised unemployment is positively correlated. This increasing disguised unemployment in traditional non-farm sector may be due to spill-over of disguised unemployment in agriculture. We have seen that the second phase of Green Revolution has been marked by falling labour absorptive capacity of agriculture, rising landlessness, falling incidence of tenancy and rising wage-based production. In addition, increasingly greater part of agricultural labour is being hired only for peak periods. Given this situation, increasingly larger part of rural labour force has to seek non-farm jobs which may be the cause of strong association between unemployment rate and rural male non-farm employment.

Determinants of Rural Male Non-Agricultural Employment

(A) **Dependent Variable:** Proportion of non-farm workers among total rural male workers (1987-88)

Independent Variables	Constant	β	R
1. Rural Income	26.33	Ø.ØØØ	Ø.ØØ8
2. Value addition per worker in Agriculture & Allied Activities.	25.Ø9	Ø.ØØ1	Ø.Ø55
3. Gini-Coefficient of Operational holdings.	21.36	19.Ø8	Ø.Ø84
4. Share of Non-foodgrain items in total Rural Consumption Expenditure.	2Ø.63	14.197	Ø.Ø15
5. Average value addition per hectare in Agriculture.	18.23	Ø.ØØ1	Ø.239
6. Share of Non-Foodgrain in Total Agricultural output.	19.45	Ø.275	Ø.4Ø6
7. CMIE Index of Infrastructural Development.	17.29	Ø.Ø91	Ø.189
8. Percentage of Literate Among Rural Male workers.	14.38	1.28	Ø.526
9. Urbanisation Level	24.Ø4	Ø.15	Ø.Ø28
1Ø. Seventh Five Year Plan per capita Expenditure at State Level.	2Ø.89	Ø.ØØ7	Ø.112
11. Annual State level per capita Expenditure.	25.86	Ø.ØØ1	Ø.Ø11
12. Current Daily Rural Male Unemployment Rate (linear)	18.42	1.74	Ø.688
13. Non Linear	3.71	Ø.13	Ø.382
14. Head - count Ratio	35.23	-Ø.16	Ø.Ø97
15. Percentage of Casual Labour Among Rural Male Labour Force.	24.53	Ø.1Ø	Ø.Ø21

(β) Dependent Variable - Land -Productivity per hectare.

(O) Independent Variable

(1)	Current Daily Unemployment Rate.	3285.Ø9	335.19	Ø.359

Dynamic Analysis.

The foregoing exercise was aimed at investigating influences bearing upon the level or share of male non-agricultural employment in total rural male employment. We now turn to the task of attempting to explain the changes that occured in such employment over the eleven year period from 1977-78 to 1987-88. The method used for dynamic exercise in also that of linear regression.

Almost all factors which are expected to have impact on rural non-agricultural employment have shown systematic changes over the period under consideration. The rural agricultural income, value-added per hectare, degree of commercialization, level of urbanization, educational level, unemployment rate etc. everything, has changed significantly. It is worthwhile examining their dynamic effect on rural male non-agricultural employment

Empirical Results

(A) Dependent Variable - Change in proportion of rural male non-agricultural employment in total male rural labour force between 1983 and 1987-88.

Independent Variables

(i) Agricultural Growth Rate over 8Ø's

(ii) Change in educational level among rural male workers between 1983 and 1987-88.

(iii) Change in the incidence of poverty between 1983 and 1987-88.

(iv) Change in Urbanisation level between two censuses 1981 and 1991.

(v) Net migration rate over the decade 1981-91.

(vi) Change in Current daily rural male unemployment rate between 1983 and 1987-88.

(vii) Annual rate of growth of non-farm non-organised sector

(B) Dependent Variable:

Change in proportion of rural non-agricultural male workers in total male rural labour force between 1977-78 and 1987-88.

Independent Variables

(i) Agricultural growth rate over 8Ø's.

(ii) Change in Urbanisation level between two censuses 1981 and 1991.

(iii) Net migration rate over the decade 1981-91.

(iv) Change in current rural male unemployment rate between 1977-78 and 1987-88.

None of the variables shows significant association with the change in non-farm rural male employment. There is insignificant association between agricultural growth rate

and change in rural non-farm male employment because of weak demand and supply interlinkage between the two sectors for the reasons discussed earlier. The changes in urbanisation level and net migration rate have negative though insignificant association with the non-farm rural male employment. The negative association between change in urbanisation level and non-farm rural male employment may be due to greater penetration of urban goods to rural market and rural rich turning away from locally produced goods and services to urban goods and services. On the other hand negative association between migration rate and rual male non-farm employment suggests that they are competing alternatives. Though, education level and rural non-farm male employment, as seen earlier, have significant positive association, change in education level has insignificant association with change in rural male non-farm employment. It may be due to the fact that educated workers want to join non-traditional highly priced and high productivity non-farm activities, but as far work-force is concerned (largely due to distress factors) it is expanding more in traditional non-farm sub-sector which educated people shun. Changes in non-farm rural male employment also seems to have insignificant association with the annual rate of growth of non-farm non-organised sector. The growing economy is likely to have larger urban component. This component may not be growing fast enough to absorb increasing urban labour force let alone increasing rural labour force. Similarly, rural component

may not be growing fast enough. The problem is further compounded by the fact that most dynamic part of rural non-organised sector is likely to be non-traditional sector with relatively less potential of additional employment generation. Finally, we do not find any significant association between the change in current daily rural male unemployment rate and change in rural male non-farm employment despite the fact that there is very strong level to level association between the two. This may be due to following reasons. Firstly, structural changes are long-term process and they came about slowly. The changes may not get reflected in short-period. This may be the reason for despite getting high level to level association between unemployment rate and rural non-farm employment, no significant association is found between change in unemploymert rate and change in rural non-farm employment. This proposition seems plausible because we find that in non-linear case the degree of significance of association between change in current daily rural male unemployment rate and change in proportion of rural male non-farm employment increases as the period over which change is considered is increased (in case of change between 1983 and 1987-88) R^2 = Ø.181 while in case of change between 1977-78 and 1987-88 R^2 increases to Ø.362. Secondly, additional labour force unable to find employment in rural areas may be migrating. We have seen that migration and rural non-farm employment are competing alternatives.

Determinants Non-Agricultural Employment (Dynamic Analysis)

(A) **Dependent Variable:** Change in the proportion of rural non-farm male employment between 1983 and 1987-88.

Independent Variables	Constant	β	R
1. Agricultural Growth Rate	3.76	Ø.ØØ81	Ø.ØØ4
2. Change in Educational Level	-Ø.17	1.Ø9	Ø.137
3. Change in Urbanisation Level	4.97	-Ø.26	Ø.ØØ9
4. Change in Non-Organised non-farm sector state level GDP.	2.2Ø	Ø.48	Ø.132
5. Change in Incidence of Poverty	5.29	-Ø.71	Ø.33Ø
6. Net Migration Rate	4.53	-Ø.24	Ø.ØØ9
7. Change in Current Daily Rural male Unemployment (1983-1987/88) (linear)	5.4Ø	Ø.48	Ø.144
8. Non-linear	-.2Ø	Ø.Ø3	Ø.181

(B) **Dependent Variables** - Change in rural male non-agricultural employment between 1977-78 and 1987-88.

Independent Variable	Constant	β	R
1. Agricultural Growth Rate	5.91	Ø.68	Ø.Ø6
2. Change in Urbanisation level	7.8Ø	-Ø.21	Ø.ØØ6
3. Net Migration Rate	8.25	-Ø.53	Ø.Ø4
4. Change in Current Rural Male unemployment Rate Between 1977-78 and 1987-88 (linear)	6.6Ø	Ø.8Ø	Ø.Ø92
5. Non-linear	-Ø.26	Ø.84	Ø.362

Conclusion

1. There seems to be weak demand and production interlinkages between agricultural and rural non-farm sectors.
2. The outside factors do not seem to have much impact on rural non-agricultural employment.
3. There seems to be strong positive association between educational level and rural non-agricultural male employment.
4. Unemployment rate seems to have strong positive association with rural male non-agricultural employment supporting distress diversification hypothesis.
5. Other proxies for distress diversification do not have significant association with rural non-agricultural male employment.
6. None of the variables used to capture dynamic impact on rural non-agricultural employment give significant result not even change in unemployment rate even though there is strong level to level positive association between unemployment rate and rural non-agricultural male employment.

Concluding Remarks

Looking at the results obtained it seems that 'interlinkages hypothesis' and thus 'Agricultural led Development model' gets refuted and the 'residual sector hypothesis' is more applicable in Indian case. But, arriving at such conclusion will be too hasty. 'Agricultural led Development model' is concerned with agricultural and non-agricultural sector in general (Urban and well as rural). The weak demand and production interlinkage between agriculture and rural non-agriculture sectors does not indicate weakened interlinkages between agriculture and non-farm sector too. To the contrary, given the urban bias in consumption of rural rich and most inputs of modern agriculture coming from the units located in urban areas, there is good possibility of strong interlinkages between the later too.

In fact when we talk of such interlinkage we should divide rural non-farm sector into two sub-sectors - traditional and non-traditional. Both may have different kinds of interlinkages with the agricultural and urban sectors and any change in them or economic development in general is likely to have different types of impact on these two sectors.

The traditional sector is characterized by use of unpaid family labour, small-size, low capital base, use of primitive technology and catering to local consumption needs and small production requirements of agriculture. Such

activities are closely integrated with traditional agriculture. Advent of new technologies in agriculture and rising rural income particularly in case of high inequality are likely to affect this sector adversely due to following reasons. Firstly, their technology and size of operation are generally not capable of coping with the changing character of volume of the manufacturing of inputs and processing of agricultural produce. Secondly, they are unable to cope with increasing competition of urban goods. Finally, goods and services produced by them being inferior in nature, they are less patronized by rural rich.

On the other hand, new non-traditional sector is likely to have strong demand interlinkage with agricultural and urban sector. Enterprises in this sector exhibit following traits, enterprises run on more or less stable basis with an eye on surplus generation and growth, using primarily hired labour and a certain degree of technological sophistication. In short, this sub-sector is more geared to new type of agriculture and it is this sector which is likely to flourish with the growth of agriculture. This implies that agricultural growth at one hand weakens its interlinkages with traditional sector but on the other hand strengthens the interlinkage with other sub-sector and since traditional non-agricultural sector is much larger than the new non-traditional non-agricultural sector, it is not surprising that agriculture over all shows weak interlinkage with rural non-agricultural sector. Some studies on Punjab have found

strong demand and supply interlinkage between agriculture and rural non-farm sector. But, these studies by no means contradict the results obtained. In Punjab, which is agriculturally the most dynamic region of the country, non-traditional sector may be growing so fast that it may be more than compensating for any reduction in traditional non-farm sector. But, this is certainly not the case with most of India.

To sum up, a dual structure seems to have emerged in rural non-agricultural sector itself. This duality has made any comprehensive study of regional variations in non-farm and residual sector hypothesis quite complex. One will have to adopt a dual sector approach. Interlinkage hypothesis is likely to be true for non-traditional sub-sector of rural non-farm activities while residual sector hypothesis and 'inferior goods hypothesis' may be more appropriate for traditional non-farm sector. Since traditional sector in India is much larger than the non-traditional sector at least as far as employment is concerned, it results in over-all strong association between unemployment rate and rural non-agricultural sector.

The weak overall interlinkage between farm and rural non-farm sector has a number of implications:-

Firstly, rural non-agricultural sector may have to be developed independently of agricultural sector.

Secondly, less labour-intensity of dynamic non-traditional non-farm sector raises doubts against the efficacy of the non-farm sector to productively employ additional labour.

Traditional sector is already saddled with large number of disguised unemployed. Additional labour-absorption within this sub-sector will be only due to the fact that labour-force unable to find employment elsewhere joins it. One way out is to try to expand traditional sub-sector which may involve change of product mix, techniques of production, infusion of new capital etc. with consequent adverse effect on employment at least in the short-run. This raises the ticklish problem of determining appropriate trade-off between employment and new technology in traditional sector to make it more productive and at the same time retain employment to the maximum extent.

Finally, new avenues of employment are needed to be explored within the agriculture sector itself, so that ousted disguised family labour is absorbed within the agricultural sector itself. The allied activities like fishery, dairy, animal husbandary etc. offer vast yet untapped employment opportunities. Urgent steps are needed to develop this agricultural sub-sector to reduce distress - diversification if not to completely eliminate it.

Table I

	Years			
Sector	1950-51	1970-71	1980-81	1987-88
Primary Sector	58.3	47.8	41.2	34.0
Secondary Sector	15.1	21.2	23.0	26.3
Tertiary Sector	26.6	31.0	35.8	39.7

Source: National Account Statistics (1990) and New Series on National Account Statistics (1980-81 to 1985-86) Feb. 1988.

Table II

Occupational Classification of Workers 1901-1981.

	Years					
Sector	1901	1921	1951	1961	1971	1981
Primary Sector	71.7	76	72.1	71.8	72.1	68.8
Secondary Sector	12.6	10.5	10.7	12.2	11.2	13.5
Tertiary	15.7	13.5	17.2	16.0	16.7	17.7

Source: Campiled from CMIE, Basic Statistics Relating to the Indian Economy, Vol. I, All India, August 1988.

Table III

State-wise Rural Non Agricultural Male Employment:

States	32nd Round 1977-78	38th Round 1983	43rd Round 1987-88	D 38th -32th	D 43rd -38th	D Total
Andhra Pradesh	19.7	25.6	25.9	5.9	Ø.3	6.2
Bihar	16.9	18.7	2Ø.Ø	1.8	1.7	3.1
Gujrat	15.6	21.1	31.4	5.5	1Ø.7	13.8
Haryana	22.5	27.8	29.1	5.3	1.3	6.6
H.P.	22.6	22.9	31.3	Ø.3	8.4	8.7
Karnatka	16.8	18.4	2Ø.4	1.6	2.Ø	3.6
Kerala	4Ø.8	42.2	45.8	1.4	2.6	5.Ø
M.P.	1Ø.8	12.8	14.7	2.Ø	1.9	3.9
Maharashtra	19.6	2Ø.4	24.2	Ø.8	3.8	4.6
Orissa	15.4	21.8	25.8	6.4	3.3	1Ø.4
Punjab	22.2	22.5	31.2	Ø.3	8.7	9.Ø
Rajasthan	17.5	19.Ø	34.8	1.5	13.8	17.3
Tamil Nadu	26.1	31.1	34.8	5.Ø	3.7	8.7
Uttar Pradesh	19.8	21.3	21.1	1.5	-Ø.2	1.3
West Bengal	22.3	26.9	27.8	4.6	Ø.9	5.5
All India	19.5	22.4	24.5	2.9	2.1	5
All India All Workers	16.7	18.6	2Ø.5	1.9	1.9	3.8

Sarvekshana - Sept. 199Ø, Oct. 1988, Apirl 1981.

D = Change between two periods.

Table IV

The Distribution of Rural Non-Agricultural Households by Industry:

States	Agri.	Mining & Quarrying	Manu.	Elec. Gas & Water	Cons-truction	Trade	Trans-port	Services	Others
Andhra Pradesh	681	10	85	1	25	53	20	74	51
Bihar	759	10	47	1	21	50	17	44	51
Gujrat	654	6	83	2	95	34	24	71	31
Haryana	647	5	76	7	37	56	20	83	68
H.P.	705	1	56	10	88	22	10	80	27
Karnatka	754	13	68	2	18	47	12	53	33
Kerala	558	15	103	4	49	101	47	103	19
M.P.	833	3	47	3	13	28	6	45	17
Maharashtra	733	2	66	5	33	40	15	67	38
Orissa	698	14	66	5	41	52	10	73	42
Punjab	640	-	84	14	45	50	41	77	48
Rajasthan	593	24	75	4	164	35	19	54	33
Tamil Nadu	630	7	120	4	30	62	23	79	45
U.P.	675	1	65	1	26	37	14	59	35
West Bengal	665	6	90	1	18	69	37	64	50
All India All Workers	707	7	71	3	37	49	20	67	39

Sarvekshana - Sept. 1990 - Statement 14.

Table V

Per 1ØØØ Distribution of Rural Households and Population by Household type:

Household Type	Households. 1977-78	1983	1987-88
Self Employed in Agriculture	461	4Ø7	377
Non-Agriculture	1Ø6	117	123
Total Self Employed	567	524	5ØØ
Agricultural Labour	299	3Ø7	3Ø7
Other Labour	69	66	9Ø
Rural Labour	368	373	397
Other	65	1Ø3	1Ø1
All	1ØØØ	1ØØØ	1ØØØ

Sarvekshana Sept. 199Ø, Statement - 5.

Table VI

State wise Dist of Rural Households.

State	Self Employed		Labour		Other
	Agri.	Non. Agri.	Agri.	Other	
Andhra Pradesh	321	141	373	94	7Ø
Bihar	398	129	32Ø	61	91
Gujrat	348	81	323	157	91
Haryana	485	143	178	68	126
H.P.	681	88	44	94	91
Karnatka	4Ø6	111	357	68	57
Kerala	239	164	3Ø3	183	1Ø9
M.P.	548	85	28Ø	35	5Ø
Maharashtra	38Ø	91	365	75	88
Orissa	38Ø	145	319	65	89
Punjab	377	178	252	74	117
Rajasthan	489	138	113	198	6Ø
Tamil Nadu	25Ø	144	387	132	87
U.P.	585	129	176	48	6Ø
West Bengal	343	17Ø	33Ø	68	44
All India	428	128	228	84	81

Sarvekshna - Sept. 199Ø Statements 6.

Table VII

Per 1000 distribution of hh by principal industry of the hh for each size class of land cultivated:

Size Class of Land Cultivated Hectare	Agricultural Sector	Non-Agricultural Sector
1.01 - 2.00	890	110
2.01 - 4.00	924	76
4.01 & Above	943	57

Sarvekshana - September 1990. (Table 5(R) page S-26.

Table VIII

Per 1000 distribution of h.h by h.h type for each size class of land cultivated for Rural Areas:

Size Class of Land Cultivated Hectare	Self Employed			Labour			
	Agri	Non-Agri.	Sub. Total	Agri.	Other	Sub Total	Other
1.01 - 2.00	745	56	801	119	32	151	48
2.01 - 4.00	852	41	893	46	19	64	43
4.01 & Above	894	31	925	25	16	41	34

Sarveksana - September 1990. Table 3(R) - page S-24

Table IX

Per 1000 distribution of households by use of hired labour for crop production in rural India:

Use of hired Labour	All Households	
	1987-88	1983
Regular	45	47
During Peak seasons only	196	140
Casual	101	123
No hired labour	288	319
No Crop production	370	371
All	1000	1000

Sarvekshana - Sept. 1990. Table (15 R) Page 34.

Table X

Per 1ØØØ Distribution of h.h. Monthly per-capita expenditure for each principal h.h. Industry:

Household Monthly per-capita expenditure	Agricultural	Non-Agricultural
- 95	231	2Ø9
95 - 14Ø	331	314
14Ø - 215	269	277
215 & Above	162	2Ø1

Sarvekshana September 199Ø. Table (6) page S-27.

Table XI

Per 1000 distribution of h.h. Monthly per-capita expenditure for each principal h.h. Industry:

Household Monthly per-capita expenditure	Self Employed			Labour			
	Agri.	Non-Agri.	Sub Total	Agri. Lab.	Other Lab.	Sub Total	Other
- 95	272	86	358	484	97	581	59
95 - 140	366	121	488	357	88	445	65
140 - 215	422	143	565	244	92	337	97
215 - & Above	445	136	582	117	81	198	219

Sarvekshana - September 1990. Table (1 R) -page S-18.

Table XII

Per 1000 dist. of person of Age 15 Years and above by general Education for Rural Areas:

Household Type	Not Literate	Literates
Self Employed in Agriculture	582	418
Non-Agricultural	521	479
Sub Total	569	431
Agricultural Labour	766	234
Other Labour	638	362
Sub Total	736	264

Sarvekshana - Sept. 1990. Table (33 R) page S-96.

Table XIII (a)

Average wage/Salary earned per day by Regular/Salaried Employees in Rural Area:

Industry Division	Average of earning regular salaried people.
Agriculture (Ø)	14.58
Mining & Quarrying (I)	38.7Ø
Manufacture (2)	22.77
Manufacture (3)	28.69
Elec., Gas,& Water (4)	36.16
Construction (5)	31.58
Trade (6)	17.99
Transport & Communication (7)	32.Ø8
Services (8)	46.25
Services (9)	38.54

Sarvekshana - Sept. 199Ø. Table (29) - page S-34

Table XIII (b)

Average wage earning per day received bymale casual wage labourers in 15-59 age group in rural areas.

Industry Division	Average of earning regular salaried People.
Manual Work in Cultivation	1Ø.82
Manual work in other Agricultural activities	13.46
Non-manual work in cultivation	15.46
Manual work in non-agricultural activities	15.69
Non-Manual work in agricultural activities	15.86

Servekshana - Sept. 199Ø, Table (81 R) - page S-352

Table XIV

Determinants of Non-Agricultural Rural Male Employment:

State	NAN	R.I.	PWGSI	PAVA	NFG	NFE	E.L.	U.R.	CMIE	GPCE	GPE	CDUR	HC	CL	GC
A.P.	25.9	1471	1093	5159	34.10	.52	8.4	26.84	103	757	718	4.9	31.56	38.1	.18
Bihar	20.0	1156	1060	6785	9.70	.37	8.3	13.17	93	482	626	3.7	66.26	35.2	.22
Gujrat	31.4	1474	1306	3148	62.10	.47	11.9	34.40	130	1057	1435	4.7	41.57	39.8	.48
Haryana	29.1	2952	3863	5267	26.90	.50	17.4	24.29	148	1129	1871	8.2	23.17	22.5	.39
H.P.	31.3	1178	N.A.	4808	9.30	N.A	9.3	8.70	84	1669	2100	4.1	24.75	3.9	.17
Karnatka	20.4	1787	1493	4014	33.50	.53	9.1	30.91	98	331	799	2.5	42.29	36.8	.30
Kerala	45.8	1306	1779	9417	75.60	.53	23.1	26.44	140	739	727	16.7	44.02	43.2	.45
M.P.	14.7	1421	890	2661	20.30	.59	6.8	23.21	72	660	1146	2.3	49.83	25.5	.39
Maha-rashtra	24.2	1616	856	3324	31.30	.53	8.9	38.73	114	961	1434	2.9	54.17	35.5	.36
Orissa	25.1	1299	1414	3265	24.50	.39	8.4	13.43	82	687	1146	5.8	65.64	37.6	.36
Punjab	31.2	4208	5683	7050	23.10	.56	11.6	29.72	214	1391	1685	3.8	21.02	22.0	.51
Rajasthan	34.8	1632	1598	2485	27.60	.52	9.5	22.88	78	807	799	5.9	41.89	2.57	.47
Tamil Nadu	34.8	1286	747	6422	36.60	.51	9.9	34.20	142	743	1063	8.4	51.30	41.7	.18
U.P.	21.1	1332	1434	4989	13.20	.46	8.2	19.89	107	573	803	3.0	47.30	21.0	.26
West Bengal	27.8	1556	2456	7600	24.00	.38	6.9	27.39	121	651	653	4.6	57.19	36.3	.40

Sources:

Column 1 - Rural Male Non-Farm Employment - Sarvekshana Sept. 1990 [CMIE - 1989 Vol. 2.]

2 - Rural Income

3 - Per worker value addition in Agriculture & Allied Activities -CMIE - 1989.

4 - Average Value additon in Agriculture per hctare - CMIE - 1989

5 - Share of Non Food Grain in Total Agricultural Production - CMIE - 1989.

6 - Share of Non Food Items in Total Rural Consumption Expenditue CMIE 1989.

7 - Educational Level among Rural Male workforce - Sarvekshana Sept. 1990

8 - Urbanisation level - Census 1991 - Provisional Results.

9 - CMIE Inde for Infrastructural Development - CMIE - 1989 Vol. 2.

10 - Seventh Plan per capita expenditure - CMIE.

11 - State level Annual percapita Development Expenditure - CMIE

12 - Current Daily unemployment rate - Sarvekshana Sept. 1990.

13 - Head count ratio - Tendulkar & Minhas E.P.W. July 1991.

14 - Level of casualisation among rural male workers - Sarvekshana Sept. 1990.

15 - Ginri Coefficient - CMIE - 1989.

Table XV

Determinants of changes in Rural Non-Agricultural Male Employment:

States	NAM 83-87/88	NAM 77/78-83	AGR	CEL	CUO	CPL	MR	DCDUR 83-87/88	DCDUR 77/78-87/88
A.P.	.3	6.2	5.56	5.0	-0.7	3.36	2.18	-0.69	6.2
Bihar	1.7	3.1	0.27	2.4	1.2	4.18	0.73	-0.54	3.1
Gujarat	10.7	15.8	3.25	5.1	-	-5.25	1.25	1.68	15.8
Harayana	1.3	6.6	3.61	4.5	-	6.84	1.93	4.89	6.6
H.P.	3.4	3.7	-	-	7.3	-1.79	-	2.93	3.7
Karnatka	2.0	3.6	0.61	5.8	1.67	-2.03	0.83	-2.29	3.6
Kerala	2.6	5.0	0.73	2.8	-0.04	3.18	4.42	3.31	5.0
M.P.	1.9	3.9	0.89	2.5	6.2	4.22	2.23	0.74	3.9
Maha-rashtra	3.3	4.6	0.68	3.3	4.3	-0.12	7.29	-1.09	4.6
Orissa	3.3	9.7	0.39	1.9	9.96	-0.59	1.62	-0.09	10.4
Punjab	3.7	9.0	3.71	6.1	8.96	-2.57	0.78	-0.28	2.0
Rajasthan	15.8	17.3	0.69	4.4	3.7	0.11	1.75	2.31	17.3
Tamil Nadu	3.7	8.7	-	2.9	1.24	5.54	0.30	-3.60	8.7
U.P.	- .2	1.3	0.47	3.9	3.6	2.48	1.65	0.84	1.3
West Bengal	.9	5.5	0.66	0.8	2.9	8.68	1.59	-4.14	5.5

Column 1, 2 Change in Rural Male Non farm Employment - Sarvekshana Sept. 1990. Oct. 1988, April 1981.

3. Agricultural Growth Rate - Agricultural Condition in India 1990.

4. Changes in educational level among rural male workers - Sarvekshana Sept. 1990, Oct. 1988.

5. Change in Urbanisation level - 1991 Census Provisional Results.

6. Change in Unorganised non farm state GDP - C.S.O. State level GDP - 199Ø-91.

7. Changing incidence of poverty -·Tendulkar & Minhas , E.P.W. July 1991.

8. Migration rate - Census 1991.

9 & 1Ø. Change in current darty status rural male Unemployment rate-
Servekshana Sept. 199Ø, Oct. 1988, April 1981.

Table XVI

Growth Rate of Employment By Residence:

	1972-75 to 77-78	1977-78 to 1983	1983 to 1987-88	1972-73 to 1987-88
Rural	2.52	1.74	Ø.95	1.75
Urban	4.31	4.1Ø	3.79	4.ØØ

Table XVII

Growth Rate of Employment by Major Sectors.

Sector	1972/73 to 77-78	1971-78 to 1983	1983 to 1987-88	1972-73 to 1987-88
Agri.	2.32	1.2Ø	Ø.65	1.37
Mining	4.68	5.85	6.16	5.47
Manufacturing	5.1Ø	3.75	2.1Ø	3.61
Construction.	1.59	7.45	13.69	7.23
Elec. Gas & Water Supply.	12.23	5.Ø7	4.64	7.Ø6
Transports, Storage & Communication.	4.85	6.35	2.65	4.65
Services	3.67	4.69	2.5Ø	3.Ø5
Total	2.82	2.22	1.55	2.17

Source: NSSO and Expert Committee on Population Projections.

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