CHAPTER I

INTRODUCTION AND REVIEW OF EVIDENCES
CHAPTER I

1. INTRODUCTION

In a predominantly agrarian economy like India, unemployment and underemployment are common phenomena, particularly in the agricultural sector. Such an economy is characterized by low output per agricultural worker, a precarious land-man ratio and a high incidence of poverty. These adverse conditions tend to get accentuated with increasing demographic pressure, since the capacity of the agricultural sector to provide productive employment to the growing labour force is limited (Bhalla, 1993). Also the labour absorptive capacity of the new technology proved to be rather limited. In most of the developing countries the industrial sector has been unable to generate employment opportunities mainly due to the high capital intensity of industrial production techniques. Besides, attempts to rapidly industrialise by establishing large-scale urban-based capital intensive industries often lead to disappointing results in terms of income inequalities and rural-urban differentials. Because of the limitations of agriculture and the large-scale manufacturing sector, scholars and development planners began to think in terms of diversification of the rural economy. It is to this end that considerable interest has been generated to show in the promotion and expansion of various rural non-farm activities. The expansion of the non-farm sector as a means of coping with these pressures thus acquires a great deal of importance. Under these circumstances, the trends in the incidence of rural non-farm employment (RNFE) and the spatial distribution of such employment are clearly of considerable interest in describing an aspect of the developmental process.

It is widely accepted that economic development involves a continuous fall in the share of the primary sector in total output and employment and a concomitant rise in the share of the secondary and tertiary sectors. Kuznets (1966) study of historical changes in the sectoral composition of national income and labour force in developed countries has drawn attention to the dynamics of such developments. In India, the Five year plans, most notably the Second Five Year Plan, have aimed at such a transformation of the sources of the national income and the workforce structure. Given the persistently widening gap between labour productivity in agriculture and labour productivity in the
non-farm sector, Bhalla, 1993; 1997a) the objective of reducing the share of the workforce engaged in agriculture has lost none of its urgency with the passage of time. These changes have induced considerable research in the area of non-farm sector.

Since agriculture is the dominant sector in the Indian economy, economic development depends largely on the development of the agricultural sector. The agricultural sector harbours more than 60 per cent of the labour force in the Indian economy. It has also vital supply and demand links with the manufacturing sector. Given its sheer size and links with the manufacturing sector, the performance of the agricultural sector will have a significant impact on the process of development and industrialization. It should, however, be noted here that although India has attained self-sufficiency in food production, overall the farm sector seems to be underdeveloped on the basis of other important criteria such as the level of farm labour productivity, as compared to labour productivity in the non-farm sector of the economy. Likewise, although the secondary sector has contributed substantially to the development of the Indian economy, its development has not been rapid enough to accelerate per capita income growth rate to acceptable level. However, the service sector has shown healthy sign of development in the Indian economy.

Kuznets' pioneering statistical study of the growth experience of thirteen developed countries over several decades suggests that growth is likely to be accompanied by a decline in the share of farm sector in total output and an increase in the non-farm sectors. In fact, these changes that have occurred in the sectoral composition of total output both in India as a whole and Tamil Nadu (TN) in particular confirm to the observed historical patterns. The emerging structural change in GDP/GSDP shares witnessed a big decline in the share of agriculture, coupled with a modest increase in the share of industrial sector and a much sharper increase in the share of service sector. It is also emerged that with a shift of GDP/GSDP from agriculture to industry, there was a nearly proportionate shift in employment. Similarly a rise in the share of services in GDP/GSDP was accompanied by a proportionate increase in employment. (Vide chap -II)

There is an extensive literature on the sectoral composition of total GDP in India. A number of such studies reached similar conclusions to those arrived at here. (For example, see Shetty, 1978; Rao, 1983; Balasubramanyam, 1984; Bhalla,
1985, 1993, 1997a; Dandekar, 1988; Chadha, 1993; Singh, 1996; Mozoomdar, 1997). In
addition, some studies have assessed sectoral shares of GSDP in Tamil Nadu, based on
the Tamil Nadu Economic Appraisal figures.

It is surprising, in this connection, that not very much empirical work has been done on explaining spatial and temporal variations in the extent of non-farm employment in India. A notable exception is the work, based on National Sample Survey and Census data, done by A. Vaidyanathan (1986), who effected something in the nature of a ‘first cut’ at the problem, by performing a cross-sectional analysis (disaggregated to the level of the state) of variations in non-farm employment. One must here also mention the work of B. Dasgupta, R. Laishley, H. Lucas, and B. Mitchell (1977). While Dasgupta et al. in their study are primarily interested in analyzing patterns of labour use (on the basis of data for 144 villages in six Agro-Economic Research Centers distributed across the country), their study also sheds interesting sidelights on questions of direct concern to the present study. Both the works just cited provide very useful leads for further investigation, but neither advances a wholly adequate explanatory framework inasmuch as the emphasis on factors that affect the growth of the non-farm sector in rural areas is confined entirely to factors which are internal to the rural economy. Vaidyanathan does allude to the possible importance of external factors such as proximity of rural areas to urban centres and the extent of development of the transport system, but such factors have not, in his work, been explicitly incorporated in the formal analysis. One imagines that the unit of disaggregation (the state) which he has employed has precluded the possibility of a more inclusive analysis. This underlines the desirability of a more disaggregated study; and in so far as intra-state variations in the extent of non-agricultural employment are concerned, an earlier study by (Jayaraj, 1989) attempts an explanation of these variations, across taluks, for the state of TN. Some of the preceding available literature indicates that research on the subject is very much in its incipient stages; and the present study seeks to explain inter-village variations in the level of non-farm employment in Tirunelveli district. It is an attempt at building on the guidelines offered by the scanty work that has hitherto been done in the area. The present study is concerned primarily with an analysis of spatial variations in the incidence of rural non-farm employment; and a picture of these variations across a sample of villages in Tirunelveli district.
1.1.0 RURAL AREA: MEANING

There seems to be some differences of opinion with regard to what should or should not be labeled as rural non-farm activity. One aspect of the controversy relates to the location of the activity. How is rural area to be defined? For the purpose of official statistics, rural areas are usually distinguished from urban areas on the basis of population size and presence or absence of public facilities. However, many scholars have argued that for the purpose of studying the rural non-farm sector one should not limit oneself to the official definition of rural areas. (For example, Islam, 1989) According to the Census of India, rural areas include all areas other than 'urban' areas, while an urban areas is defined as (a) all places with a Municipality or Corporation or Cantonment or Notified Town area (b) all other places which satisfied the following criteria:

i) a minimum population of 5000

ii) at least 75 percent of the male working population in non-agricultural activities, and

iii) a density of population at least 1000 per square mile, (390 per square kilometer)

1.1.1 NON-FARM EMPLOYMENT: MEANING

There is no precise and clear cut definition for the term 'non-farm' in the literature. The term non-farm is used in different terms in the literature such as 'non-agriculture', 'off-farm', 'non-crop' activities. However, the term 'non-crop' activities are found to be in limited usage in the literature. One aspect of controversy is whether non-farm should only mean non-agricultural activities. Because the non-crop would include homestead based agricultural production (raising vegetables, fruits etc..) and other non-crop agricultural production. Hence, in a general sense, the term non-farm is defined as an economic activity which is non-agricultural and includes all non-farm pursuits such as mining and quarrying, manufacturing, electricity, gas and water supply, construction, trade, transport and services and all other activities undertaken on a commercial basis outside the farm sector.

For rural non-farm employment the researcher has used the definition given by the 2001 Census, which is workers who have been " engaged in some economic activity only those who work over 183 days in a year, mainly in RNFE during the year preceding
enumeration and who are neither cultivators or agricultural labourers but are “other workers” (non-farm workers)”. The Census of India categorizes all rural workers into nine industrial categories. For this study, we define ‘farm workers’ as any engaged mainly only for 183 days in a year in the categories from I to III. I being cultivators, II agricultural labourers and III is agricultural allied activities i.e., livestock rearing, forestry, fishing, plantations, orchards and allied activities. Non-farm activities consist of: IV mining and quarrying; V manufacturing, processing, servicing, and repairs; V(a) in household (HH) industry; V(b) in other than household industry; VI construction; VII trade and commerce; VIII transport, storage and communications and IX other services.

For our study we shall define a rural non-farm (RNF) worker as; ‘engaged in non-farm activities’, any worker within a household who has, as a primary occupation one or several of the activities covered by the Census of India 2001 (occupational categories IV-IX workers). In other words, all those who work in a primary occupation in any field of economic activity other than cultivation or agricultural labour, are deemed as ‘non-farm workers’.

Principal occupations were determined on the basis of the time spend by the households (HH). Respondents (who were mainly the head of the HH but occasionally were all of the inhabitants within the HH) were asked to rank their occupation as being primary on the basis of what they spent the majority of the year employed as. So a household may have several secondary occupations, but only one primary. The occupation which was undertaken by working members of the HH most often and which required at least 183 or more days employment per person in a year (Census of India, 2001) was treated as primary and counted as non-farm worker.

Alternative definitions of the concept of RNFS have found in the literature, Chadha G.K. (1993) defined non-farm as a composite and catch-all term which includes a wide range of economic activities whose composition may vary from country to country. The most common convention is to include animal husbandry, hunting and trapping, forestry and logging, fishing etc., in agricultural activities, and accordingly, all other economic activities would constitute the ‘non-farm’ sector. Thus, a variety of industry and manufacturing, transport and communications, trade and hotelling, community and personal services put together constitute the non-farm sector. For “a typically developing
economy, agricultural activities are very largely spread partly in the rural and partly in the urban areas. At any point in time, the share of rural areas depends on numerous policies, institutional and historical factors operating in each specific country”.

Unni.J (1991) defined as the size of the rural non-agricultural sector in India can be measured in terms of employment using Census and National Sample Survey (NSS) data. Non-agricultural activities include all economic activities other than crop production and allied agricultural activities such as animal husbandry, plantations, fishing, forestry, etc., Non-agricultural work may often be undertaken as a secondary activity, such work undertaken by women in particular may be under counted. Given the multiple occupational status of individuals it is difficult to identify the main occupation of a worker. We have included both principal and subsidiary or marginal workers in our estimates of non-agricultural worker.

For Colin Simmons and Salinder Supri (1995) non-farm activities are defined as those activities undertaken in rural areas covered by the Census of India 1981 and 1991 occupational categories IV-IX. This enables us to define ‘non-farm household’ as one where a simple majority of working persons pursued such activities. There were two types of non-farm households: first those were had historically followed non-farm activities, in that both the parents and grandparents of the current head of household (always male) were non-agriculturists. Second, those who were had recently diversified into these activities but hailed from a cultivating background.

There is no formal official definition of non-farm activities. It has often been treated as a residual category lying somewhere between agriculture (generally stopping at the harvest marketing stage but occasionally proceeding upstream to agro-processing), and the secondary, tertiary sectors. As a result, there is a little agreement over the use of the term non-farm activities, which is often used interchangeably with rural non-agricultural activities’, ‘rural non-farm activities’, and even ‘rural industries’. While there are subtle differences between these terms, it has chosen to treat them as synonymous since the employment dimension is the focus of this thesis. Chutta and Liedholm (1979); Shand (1987a); Islam (1987a) and Ranis and Stewart (1993)

Parthasarathy and Shameem (1998) definition of non-agriculture in Census varies from the definition given in the NSS. NSS agricultural workers include those engaged in
allied occupations while Census agricultural workers include only those engaged in crop production i.e. cultivators and agricultural labourers.

Gangadhara Rao, (1997) the author, based on the survey of literature, the concept of rural non-farm employment (RNFEE) is defined as employment in pursuits other than cultivation, livestock, forestry, fishing, hunting, plantations, orchards and allied activities. In brief, it covers employment in mining and quarrying, manufacturing (manufacturing, processing, servicing and repairs in household industry and other than household industry), construction, trade and commerce transport, storage and communications and other services.

1.1.2 IMPORTANCE OF RNFE

The growth of employment or output shares in the rural non-farm sector (RNFS) appears to be positively associated with absolute growth rates in rural districts of TN. In other words, the faster the growth of the share in employment of the RNFS among TN districts, the faster the growth of total employment. Mellor (1976), Hazell and Haggblade (1992) support the view that the growth of RNFS takes place when agricultural growth precede.

RNFS is considered important because of undesirable consequences of rapid urban population growth. RNF activity can successfully reduce large scale rural – urban migration. It has many social benefits such as lower levels of congestion, and less pressure on infrastructure because it has caused many social and economic problems. However, the expansion of the RNFE share can result from two different processes. They are 1) distress diversification and 2) growth linkage diversification. That is, from distress diversification, as pressure on land reduces farm income and output per head, and forces people out of agriculture. From growth linkage diversification, as higher agricultural income and output due to technological improvement induces more RNFE activity through growth linkages from agriculture.

While agricultural sector grows slowly or shrinks relative to workforce growth, distress diversification into unproductive or low paid RNFS may take place. This happens when labour is not fully absorbed in the agricultural sector and the RNFS acts as an absorber or sponge for surplus labour. On the other hand, rapid agricultural growth may induce growth in the RNFS through growth linkage diversification in four main
ways. They are 1) backward production linkages, 2) forward production linkages, 3) consumption links and 4) farm accumulation leading to the generation of a surplus which may be involved in the RNFS.

Backward linkages are related to agricultural use of locally produced tools, equipment and others. That is the growth of agriculture may lead to increase demand for the supply of produced goods and services for instance, maintenance and repair of farm machineries, tools and equipments. Forward production linkages occur from farming to the RNFS and entail activities such as agro-products processing and post-harvest activities. Farm growth raises the income of the rural community which can increase consumer demand for local non-farm consumer goods and services. Finally, agricultural growth may generate surplus for investment in both farm and non-farm production.

Thus, the argument of this study is that, if the distress diversification is dominant, a rapid rise in the RNFS share of workers normally focused on ‘traditional’ occupations such as household crafts, carpenter, blacksmith, handlooms, petty trade, milk vending, butchers, barbers, goes with slow agricultural and total growth. If the growth linkage diversification dominates, as rapid rise in the RNFS share normally focuses on ‘modern’ occupations such as transport, retail, construction, services goes with fast agricultural and total growth. The moot point that needs to be underlined is that the distress diversification out of unsuccessful agriculture leads to traditional RNFE. Growth from successful agriculture leads to modern RNFE.

1.2 RURAL NON-FARM EMPLOYMENT: A REVIEW OF EVIDENCES

This part presents a survey of the literature on the rural non-farm employment concentrating mainly on Indian and other Asian countries. The part is divided into three main sections and covers three sets of influences on the RNFS.

1) Agricultural growth linkages to RNFE share and growth
2) General growth and development linkages to RNFE shares and growth
3) Other possible causes in RFNE share and growth and finally the key findings from the literature review.

1.2.1 AGRICULTURAL GROWTH LINKAGES TO RNFE

This section discusses the evidence on how RFNE is affected by agriculture related factors such as the ‘agriculture first priority’ strategy, commercialization of agriculture,
land holding size, RNFE and irrigation, and quantitative significance of non-farm employment.

1.2.1.1 A DESCRIPTION OF RURAL GROWTH LINKAGES MODEL

The rural non-farm sector was uncared by economists who were mainly working in the two sectors growth models (Lewis, 1972; Ranis-Fei, 1961). In their models, it is hypothesized that employment in the modern industrial sector will expand and absorb the supply of labour from agriculture. This assumption has proved to be unrealistic. They both refer to two sectors as agriculture and non-agriculture, irrespective of whether these are rural or urban. However, the logic of their approach does not exclude the RFNS.

An explicit effort to incorporate RNFS into a growth paradigm was Mellor's (1976) discussion on agricultural growth linkages (AGL): forward and backward linkages and consumption linkages from agriculture to the non-farm sector. Forward linkages include those to processors and distributors in the non-farm sector such as processing, transport and marketing of agricultural activities. Such linkages are frequently quite strong and the strength of such forward linkages depends on crucially on the choice and location of the processing technology involved. The backward production linkages from agriculture to RFNE i.e., rural input suppliers are also crucial to agricultural performance and there may also be backward linkages to those who supply and maintain produced goods. Finally, consumer demand linkages are generated as a result of increasing farm incomes. Consumption linkages from agricultural income to non-farm sector are normally defined as one type of forward linkages. Push and pull factors are both important in influencing the level and growth of the RNFS. In some rural areas non-farm activities may be increasing because of agricultural growth and in some other areas, the workforce might have been pushed out of the farm sector because of lack of farm growth. The AGL model emphasises the pull factors. Mellor, (1976 p.177) argued that:

'A rural-led strategy of development is likely to produce high average rates of return to investment in agriculture; rapid growth of small-scale rural industry receiving direct capital from cultivators; price relationships for industrial consumer goods which facilitate high profits and reinvestment; and an income base in agriculture sufficient to support taxes to self-finance much of the infrastructure requirements. The resulting
substantial net outflow of resources from agriculture will spur growth in other sectors of
the economy even while agriculture itself is expanding rapidly and profitably'.

Mellor also argued that increase in farm income stimulate demand for consumer
goods and services. Agriculture must be given a leading role for a better employment-
oriented strategy for economic growth. The larger agricultural production on medium
and large farms increases cash incomes to these farmers. The bigger cash incomes
provide a demand for increased non-agricultural production and a resultant rise in
employment. The expanded employment of the lower income classes that spend the bulk
of increased income on food provides the demand for additional food production.

The focus is on increased employment through growth linkages and greater
participation of the poor in economic growth rather than on the redistribution of existing
output. Mellor focused on the concept of growth linkages. While the production linkages
from economically backward agriculture may be low, technological innovation and
intensification will enhance these linkages and rising agricultural incomes provide the
impetus for consumption linkages. A non-farm employment-oriented strategy requires
emphasizing agricultural development. Mellor's central argument is that RNFS growth is
increasingly becoming vital because agriculture is income-inelastic in demand. This
means a given proportionate change in income will not be matched by proportionate
change in demand for agricultural products.

Following on from Mellor's work, Hazell and Haggblade(1991) developed a model
designed to estimate the strength of farm and non-farm linkages, based on the hypothesis
that the performance of the RNFS is linked to agricultural performance. A substantial
share of RNFS involves agro-processing and consumer goods production through forward
linkages, and repair and supply of farm inputs through backward linkages. Dominant
sectors like trade and services provide largely for rural consumer demand. The growth of
RNFE is primarily driven by agricultural growth, while infrastructure also showed a
positive impact on RNFE.

Mellor also emphasized that non-farm linkages generated by bio-technical change
on small and medium farms can accentuate both overall agricultural growth and its
poverty reducing effect. Besides stimulating national economic growth, the production
and consumption linkages affect poverty and spatial growth patterns, particularly when
The agricultural growth is concentrated on small and medium size of farms (Johnston and Kilby, 1975; Mellor, 1976; Mellor and Johnston, 1984). This is due to the nature of the producer and consumer goods demanded by lower income farmers. The kinds of non-farm goods and services demanded by small and medium size farms are often those produced by small, labour-intensive enterprises, whose growth can contribute to increased employment and income earning opportunities for the poor (Hazell and Haggblade, 1991). Because much of the resulting growth in non-farm activity occurs in rural areas and small towns, it can help to contain rural to urban migration.

Hazell and Hojjati, (1995 p.1) argued that: 'The rural non-farm economy is also intimately linked to agriculture. For example, a substantial share of rural manufacturing involves agro-processing and the production, repair and supply of farm inputs. Moreover, the dominant sectors in the RNFE consist of trade and services establishments that cater largely to rural consumer demand. Therefore, the prospects for growth in the RNFE will hinge on future agricultural performance'. However, Unni (1991 p.30) argued that: 'A high incidence of poverty in a region could also result in distress diversification into non-agricultural activity. Households in the more impoverished regions, where agricultural development has not taken place, perhaps depend on some form of non-agricultural activity for their livelihood'. Since such poverty is likely to be associated with weak agricultural performance, it is also argued that the agricultural distress diversification (ADD) i.e., lower or slower-growing agricultural production or 'performance, on cause higher RNFE shares. A central task of this thesis is to which types of RNFE are associated with ADD and which types with growth linkages.

1.2.1.2 EFFORTS TO CORROBOTATE THE RURAL GROWTH LINKAGES MODEL

Bell, Hazell and Slade (1982) used an input-output model derived from a social accounting matrix for the Muda region in order to measure the direct and indirect effects of the project. They estimated that every $1 of value added in agriculture generated directly from the project stimulated an additional 83 cents in the region's non-farm economy. Of these downstream effects, 40 per cent was due to production linkages (backward and forward linkages), and 60 per cent to consumption linkages. Hazell and Roell (1983) claimed that larger farmers exhibit relatively strong demand for regional
non-tradable commodities, and that their consumption behaviour is therefore a key source of growth in the regional economy. The example of North Arcot district of Tamil Nadu in India also shows there are multiplier effects from agriculture (Hazell and Ramasamy, 1991). Haggblade et.al., (1989) estimated that African regional growth multipliers are approximately 60 per cent below those in Asia; a $1 increase in agricultural income in Africa produces only 50 cents of additional rural non-farm income, compared with more than 80 cents in Asia. The reasons they give for lower production and consumption linkages in Africa compared to Asia include ecology, low population densities, lower levels of commercialization and urban-biased policies which constrain non-farm supply response.

Empirical studies revealed the strength of farm, non-farm growth linkages in Asia. Increases in agricultural output stimulate secondary rounds of growth in RNFE income that are 50 – 80 per cent larger than the initial increases in agricultural income (Bell, Hazell Slade, 1982; Hazell and Ramasamy, 1991; Hazell and Haggblade, 1991; and Rangarajan, 1982). Employment multipliers are also substantial, with evidence from the Philippines (Gibb, 1974) and India (Krishna, 1976; Mellor and Mudahar, 1974) placing agriculture to non-farm employment elasticity between 1.0 and 1.3.

Studies carried out in Sierra Leone, Nigeria, Malaysia and Bangladesh revealed a strong positive relationship between changes in rural household and changes in demand for rural small scale enterprise goods and services (Debb and Hussain, 1984; Hazell and Roell, 1983; King and Byerlee, 1978). The expenditure elasticity for small scale rural non-farm activities are consistently high, ranging from 1.34 in Nigeria, to 1.40 in Sierra Leone and 2.05 in Malaysia. A one per cent increase in rural household income in Sierra Leone would lead to a 1.4 per cent increase in spending on rural small scale non-farm activities. Moreover, in Nigeria and Malaysia, the expenditure elasticity for these activities is higher than those for comparable products purchased from enterprises outside the region.

A semi-input-output model was used by Haggblade and Hazel, (1989) to estimate the multiplier effects of growth in agriculture on non-farm income. The agricultural income multiplier varies from 1.22 to 1.43. This means Rs.1 increase in agricultural
Income due to technological change results in Rs.0.22 to Rs.0.43 additional income in the RFNS.

Time-series evidence comes from the moderately prosperous agricultural region of North Arcot in Tamil Nadu. Using a simulation model for the region, Hazell and Ramasamy (1991) have estimated demand multipliers emanating from agricultural growth over the Seventies. They estimated that, as a result of production and consumption linkages, every Rs.100 increase in agricultural income induced an additional Rs.87 in income in other sectors of the rural economy. Production linkages accounted for about half the increase and consumption linkages the other half.

Basant and Parthasarathy (1991) observed that weak linkages exist between rural non-agricultural activities and the levels and growth of agricultural productivity in the regions of Gujarat. They hint at the fact that the production and consumption linkages between agriculture and non-agriculture are weak.

More generally, four things emerge from the literature. First, countries with more equal farms tend to have larger RFNE shares. This is strongly visible for the more developed countries, such as the Republic of Korea, Japan and Taiwan (China), where the process of inter-sectoral labour transfer has been the most successful.

However, the presence or absence of measured local RFNE linkages depends heavily on whether rural towns, or places just across district borders, are included in RNFE income gains. This is a major criticism by Harriss, (1987).

In conclusion, these empirical studies indicate the importance of backward and forward linkages between farm and non-farm activities and point to the need for future research on the linkage question amongst several regions with different scales of development.

1.2.1.3 ARGUMENTS AGAINST SUBSTANTIATING THE RGL HYPOTHESIS

The purpose of this section is to examine whether there any evidence to suggest that regional growth linkage concepts misinterpret some of the key dynamics of rural industrialization. In this regard the contributions made by Harriss (1987) and Hart (1998) are significant. Harriss (1987, p.8) questioned whether consumption expenditure was a response to agricultural production or non-farm income and also argued that there were flows from agriculture to urban commercial centres. She found that: 'Despite negative
evidence of linkages from the newer industrial estates and despite the relative neglect of agro-industry in the district's credit plans, it appears that North Arcot's "backward industrialization" is strongly and directly linked to agricultural production, less strongly to consumption".

The main criticism about the growth linkages approach questions not only the quantitative importance of financial flows comprising consumption linkages but also the local location, small size and high labour intensity of units providing these goods and services. She noticed that much rural industry is not geared in terms of its product mix to local and non-local production.

In North Arcot, Harriss argues that RFNS production linkages were missed by Harriss and Ramasamy because they were considered out-of-district by being just over the border (in small rural towns). Harriss (1993) concludes that the growth of the non-farm economy is also determined by the growth of the non-local home and national markets and increasing regional integration. Meanwhile, the interaction between large farms, banks and finances is increasing. There is also a flow of agricultural surplus to the urban commercial industrial economy.

Harriss (1987, p.276) examined the methodologies, assumptions and data base for the quantification of the local and non-local regional multiplier effects from agricultural development. The direction of causation in the pioneering growth linkages model exercises has been from agriculture to the rest of the economy, rather than the reverse, or allowing for full feedbacks (Rangarajan, 1982; Ahammed, 1984 and Hart, 1998).

Harriss (1987, p.276) asserted that Controversial issues are (a) whether all these downstream effects or growth linkages of agriculture are stronger or weaker than those of industry; (b) whether consumption linkages are stronger or weaker than non-local linkages; (c) whether local linkages are stronger or weaker than non-local linkages; (d) whether local linkages are better than non-local linkages and thus whether state governments should implement policies with public investment in agriculture; (e) whether the generation of initial extra income for large farmers leads to more or less, and to better or worse, linkages than the generation of similar extra income for small farmers; and (f) whether the extra impact from these linkages leads to extra output, extra imports or higher prices (Johnston and Kilby, 1975; Mellor, 1976;1983). Further, Harriss raised
the issue of the social accounting matrix which concerns the absence of sensitivity analyses and of discussions of measuring errors. In the case of commercial rice milling, which is the most important forward linkage, the values of paddy inputs and outputs have been scaled from surveys made in other years and provinces. Other inputs and components of value added were obtained from one or two rice mills in the region (Bell, Hazell and Slade, 1982; p.297). These components have elsewhere been subject to great variation according to technology and capacity utilization (Timmer, 1974; Harriss, 1979).

Hart (1998 p.28, 31) also presents the criticism related to the assumptions underlying some of the growth linkage studies and the subsequent interpretation of results. She argues that: “Diversification of local rural economies does not emerge automatically from agricultural growth and market expansion. Rather, inter-sectoral and spatial linkages depend crucially on the social logic of investment— that is, who gets the surplus and what they do with it— as well as on wider configurations of political economic forces”.

She raised the question of “whether agricultural growth can play a progressive role without prior redistribution along the lines of a Taiwanese-style land reform; particularly if larger farmers have preferential access to yield-increasing technology, consumption linkages can easily turn into import leakages if incremental income from agricultural growth is spent on luxury imports rather than labour-intensive, domestically produced goods and services”.

She also argued that “in the Muda region of Malaysia, the growth of smallholder agriculture did not lead automatically to sustained diversification. In Taiwan, regional diversification cannot be attributed simply to agricultural growth. In Taiwan, and more recently in Malaysia, rising costs in urban areas have been a primary force propelling rural industrialization. Yet the particular institutional forms and distributional outcomes are dramatically different. Ironically, the closest approximation to the outcome envisaged by the neoliberal regional growth linkage model is to be found in semi-socialist China. In certain parts of China, resources have indeed been retained within local circuits in ways that have dynamited some rural regions and sharply reduced poverty. Rural industrialization in China since the 1980s is partly the product of a remarkable set of institutional innovations that combine collective ownership with market discipline”.
One of the controversial aspects of the quantitative regional growth linkage models has been the estimates of consumption linkages. In particular, the contention that larger farmers display more multiplicative consumption patterns because they spend a higher proportion of incremental income on regional non-tradable (Haggblade et al., 1989; Hazell and Roell, 1983). Accordingly, there should be the main targets of productivity increasing agricultural projects. This argument, which has been applied both to Asian and to African cases, flies in the face of the widely-held view that an agrarian structure dominated by egalitarian peasant agriculture (such as that in Taiwan) is most conductive to high levels of demand for labour-intensive, locally-produced goods (Ranis and Stewart, 1987, 1993).

Bhalla (1993) reports a decline in employment elasticities of agricultural output. However, this decline was accompanied by a rise in real wages which could partly be explained by a rise in demand for labour in non-farm activities (construction and services) (Bhalla, 1991; Hanumantha Rao, 1998).

The evidence available from the Census of India and NSS indicates that non-farm activities are an important component of primary and secondary employment in the rural areas of India (Census 1991). Non-farm activities in rural areas are defined by the Census as residual categories (i.e., all activities other than agriculture). Whilst some of these non-farm activities are linked directly or indirectly to agriculture, others are distinct, ranging from wage employment in industry or construction to self-employment in home-based handicrafts, trading and other services.

There is a growing recognition that non-agricultural activities in rural areas play a crucial role in providing simple consumer goods and services to the rural households and also a big per cent of income and employment (Reardon 1998). The local provision of goods and services provides a humble but critical income of landless labour. Yet in developing countries the rural economy has until recently been viewed as an agricultural economy where in addition to crop production, fishing and forestry, a number of rural households may engage in a relatively limited amount of agro-processing, transporting and marketing of agricultural produce. The benefits are concentrated among the large farmers.
As Fisher et al. (1997: 25-6) stated: ‘comparisons across states, with their widely differing proportions of RNFS workers in the rural labour force, suggest that education, infrastructure and higher agricultural incomes all contribute towards the growth of rural non-farm employment..... Education is an important preparation for entry into the RNFS, and assists the mobility of workers within the sector. Better infrastructure promotes RNFS employment, for example by making transport of raw materials and products easier, or by providing electricity to RNFS units. Moreover, rural towns are often the focus of the growing RNFS, as units can enjoy better access to markets, services and infrastructure. Agricultural development provides more produce for processing and trading in the rural non-farm sector, and leads to greater demand for inputs and services supplied by the RNFS. By raising farm incomes, agricultural development also increases demand on the part of rural households for RNFS products. Finally, changes in the labour market in either sector influence the supply and demand for labour in the other’. Likewise, the fact is that RFNE growth can result from a number of other stimuli than farm-based expenditures.

There is strong evidence to suggest that regional growth linkage concepts misinterpret some of the key dynamics of rural industrialization. Taiwanese rural industrialization was not simply a localized process operating directly via production linkages and demand for regional non-tradable, but was shaped in important ways by broader industrial dynamics. In addition, the specific forms of inter-sectoral and spatial linkages have been forged through institutional dynamics at different societal levels in particular, the character of the coalition in control of the state and its relations with the peasantry, and the exercise of power through gender and kinship relations.

A high proportion of spending committed to goods and services which are locally produced is equivalent to a high degree of labour intensity and therefore makes a good impact upon poverty. However, the above review of literature questions the regional growth linkage argument that there is some best possible degree of agrarian inequality that will maximize consumption linkages, thereby generating non-farm expansion within the rural regions. Farm and non-farm linkages do not emerge automatically from market expansion. Rather, they are shaped by the social relations of production, and forged through the exercise of power in many institutional arenas.
1.2.1.4 SECTORAL LEVEL DIVERSIFICATION AND HOUSEHOLD LIVELIHOOD STRATEGIES

What has been reviewed in preceding sections has detailed only linkages between two sectors. Household level analysis can help to enhance understanding of why individuals enter different types of non-farm production. Household level studies point out that there are other factors, which may help to explain total RFNE share and/or sub-sectors RFNE shares, not directly associated with either RGL or agricultural distress diversification such as household size, age, caste related to household livelihood strategies.

Reardon et.al., (2000) argue that diversification of assets, activities and income are important to African rural households. They report that non-farm income constitutes on average about 45 per cent of rural incomes, and that push and pull factors drive diversification. The authors addressed some of the problems related to definitions and concepts, data collection, and the measurement of the nature and extent of diversification.

The livelihood is a term used frequently in diversification research, and while its meaning differs somewhat between studies, it generally applies to household and community behaviour, with respect to holdings and use of assets and the productive activities to which the assets are applied. The link between livelihoods and incomes needs to be made by valuing the output of livelihood activities at market and/virtual prices. Also reviews the evidence on whether the poor are more reliant on RFNS income than the non-poor, or less reliant. There are quite region-specific conclusions and certainly there is no general trend for the poor to be more reliant on RFNS.

Nonetheless the rural non-farm economy is extremely important for the very poor section living in rural areas. The landless and the very small land holding sections of the rural population obtain more than 1/3 of their income from non-farm activities. These manufacturing and services activities use simple technology and very little investment e.g. making pots, gathering fuel, making food, weaving, domestic services and unskilled non-farm wage labour. On the other hand, for the better-off, non-farm production can include transport, commerce and certain manufacturing activities using high levels of investment such as metal works and milling.
Rural households in Africa are based on their economic welfare on a range of production activities: in self-employment and wage employment, producing for subsistence and the market, both within and outside agriculture (Diana Hunt, 1991, pp.49-50). Further the author explored the theme for a new research and extension paradigm for complex, diverse and risk-prone (CDR) agriculture, exploring in particular detail its methodological implications. This is the need, particularly in CDR agriculture, for an intellectual framework that can facilitate analysis and interpretation of, and hence appropriate technological research planning and evaluation for small-scale multi-enterprise production units which are far from purely agricultural. Indeed, in sub-Saharan Africa farm household members are typically part-time farmers, and are simultaneously engaged in a variety of non-farm productive activities both for their own consumption and for the market. Yet the analytical frameworks that have been developed to explore the performance of these units reflect, on the production side, a strong bias towards the agricultural branches of household productive activity. They can be adapted to give equal weight to non-farm branches of production for rural development in terms of employment and income generation.

In many developing countries in Asia, there are severe limitations on the capacity of the agricultural sector to absorb the existing supply of rural labour and to satisfy even minimum subsistence requirements of a large proportion of the rural population (Shand, 1983: p.1). Rapid rural population growth has greatly increased the number of people that need to be absorbed into productive employment. Given agriculture's limited capacity to absorb labour, rural non-farm activity assumes increased importance as an alternative or supplementary source of rural employment and income.

There have been relatively few studies in which the household strategies towards RNFS are analysed. This present study tries to provide empirical evidence which allows an insight into such household strategies.

1.2.1.5 TRENDS IN AGRICULTURAL EMPLOYMENT

Evidence from field studies on rice cultivation in India suggests that over a period, employment per hectare of cropped areas under HYC (high yielding varieties) has been falling. The hired labour days per hectare of irrigated paddy increased from 127 during 1957-60 to 161 for kharif and 198 for Rabi in 1968-69, with the shift to HYV in the West
Godavari district of AP initially. By the 1980s, there is a marked decline to almost pre-HYV level (Parthasarthy, 1987). This decline is associated with a rapid decline in bullock labour days per hectare of irrigated paddy, due to the replacement of bullock-labour by tractors in ploughing and transport (Mohan Rao, 1986: p.18). A similar picture is seen in the North Arcot district of Tamil Nadu (Chinnappa and Silva, 1980: p.210). The increase in the proportions of area under HYV since 1973-74 witnessed a continuous fall in the total labour use per hectare as seen from the data of Comprehensive Cost of Cultivation studies for west Godavari district. The index of labour use per hectare with 1973-74 as the base year showed a continuous fall and reached its lowest level of 72.13 hours by 1981-82. In terms of labour use per quintal of output, it was 79-20 hours in 1973-74 and only 40.50 hours in 1982-83. The decline reflects the increased mechanization of agriculture, including in irrigation pumping and paddy threshing (Ramasamy et al., 1986:p.9). However, the decline may also be in due to family labour inputs into HYV rising. If so, family labour is presumably moving away from non-paddy farming or RNFS, leaving landless or non-paddy families with better changes of work in those sectors. Season and Crop Reports of TN for various years show the total rice area, production and yield. Total rice yield has been doing well between 1965-66 and 1992-93. Rice is the major staple food grain crop grown in TN. This crop is predominantly an irrigated crop and is grown in both seasons. Sometimes excessive rains and depression in Bay of Bengal had caused considerable damage to the standing paddy crop.

Production and yield have generally increased, but with little changes in terms of the area under the crop. As yield per hectare increases demand for employment both in agriculture and in the RNFS is likely to increase. Whilst fluctuation in production might occur, there has been no long run area decline although some periods of decline can be identified during eighties.

Area fluctuations were important for Kharif and became more cyclical from the mid 1970s. The fluctuations for Rabi are of a much lower magnitude but became more pronounced from the mid-1970s when a cycle of about 4 years appears. Given that rabi is produced between September and February and as the area under such rice is about 1/3 of that under kharif, it is possible that more seasonal RNFS may be generated (and
sought) in that period. The caveat with such possibility is that the remaining 2/3 of the land might be devoted to other types of agricultural activities.

1.2.1.6 ‘AGRICULTURE FIRST’ STRATEGY FOR RNFS

Agriculture first strategy (AFS), proposed by Mellor, is expected to contribute to RNFS through a strategic shift in favour of agricultural development, based on small to medium size farmers. This agriculture-biased pattern of development would create stronger mass demand linkages to RNFS. Following Mellor (1984), Hazell and Haggblade (1992) also argue that agriculture can influence non-farm activities through production, consumption and labour market linkages. ‘Labour market linkages’ can happen via FLs, BLs or CLs. (The Mellor, Hazell-Reardon claim is that labour’s share of CLs in RNFS net income is higher than in FLs or BLs). The growth of production in agriculture leads to increasing demand for the supply of seeds, fertilizers, pesticides, sprayers and repair services which are produced or supplied by non-farm activities. However, increases in agricultural production also give rise to increases of consumption of non-food items and thus non-farm activities become more relevant. In addition, growth in the agricultural sector may lead to an increase in farm wages to attract labour from non-farm activities and this in turn both leads to a tendency to increase mechanization in farming and to pressures to raise labour productivity in the non-farm sector itself.

Agriculture output is controlled by the current state of technology, available land and climate. The improvement of agricultural technology will affect non-farm activities. On the other hand, development of non-farm activities such as transport, storage facilities, and intermediate goods demand can induce growth in agriculture. This indicates that developments in the farm and non-farm sector may influence each other. A major theme of the debate is: how does distribution of land (and farm income) affect linkages to (local) RNFS, especially to demand for RNFS labour? As shown by various research (e.g. Hazell and Roell, 1983; Mellor and Lele, 1973; Haggblade and Hazell, 1989), the multipliers are bigger for small to medium-sized farms than for very large farms or, they claim, than very small farms. Bell et.al., (1981) argued that the smaller and more equal the farm leads to the more the local RNFS share and labour input. Mellor & Hazell and later Hazell & Ramasamy (1991) on North Arcot in Tamil Nadu said no, middle farmer
households had more (CLs leads to local RNFS labour income) than small ones. A higher marginal budget share devoted to RNFS products.

The magnitude of the growth linkages can be increased through appropriate governmental policies and investments. Khandker (1997) has identified the importance of rural infrastructure (e.g., roads, electrification, banking services) in enhancing the size of the multipliers. Irrigated agriculture also has larger multipliers than rain fed agriculture. Therefore appropriate regional and farm targeting of agricultural technology and investments, supported by adequate investments in rural infrastructure, may significantly enhance the size of the indirect benefits emanating from agricultural growth (Hazell and Haggblade, 1991).

AFS has also been proposed from the standpoint of generating higher levels of demand for modern urban industry. Adelman, (1984) on agriculture-development led industrialization the main thrust is to support the development of small-medium farms (the small farm sector) in the first instance. In this case an AFS version favouring the larger farmer could generally be expected to perform better. On the other hand, if AFS was being construed as a better basis for generating that elusive trickle-down effect in favour of the rural poor, the class emphasis of AFS might have to be different, with a special premium attached to linkages favouring the poorer sections of the rural economy.

However, even when non-farm linkages are substantially increased, the question may be raised about their sectoral destination: a distinction needs to be maintained between non-farm linkages which travel towards the modern industrial sector and the urban economy, and those which are captured and retained by the rural producers of goods and services.

Many studies have shown that technology-driven agricultural growth can contribute significantly to growth in national income (e.g. Adelman, 1984; Rangarajan, 1982; Cavallo and Mundlak, 1982; Byerlee, 1973). A large, if more contentious, body of literature discusses the poverty-reducing effect of technological change (e.g., Pinstrup-Andersen and Hazell, 1985; Lipton & Longhurst, 1989; Hazell & Ramasamy, 1991). Mellor (1976) emphasizes the importance of divisible bio-technology as the basis for small to medium farm development and hence, for maximization of farm, non-farm
demand linkages in rural regions. Technological change based on large-scale mechanization does not provide the same linkage potential.

The experience of the Punjab is sometimes cited to illustrate the potential of spread to RNFS growth from an AF strategy based on medium size farm adoption of biotechnology. In Punjab fast growing agriculture made a far reaching impact on both farm and non-farm employment and income levels, besides strengthening agriculture industry relationships (Chadha, 1993: p.147). Through continuous expansions of irrigated cropped areas, rising levels of cropping intensity and the emergence of new labour intensive crop combinations on a large scale, on-farm employment has expanded impressively. With the expanding volume of agricultural produce, the many types of activities inside as well as outside the village have given rise to a high level of seasonal non-farm employment. Overall, income levels of all sections of the rural community have expanded gradually over time. Rising rural incomes have accelerated the demand for industrial output and employment, the benefits of which have occurred partially to the rural sector itself in terms of increased non-farm employment.

On the production side, the input structure has gradually changed with increased reliance on purchased inputs. This in turn has initiated the process of agro-industrial units and beneficial effects on off-farm incomes and employment. Further, the availability of sizeable agricultural surpluses and the rising demand for processed food and non-food products have given a great fillip to the expansion of an agro-processing industry.

In brief, the Punjab development model shows that a fast-growing agriculture is capable of generating (1) high and rising levels of on-farm employment and income, (2) rising demands for purchased inputs to meet the requirements of technological changes, and for non-farm consumption goods arising out of higher income levels and structural changes in total consumption patterns. It has also induced (3) new and expanding avenues of non-farm employment and income, especially for the weaker sections of the rural society, (4) a considerable industrial growth heavily biased towards agro-industrialization which, by its very nature, is widely dispersed and strengthens the rural-urban relationships (Papola, 1987).
1.2.1.7 AGRICULTURAL DEVELOPMENT AND COMMERCIALISATION

It has been shown that both agricultural developments in general and agricultural commercialization are expected to encourage rural industrial activity. Generally, two variables can be used to capture levels of agricultural development: (a) the agricultural output per capita of agricultural population. Prima-facie (b) is likely to be a better index of rural prosperity than (a) however, the available literature suggests that (a) is a better predictor of RNFE share (b) shows a significant positive relationship with the share of rural non-farm workers only at the state level, (Vaidyanathan, 1986) and not at the NSS regional (Dev, 1990; Unni, 1991) and district levels (Singh, 1989; Jayaraj 1989). In contrast, (a) shows a more significant positive association at all these 3 levels. The lack of correspondence between the two indices (output per capita and per unit of land) is mainly due to the fact that more fertile regions are also densely populated. Migration into more agriculturally productive areas (the suction process) may neutralize the per capita productivity advantages of these areas.

The RNFS is mainly influenced by two sets of factors broadly described as growth induced and distress induced. Kuznets (1966) observed that in most cases of successful sustained economic growth. The share of agriculture in both the labour force and the gross domestic product declined over time. On the supply side, when agricultural labour productivity improved, so did the overall economy. Kuznets and Lewis are about rising non-farm share. They say nothing about whether it is rural or urban. Similarly on the demand side, given a low income elasticity of food (Engel’s law), any rise in income leads to a higher demand for non-farm output relative to food. (But this effect is much weaker for the very poor, who have a higher propensity to use income to raise diet quality and quantity especially if the incomes is earned by extra physical effort needing more calories. (i.e., middle-income rural groups might do more, out of extra income, to promote RNFS than the poorest would do). This is the growth induced rise in the RNFS. Bhalla (1990) argued that the structural changes in output were not matched by similar changes in the employment of the workforce. The agricultural sector was unable to absorb the labour force causing rural unemployment and poverty. The RNFS is therefore seen as a labour absorbing counterpart via growth linkages of agricultural. These agricultural linkages are argued by the Mellor School to be the most useful to RNFS
growth, while forward agricultural growth linkages mainly increase employment in processing industries (i.e. non-rural, capital heavy, and low-employment).

The separate issues are: Does agriculture, or RNFS, or urban non-farm sector, grow fastest when income per person (and hence demand) grow? Where employment effects are highest and where is extra employment most affordable (i.e. low capital cost per job)?

Kuznets' viewpoint is that in a growing economy the process of growth is accompanied by agricultural transformation leads to a rise in productivity leading to a surplus of labour. The next stage of development lies namely with the secondary and tertiary sectors. It is the service sector that absorbs more of these revealed inputs as the primary and secondary sector's demand for services increases. This directly leads to an expanding non-farm sector mainly propelled by growth and prosperity in the economy.

The degree of commercialization of the rural economy world seems to be a major factor affecting the scale, and location of and technology used in rural non-farm activity. Traditionally, village communities were relatively self-sufficient and had an internal division of labour, based in India largely on caste and regulated by the Jajmani system. Trade and transport activity was limited, and most of the transport was by bullock carts or on animals. The level of development of the transport network, as well as the size and density of village settlements, would seem to be relevant in determining the location, organization and hence labour intensity on non-farm activities.

Empirical studies of farm and non-farm linkages have shown that the degree of commercialization of agriculture influences the shares and growth of RNFE. Most studies (e.g., Basant and Parthasarathy, 1991; Murty and Durga, 1992) use the percentage of area under non-food crops as an index of commercialization. The extent of commercialization of agriculture helps to determine the extent of trading and transport activities in the rural areas. The larger the per capita output and the proportion of output which is sold outside the region the larger will be the volume of trade and trades-related activity. A high degree of commercialization in production also often implies a greater degree of dependence on market purchases for intermediate and final goods, which adds to the volume of commercial and transport activity.

For these authors, growth of agricultural output and the degree of commercialization of the rural area are the important factors in the rural economy which
affect the growth of non-farm activities. Growth of agricultural output requires purchased inputs at the farm gate, as well as marketing the increased output, requires the expansion of trading activities which result in the growth of rural non-farm activities.

Agricultural development and commercialization are together expected to encourage rural non-farm activity by; supplying more raw materials; creating greater demand for inputs and allied services; raising demand for consumer goods and; generating surplus for investment. The variable used to capture levels of agricultural development is the value of agricultural output per agricultural worker.

Sankaranarayan (1980) argued that it is the degree of commercialization of agriculture that determines the level of non-farm activity in rural areas. He suggests that the degree of commercialization can be captured with two indices: exports from agriculture to the non-farm sector (FLs) and imports into agriculture from the non-farm sector (BLs). The percentage of area under non-food crops to total cropped area was used to measure the extent of exports from agriculture. This is a partial index since it does not capture the share of food crops that is marketed. The percentage of cash purchases of non-food goods to total consumer expenditure (both food and non-food) in rural areas was used to measure the imports into agriculture. Sankaranarayan found that both indices were highly positively correlated with the percentage of rural non-agriculture workers.

An important dimension of commercialization which was not incorporated in his study was the effect of differences in the spread of modern agricultural techniques which are intensive in the use of manufactured inputs (Vaidyanathan, 1986).

As noted above, most studies use the percentage of area under non-food crops as an index of commercialization. However, this index is not found to be associated with the share of rural non-farm workers to any significant extent (e.g., Sankaranarayan, 1980; Unni, 1991; Jayaraj, 1989; Shukla and Shukla, 1989). It can be argued that the area under non-food crops does not adequately capture commercialization which encompasses all markets; a significant proportion of output of food grains is also marketed in many regions.

Between agricultural development and the growth of non-farm employment the linkages are dynamic. The RNFS is likely to grow in regions which have experienced high growth in agricultural production with a relatively stable trend over a period of time.
(Raj, 1976). However, the increases in RNFE are not always validated by empirical data. Improvements in physical infrastructure and urbanization exert considerable influence on this relationship. Despite or because of agricultural growth, local non-farm activities may not expand due to the availability of agricultural work and or the competition from goods (and even services) supplied from urban areas. Some of these issues are discussed below.

### 1.2.1.8 IRRIGATION AND RNFE

Irrigation is considered to be an important factor which leads to an increase in the labour requirement in the non-farm sector. Irrigation needs more labour for the operation itself and indirectly it increases labour use through the use of other complementary inputs like fertilizers. The increase in irrigation leads to production in agriculture and increases demand for the supply of seeds, fertilizers, pesticides, and sprayers and repair services which are produced or supplied by non-farm activities but not the local RNFS. Increases in agricultural production give rise to increases of consumption of non food items and thus non-farm activities become more relevant.

Kumar’s (1994) village level study relating to Matar Taluk in Gujarat State during the period 1965-82, was an attempt to examine the relationship between the extent of irrigation and the level of non-farm employment across the sample of 28 villages using Census data of 1961-81. The cross section analysis does not suggest any meaningful relationship for any of the census years. The simple correlation coefficients were all negative though not statistically significant. Thus, Kumar concludes his analysis does not suggest any relation between irrigation and RNFS.

Dhawan (1993) studied the relationship between yield impact of irrigation, and the impact on cropping pattern stabilization in terms of crop yield, total crop output and farm income. The author suggests that there is a positive yield impact of irrigation similarly the cropping pattern would become more market oriented with increased irrigation because the additional output due to irrigation cannot be fully absorbed in self consumption. Although market orientation of output may increase, the cropping pattern in favour of non-food crops may not occur. Dhawan specifically states that irrigation will not encourage the production of non-farm employment at the expense of food grains. According to Dhawan, irrigation has an influence on the stability of agricultural output,
and states that one may conclude that irrigation is impact on output stability in the farm sector.

Sarden (1983) also studied non-farm employment in relation to irrigation development for the Philippines. His observation is that growth of agricultural production and income stimulates growth of non-farm employment. His studies of change in two communities find that the agriculturally prosperous regions use medium technology which is labour displacing. However, these workers are absorbed in non-farm employment increases, the overall wage rate pushed up. Further when non-farm employment is generated, income inequality in the agricultural sector is reduced because the poor, who were mainly landless rural labourers, find employment in the non-farm source of income.

Jagadeswara Rao (1990) argued on the pattern of employment by noting that: In most of the tanks/ponds, own firm employment is the major source of employment. Employment in other farms is not more than 1/3 of the total. Non-farm employment is higher only in some tanks. He finds that the proportion of non-farm employment in total employment is higher in the largest farm size group (2.5 hectares and above).

1.2.1.9 FARM STRUCTURE AND THE QUANTITATIVE SIGNIFICANCE OF NON-FARM EMPLOYMENT

The quantitative significance of rural non-farm workers can be assessed by considering these relative to: (a) all rural workers; and, (b) all (rural and urban) non-farm workers. The present study is confined to all rural workers only.

Rural non-farm employment (RNFE) accounts, on average, for 10-20 percent of all full-time employment in rural Sub-Saharan Africa, and 25-30 percent of rural income (Hazell and Haggblade, 1993).

Liedholm and Kilby (1985) indicated that this is because a larger percent of these workers are in agriculture and a low percentage of total rural labour force are in non-farm activities (14 percent and 18 percent respectively), whilst countries like Iran, particularly in rural areas, and Taiwan have a high percentage in non-farm activities (33 percent and 49 percent respectively).
India stands somewhere in between, with regional variations. The Census of India and NSS (National Sample Survey) reveals that the RNFS provides an important source of primary and secondary employment in the rural areas of India.

In Japan it appears that off-farm employment provides returns, per unit of labour time, which are not very different from farming. Secondly, the cross-country evidence provided by Oshima (1984) shows that, for average farm families, the ratio of non-agricultural income to agricultural income is positively related to the level of income, and as such rises over time for countries and periods where income levels have been rising. Thirdly, time series data for Japan and Taiwan (China) also reveal that there is a steady increase of the percentage of farm households for whom on-farm income is less than off-farm income. Fourthly, for the Republic of Korea, the only country for which data is available, the inverse relationship in terms of income is far more pronounced when transfer incomes, consisting mostly inter-sectoral remittances, are excluded, which implies that remittances and dividend incomes are very much more unequally distributed over farm sizes than are other non-farm incomes (Ho, 1985). The implication appears to be that the smaller the farm, the higher the proportion of transfers in total household income—even more so than is the proportionate role of other RNFS income. It is strange to call this “more unequally distributed”.

In South Asian cases with lower levels of development, industrialisation and per capita incomes, the incidence of all wage-labour income, while forming the largest single component, is still very much lower than in the East Asian countries. The suggestion is that with development, the share of self-employment and sideline business incomes decline in favour of the category of pure wage—labour income.

Several recent studies (e.g. Fisher, 1997; FAO, 1998; Reardon et al., 2000) have revealed that non-farm employment and RNFE accounts for one-third of rural employment in India by NSS and Census data.

1.2.2 GROWTH AND DEVELOPMENT LINKAGES TO RNFE

The factors such as infrastructure and rural-urban linkages, low agricultural development, poverty and distress diversification into RNFE are discussed in this section. As well as the residual sector hypothesis, urbanisation and RNEF, farm
seasonality and RNFE, levels of schooling, adoption of technology and gender composition of RNFS, which contribute to the growth of the RNEF.

The viewpoint of McGee (1971) is distinct from that of Kuznets. The author considers the agricultural transformation and surplus of agricultural labour as a distress situation. The surplus of labour in the agricultural sector is not matched by any increase in the labour absorption capacity of the industrial sector. The surplus labour therefore has no other option but to enter into the low productivity service sector, which McGee's calls 'the bloated service sector'. Such an expansion of the non-farm sector if rural is distress diversification into RNFS. The two viewpoint points, i.e., Kuznets's growth and McGee's distress induced nature of development are clearly and totally opposite explanations of the process of expansion of RNFS, except that neither Kuznet nor Mellor specifies whether non-farm growth is rural or urban.

The farm sector's demand for non-farm products consists of inputs for agriculture and animal husbandry, manufactured goods for final consumption and/or capital formation and services of various kinds including trading, transport and other consumers and producers services. Traditional agriculture uses mostly locally produced inputs, a large part of them being derived from agriculture and animal husbandry. The few non-farm inputs, such as making and repair of implements, are also produced by local artisans in India. With the use of modern farm technology, such as fertilizer, pesticides, and mechanical equipment like pumps and tractors, dependence on non-local inputs increases greatly. Most modern inputs, except perhaps machine repair services are produced by industries located outside and far away from the village where they are used. Consequently, the growth of traditional or modern agricultural production does not lead to a proportionate increase in the demand for locally-made inputs. The final demand for manufacture and services in a given rural area is, in part, a function of the level of prosperity of its population, of whom agriculturists constitute the most important segment.

The rural demand for personal and community services which are mostly locally produced in a given area again seems likely to be a function of the general prosperity of the rural population in that area. Demand for such services – at least, those like education, transport, trade and construction, which normally are not traditional jajmani services – is
indeed highly income-elastic. But one would expect the percent of demand going to local providers normally to fall as local incomes rise. However, there are certain categories of community services (public administration, education and modern health services), whose level and location may be determined exogenously, for example by state policy. These have expanded very rapidly in the last three decades and there is some evidence that rural employment under this category has become quite sizeable in recent years. The level of the state expenditure in rural areas obviously has secondary effects on the demand for the products of RNFS, and hence non-farm employment. The logic is that (1) demand for local RNFS grows with local rural prosperity, based on farm income (2) but need it be local (3) state service provision is not necessarily local.

The level of farm incomes in a region will have a direct impact on non-farm activity in rural areas through an increased demand for diversified non-farm goods. However, a high level of farm incomes may inhibit the supply of labour from certain sections of the population, particularly among females for non-farm activities. This is possible since, with an increase in household income levels, female workers tend to withdraw from the workforce and engage in work within the household (Dasgupta, 1977). Thus, one can hypothesize a positive relation between the level of rural incomes and percentage (in total male workers) of male or overall non-farm employment, and a possible negative relation with the percentage (in total female workers) of female non-farm workers.

Since the purpose of the study is to examine the share and growth of RNFS in a specific context i.e., for TN during 1981-2001 it needs to bring together these two opposite hypotheses—growth linkages, and distress diversification—into a single framework.

Papola (1987) found that agricultural growth had contributed by supplying raw materials and creating demand for inputs and allied services and has directly affected RNFAs. Indirectly, it has influenced non-farm sector through raising consumption demand and generating surplus for investment. He also states that in the rural areas traditional industries still continue to cater to local consumption needs and to the small production requirements of agriculture.

Jayaraj (1989) separated several factors that have a bearing on the extent of RNFE into two broad internal and external factors. The internal factors are (1) the level and
growth of agricultural output, (2) the distribution of agricultural income, (3) the degree of commercialisation of agriculture, (4) the amount of land availability in relation to the size of rural population, and lastly (5) the extent of irrigation. These are internal to the rural segment of the economy. As for the external factors they are external to the rural hinterland. Of these factors, growth of agricultural output and greater degree of commercialisation are also called growth induced factors, while low land man ratio and poor irrigation facilities are grouped as distress factors. Jayaraj’s empirical findings are degree of urbanisation, size and nature of towns, level of income of male cultivators, level of literacy of rural males, pressure on land and proximity have significant positive impact on the level of non-farm employment of males across villages. Variables included to capture the impact of degree of commercialisation of agriculture have turned out to be significant. Furthermore, the results points to non-linear relationship.

1.2.2.1 INFRASTRUCTURE AND RURAL – URBAN LINKAGES

Urbanisation and development of rural infrastructure are often complementary processes and occur simultaneously. They influence the growth of RNFE in many ways.

(1) Over time, several rural localities are classified as towns, while a few former towns may get declassified. The boundaries of cities can also expand to encompass surrounding 'rural areas'. Such increases in urban locations or towns are likely to lead to an apparent decline in the magnitude of rural non-farm activities. (2) Urbanisation and the associated improvements in infrastructure may render some rural non-farm activities non-viable through the competition of more attractive or less expensive substitutes. Agglomeration economies in urban areas contribute to this process. (3) Conversely Urbanisation and the growth of infrastructure can encourage non-farm activities, both in the secondary and tertiary sectors in neighbouring rural areas to satisfy non-local demands. In fact, the relative shares of rural manufacturing employment in the districts of TN State are positively related to the relative shares of the districts in urban manufacturing. That is, districts having a high share in rural manufacturing employment in the State also have a high share in urban manufacturing, and vice-versa. (4) Better, and relatively inexpensive, transport facilities make it possible for many members of rural households to commute to non-farm occupations in neighbouring urban centres (Basant and Joshi, 1989).
Most studies (e.g. Unni, 1991) find a significant positive relationship between the rate of urbanisation and the proportion of non-farm workers in the rural areas at the cross-sectional level. The net impact of the process associated with urbanisation is positive.

The impact of urbanisation can be mixed up with the impact of large villages in a region. Large villages can perform some of the functions which towns, especially smaller towns, usually perform. A variety of non-farm activities depend on market size become viable in large villages. Implicitly, the share of non-farm employment in these large villages is not high enough to warrant their reclassification as towns but nevertheless the share is higher than in other (smaller) villages. Besides, more densely populated regions usually have a higher proportion of large villages and are therefore indicative of higher population pressure on land. Thus, regions with a higher proportion of population residing in large villages may also have a high share of non-farm workers. Therefore, it will be useful to analyse the impact of large villages with the collected data.

Chadha (1993) reviews the process of rural industrialisation in post-reform China in deriving valuable conclusions relevant to India. The study identifies various determinants of non-farm growth, including the linkages between agricultural development and the non-farm sector which is mutual, development of suitable transport and communication systems, availability of electricity and the degree of education standards of both men and women in rural areas. A good transport system with flourishing transport activity is one of the indicators of the economic prosperity of the area. The study recommends rapid electrification.

The author points out that the infrastructure can encourage non-farm activities in rural areas. Under infrastructure support, four variables were formulated as (1) electricity consumption in rural areas (million Kwh per head of rural population), (2) road development (paved road length per 1000 sq km of areas), (3) improved road development (top and secondary grade paved road length per 1000 sq km of areas) and (4) road-use intensity (number of private vehicles per 1000 sq km of area). In some sense the last variable reflects the degree of economic prosperity of local areas.

Binswanger and Khandker’s main point is that, in India, the presence of a branch bank did little for agriculture but led to a lot of extra RNFS output and include that the impact of credit on expansion of agricultural output was modest but it induced demand
for fertilizer, tractors and pump sets while reducing the requirement of labour. So the backward linkages are not as expected. The present study tests the hypothesis with the secondary data at district level and is also defining the banking system as part of rural infrastructure.

The market for products of rural non-farm activity is in many cases clearly confined to the local villages. This is particularly true of trade, transport and services, but it is not always or necessarily so. Several products of rural industry (earthenware, leather footwear, processed farm produce like sugar and textiles) are sold in neighbouring urban markets and sometimes over a much wider area.

The level of RNFE (relative to the rural labour force) depends on the level of rural demand (relative to population) for various non-farm goods and services produced locally; the level of extra –local demand, from urban areas in the vicinity as well as from other regions, for rural products and services and location, scale and technology of activities catering to these demands (i.e., the extent to which it is attractive to suppliers to locate these activities ruraly and or near consumers).

1.2.2.2 LOW AGRICULTURAL DEVELOPMENT, POVERTY AND DISTRESS DIVERSIFICATION INTO RNFE

Parthasarathy et al. (1998) identify four factors that cause the shift of labour from agriculture to RNFE in the context of growth dynamic. "A consistently high rate of overall agricultural growth; technology which facilitates high employment for a given output; a broad-based agricultural growth generating demand for non-agricultural goods; infrastructure development which facilitates location of non-agricultural industries. In the absence of these conditions, the observed rise in non-agricultural employment tends to be distress-induced (e.g. Vaidyanathan, 1986; Unni; Eapen, 1995; Saith; Chandrasekar, 1993; Bhalla, 1993a, 1993b)".

Vaidyanathan (1986) wrote: "in India that non-farm activity acts as a residual sector so that rural workers, who are not absorbed fully in agriculture, spill over into non-farm activities, which act as a sponge for excess labour. This hypothesis is supported by a strong positive association between the NSS person-day unemployment rates (PDUR) and the percentage of rural non-farm agricultural workers. An excess labour situation should lead to a fall in the non-farm wage relative to the agricultural wage'. The growth of non-
agricultural activities in the rural areas can be termed ‘distress-diversification’ into unproductive or low paid non-farm jobs. This occurs when labour is not fully absorbed in the agricultural sector and the non-farm sector acts as a sponge for the excess labour”.

Bhalla (1992) elaborates this is by identifying two kinds of distress diversification: Where workers have no main occupation but only work in household supplementary activities and where people are engaged in agricultural as main occupations but also engaged in secondary activities. In both cases there is distress diversification into non-farm activities, even though the wage rates are likely to be lower than the subsistence wage rates.

The excess labour situation in a region, leading to the growth of residual non-farm activities, was sought to be captured by the NSS person-day unemployment rate (Vaidyanathan, 1986). While the residual sector hypothesis appears promising, it needs to be emphasised that the NSS unemployment really captures only open and visible unemployment (Parthasarathy, 1979). Such reported unemployment is likely to be higher in regions where agricultural development is higher, as the expectation of obtaining employment is greater here than in agriculturally undeveloped regions. Such reported unemployment is also expected to be higher among wage-dependent households or casual labourers (Sundaram and Tendulkar, 1988; Visaria, 1981) as opposed to self-employed households and self-employed persons. This is because it is easier for casual workers to perceive and report their unemployment. As Unni (1990: p.11) put it:

“In these regions, with high percentage of landless labour households and high incidence of poverty, the growth of the non-farm sector would depend upon whether there is a demand for such goods and services. If these regions are also highly impoverished then lack of demand may inhibit rather than facilitate non-farm employment”.

It is to test whether poverty leads to high RNFE as suggested here.

This hypothesis views non-farm as a residual sector; rural workers who are not absorbed fully in agriculture overspill into non-farm activities, distress diversification. The RNFS acts as a sponge for the excess labour. A strong positive association between unemployment rates and the percentage of rural non-farm workers across the states has been taken as a validation of this hypothesis. Thus, the rate of unemployment, which is the reflection of poor labour absorptive capacity of agriculture, is another determinant for
the extent to which people resort to non-farm employment. The rate of unemployment itself can be caused by unequal land distribution and associated farm mechanisation and/or population pressure on land.

Apart from problems of interpretation, data on unemployment rates is not available at the district and taluk level. Consequently, it is difficult to test this hypothesis at the district/mandal level.

The residual sector hypothesis becomes particularly relevant because at the all India level and for TN, most extra RNFE during 1961-91 is among casual non-farm workers. Also, participation in non-farm work varies inversely with size of land-holding possessed by households (Basant and Kumar, 1989; 1990). Thus, ceteris paribus, if distress-induced diversification is the dominant process contributing to the growth of rural non-farm employment, its share is likely to be high in those regions where the proportion of landless and land-poor casual labour households is high.

The second interesting feature which emerges is that much of the employment in non-farm activities is wage-employment. However, the “casualisation” of non-farm workers or higher participation of landless households in non-form activities may not necessarily reflect a distress phenomenon if they are engaged in economically viable activities. As such, the residual sector hypothesis is difficult to test with cross sectional data for regions. This is so because only ex-post phenomena are observed, after all the adjustments have taken place. The validation of the distress diversification hypothesis may require detailed household level data. Different process may be at work in different regions, or with same region for different types of households, and a general hypothesis may not be adequate to explain the regional variations in the share of non-farm employment.

Growing population pressure, the inability of rain fed agriculture to absorb surplus labour, and general economic development have brought about occupational diversification of a significant order in a semi-arid village like Mahudi. The first one is non-farm proper (NFP) and largely results from pull factors. The second one consists of non-farm migration (NFM) and largely results from push or distress factors. Both activities have now come to play a very significant role in the Mahudi village economy, touching about 90 percent of households and 48 percent of the labour force. Given the
reality of rapidly growing population, inability of NFP activities to expand faster, and the inability of any intervention to bring about any drastic occupational changes, the NFM activity is therefore likely to remain one of the major sources of employment and livelihood in the near future in Mahudi as well as in all other neighbouring areas (Shylendra and Thomas, 1995)

Discussion in the literature regarding the association between poverty and RNFS is both interesting and troublesome. Researchers have argued for both positive and negative relations. Vaidyanathan (1986) suggests a positive relationship between poverty and RNFS. However, in a later study he changes his opinion because the increase in wage rates of agricultural compared to non-farm labour wage was quite high, ruling out distress conditions. Unni (1991) states that the relationship between poverty and RNFS is generally expected to be negative. The poor person can be easily absorbed only in agriculture even when there are distress conditions.

Fisher (1997, p.3), however, points out,

"The rural non-farm sector can also contribute to poverty reduction. Non-farm employment is particularly important to small and marginal farmers, as well as to the landless, which cannot derive sufficient income from the agricultural sector. In a recent World Bank study comparing the reduction of rural poverty across 15 of the most important states in India between 1957 and 1991 Datt and Ravallion show that the quantitative impact on rural poverty of above trend growth in non-farm output is large".

A complication in interpreting regressions of poverty on RNFS and RNFE shares is that rural anti-poverty policies may deliberately emphasise RNFS/RNFE rather than agriculture (e.g. Integrated Rural Development Programme, (IRDP) and Jawahar Rozgar Yojana (JRY employment scheme).

The nature of the relationship between the poverty ratio and RNFE is well expressed by Murty and Durga (1992).

"As regards the poverty ratio, one may say that a priori its coefficient cannot have a positive influence on employment in HHI (Household Industries). As poverty ratio increases, the effective demand for rural manufactures may fall and therefore the extent of RNFE may decline. The fall in the demand for rural manufactures is unlikely to be as much as to lead to their disappearance from the consumption basket of the poor.
However, one would expect that the desire of the poor to procure rural manufactures gets transformed into demand only for some inferior goods of local origin generally produced in the HHI sector. So the HHI shares in total RNFE are likely to increase as the ratio of people in poverty increases. A positive sign is therefore expected for the poverty coefficient”.

It is argued that poverty in a district or in a household is associated with distress diversification into traditional non-farm activities, whereas successful agriculture both reduces poverty and induces diversification into modern non-farm activities.

1.2.2.3 THE RESIDUAL SECTOR HYPOTHESIS

There are thus two arguments regarding the development of non-farm employment. One is based on agricultural development impacts, and the other on distress diversification. In distress-diversification theory, there is an inverse relationship between agricultural development and non-farm employment. Development theory postulates relationship between agricultural development and non-farm employment.

These views are: 1) there is a positive relationship between agricultural development and non-farm employment (development theory). As agricultural development increases, non-farm employment increases. 2) the non-farm employment decreases as agriculture develops (distress theory). 3) the rural share of non-farm employment decreases when agriculture develops up to a certain level, and that, as agricultural development increases beyond that level, RNFS employment begins to increase. After that level, as agricultural development increases, non-farm employment will also increase.

The positive relationship between non-farm employment and agricultural development is not automatic. Regional agricultural development can reach a level where it can boost non-farm employment. However, a positive upward trend in non-farm employment also depends on other factors like demography, literacy, and infrastructure, in addition to agricultural development. 4) the farm size is negatively associated with RNFE at the household level. Haggblade and Hazell (1987) and Ho (1994) also suggest such a strong inverse relationship. However, as the economy develops, farm households have become increasingly involved in non-farm activities.
RFNS and RNFE cover many different things and, in particular, a modern or dynamic sub-sector that one would expect to be highly income-elastic in demand when agricultural income grows (construction, trade, transport, health/education services) and a traditional/static sector that one would expect to result in a negative, or at least below, the elasticity of demand to rising real agricultural income.

1.2.2.4 URBANISATION AND RNFE

Urbanization is one of the factors which influence the RNFS. Several studies e.g. Sharma and Saxena (1984) provided the empirical evidence by estimating the Census of India data at the state level.

Unni (1990: p.9) argues that: ‘the proximity to or existence of, a large urban population in the region may also facilitate the growth of non – farm employment in rural areas. This can affect the rural labour markets in two ways. The rural areas may cater to the demand for non-agricultural products or services in the nearby urban areas, or some of the residents of the rural areas may engage in non-farm occupations in the nearby urban areas and commute to their place of work regularly. Urbanization can also be viewed as a proxy for availability of infrastructure facilities. While cropping pattern captures one facet of agriculture led growth, urbanization is a force outside agriculture which may lead to the growth of non-farm activities in rural areas. To capture the impact of urbanization percentage of urban population to total population in a region was used.’

Some studies (e.g. Unni, 1991; Singh, 1993, Kashyap and Desai, 1990) find a significant positive relationship between the rate of urbanization and the share of RNFE (at the cross-sectional level). Parthasarathy (1998) discards the growth variable and experiments with urbanization, while Murty and Durga (1992) try to explain why this variable is negatively related to the RNFS, both theoretically and empirically. Their argument is based on categorizing the output of non-farm employment into local and non-local and suggests that the local variety of RNFS output is inferior. This view is difficult to accept because there is no clear cut empirical basis to show a decline in consumption of traditional RNFS output as incomes increase. Jayaraj (1989) also concludes that of the external factors (outside of the rural areas) urbanization is a dominant factor. Urbanization has both push and pull effects. The pull effect arises from a growing urban manufacture and service sector leading to high demand for rural semi-skilled and
unskilled labour. Another way in which urbanization has an impact on the RNFS is through increased demand for raw materials and simple manufactured consumer goods produced in rural areas. Rural areas very near to urban and semi urban areas are affected by this process. The nature of the urban centre (i.e., size and functional characteristics) determines the importance of this factor.

The above discussion broadly identifies the factors determining the share and growth of RNFS at the theoretical level. Appropriate measurable proxies need to be selected for which data is available and which are close to the theoretical factors and use them in the econometric exercise. The present study also considered urbanization as an important factor in determining the non-farm employment. But a thriving nearby town induces non-farm people to go there to work, cutting RNFE/S share. One would again expect opposite effects for traditional and modern RNFS/E.

1.2.2.5 FARM SEASONALITY AND NON-FARM EMPLOYMENT

Seasonality may be a constraint on both farm and non-farm activity. In general the RNFS is labour intensive, so labour moves between the agricultural peak season and the non-farm sector in a seasonally countercyclical manner.

There is some evidence that this happens (Hazel and Hojjati, 1995, p.7) “The average farm household in the valley earns 75 percent of its total agricultural wage earnings between November and April, but earns nearly two-thirds of its non-agricultural wage earnings and non-farm business earnings between May and October. But this countercyclical pattern is less evident in the plateau where all three sources of income are about equally spread between the agricultural and non-agricultural seasons”

Basant and Kumar (1990: p12) observed that ‘Employment in agriculture and non-agriculture move counter cyclically i.e. during slack periods in the agricultural cycles a section of rural workers seek employment in non-agricultural sector. Further, as compared to self-employed and regular workers a large proportion of casual workers change their sector (agriculture / non agriculture) of employment over sub-rounds’.

There is, however, no conclusive evidence on this issue and there are likely to be significant regional variations. Although non-farm activities provide a considerable amount of part-time employment to rural population, data on the pattern of labour utilization among different types of non-farm activities for rural households is scarce.
Part time and periodic non-farm work is frequently not captured because of its seasonal nature. The World Bank (1978:22) also cites data to suggest that agricultural and non-farm employment vary counter-cyclically and that the seasonal fluctuations in non-farm employment remain significant even in irrigated areas.

1.2.2.6 LEVELS OF LITERACY AND NON-FARM EMPLOYMENT

Literacy plays a crucial role in the development process to generate employment. Levels of literacy can be expected to positively associate with modern RNFE and negatively associate with traditional RNFE.

Chadha (1993) argues that levels of education can also play a significant role in raising the capability of entrepreneurs to see local opportunities, to promote workers’ skills, and to forge better rural-urban or agriculture non-agriculture linkages. Under education and skill formation, the following variables were used through official data:

1. Educational status of general rural public (percentage of literate persons, aged 15 years and more);
2. Educational status of female rural population (percentage of literate females, aged 15 years and more); and
3. Higher educational rating (percentage of workers with junior, middle and higher education).

Chadha does find positive links of education to overall RNFS/E, but no support for the modern RNFS/E growth in Punjab and the proportion of illiterate workers in non-agriculture is much less than those in agriculture for both sexes. Thus it is clear that educational attainment is a highly facilitating support for a shift from agriculture to non-agriculture.

Education not only improves an individual’s qualifications for non-agricultural jobs, but also increases his ability to allocate his work time efficiently among income-producing activities (Huffman, 1980). The importance of education in determining rural involvement in non-farm activities in less developed countries is high. However, since in the early stages of development many rural non-farm activities require only unskilled labour, education probably only becomes important once ‘high quality’ and urban-type employment opportunities are available. Thus, education is probably more important in economies that have experienced some years of development than in those that are still in
the early stages of growth. In developing countries, the younger generation is usually better educated than the older generation. Thus, the effect of education on the participation rate in non-farm activities among the rural young is probably also more significant (Castillo et al., 1983). Rayappa (1986) too finds that the literacy levels of the population are positively associated with participation in non-agricultural activities in the case of Karnataka.

Kashyap and Desai (1990) find the determinants of non-farm employment analysing sub-zonal level data (agro-climatic zones). They report that developing and developed sub-zones show directional change in the influence of literacy (positive to negative) as one move from developing sub-zones to developed sub-zones.

Schroll (1991) in the case of Nepal, a positive relationship between illiteracy and non-farm employment is found to exist especially in the low return jobs. It is argued that people with education do not move into jobs like domestic servitude, construction, agricultural wage labour and others. This indicates that only education facilitates upward occupational mobility. The illiterate population is found to experience a depletion of its income on the other hand. He thus argues that a move into the non-farm sector has a pauperizing effect on the already marginalized groups.

Singh (1993) explored the nature of RNFE in India and its determinants of its growth across the agro-climatic regions of the country. The results show that in the Western Himalayan Region, literacy rate has significantly a positive influence in the non-agricultural employment whereas it is not so in the Eastern Himalayan Region and the Lower Gangetic Region. In this region, literacy shows an adverse effect. This can be due to the fact that this region has not reached the threshold level of literacy.

The present study recognized that the level of literacy is an important factor which facilitates the younger generation to take up non-farm employment. Generally the impact of literacy on RNFS is expected to be positive (Chadha, 1991). However, non-farm activity is of two types (i.e., traditional and modern). In the case of traditional non-farm activity, literacy may not be a deciding factor while in modern RNFS it is essential. The disaggregated data results have to be examined to verify the hypothesis that modern sector non-farm employment may have a positive relationship. Seven different major categories have been considered in addition to the aggregate picture.
1.2.2.7 ADOPTION OF NEW TECHNOLOGY

For any given level of demand, the level of employment in the RNFS will vary depending on the technology used. The number of persons employed to process a given volume of, say, paddy will be much smaller with modern rice mills than with traditional hand pounding. Whether the non-farm activity is specialized or whether it is an adjunct to agriculture may also influence the magnitude of employment.

Stewart (1977, p.234) examined the choice of technique in maize grinding on the basis of a survey conducted in 1969 in Kenya. She argues that 'The Evidence from the survey shows that the most investment-intensive technique, the roller mill requires nearly 200 times as much as investment per worker as the most labour-intensive method, the hand mill; over ten times as much as the water mill; and nearly 5 times as much as the local hammer mill, if we assume equal capacity utilization for each technique'. Further she shows that small scale investment opportunities may, to some extent, generate their own savings which has a bearing on the production and consumption linkage effect on RNFE.

Ellis (1988) argues that the induced innovation theory of technological change distinguishes two broad paths of technological development in agriculture. These correspond respectively to labour-saving and land-augmenting technical change and have implications for RNFE. 'In the labour abundant, land scarce economy farmers seek innovations to raise the productivity of land. This induces a search for yield-increasing technologies by both private and public agencies' (Ellis, 1988:p.218)

Greeley (1987) pointed out that technological changes replace traditional threshing methods in the farm-level post-harvest system in Bangladesh. 'The rural growth linkages (the multiplier effects) of new agricultural technology are an important aspect of technology assessment... In the case of pedal threshers in Bangladesh the important content in manufacturing is low by Bangladesh standards and the backward linkages from local manufacture are therefore of potential importance' (Greeley, 1987:p.196)

The above suggests that agricultural growth linkages are important for the growth of RNFE. The nature of non-farm activities is often described using three characteristics which are its location, the scale of production and the degree of capital intensity i.e. technology. The last two aspects are closely linked to one another. One factor which
influences these characteristics is the commercialization of agriculture which gives a boost to the scale of operations in RNFS. This in turn has impacts on labour costs, on industrial production units and so also on the type of technology used and the scale of RNFS employment.

Many studies (e.g., Adelman, 1984; Rangarajan, 1982) have shown that agricultural growth, especially "technology-driven agricultural growth", can contribute much to growth via its impact on other sectors (as well as directly). The strong linkages generated by technical change in agriculture towards the non-farm sector can lead to growth and poverty reduction, as growth in agriculture leads to more demand for input supply from the non-farm sector. It also provides inputs into transport, processing and marketing. These are the backward and forward production linkages respectively.

Farm income growth also leads to higher demand for consumer goods and services. This argument is developed by Johnston and Kilby (1975), Mellor and Johnston (1984), who emphasized the potential for poverty reduction when agriculture growth is mainly among small and medium size farms: the type of non-farm goods and services demanded by small and medium farms are produced by small labour intensive non-farm units. Therefore, growth of incomes of small and medium size farms increase the demand for such labour intensive activities and therefore increase the employment as well as opportunities for earning more incomes by the poor. Hazell and Haggblade (1991) consider these as "indirect or down-stream, benefits of agricultural growth". Such indirect benefits are extremely important. Another beneficial effect is that rural urban migration is also reduced.

"Why do non-farm activities vary over time and across regions?" This question is raised and answered by Hazell and Haggblade (1991). "The resource endowments, location, ethnicity, historical happenstance and government policy all play a role. Yet agriculture, because of its size must be added to the list of key aspects". Three different routes link agriculture and non-farm activities: production, consumption, and labour market links.

The labour market linkages have been studied by researchers such as Hossain (1988) and Ahmad and Hossain (1990). Labour market linkages can happen via FLs, BLs or CLs. Growth in agriculture leads to increased agricultural wages and consequently a
rise in huge-earners' demand for non-farm production, so the composition of non-farm activities changes. Both labour intensive activities and low productive activities are reduced, while investment – intensive skill-intensive activities with high returns increase. A structural transformation of the rural non-farm sector is brought about by increasing agricultural products and incomes.

The labour market links between agricultural and rural non-farm activity seem consistently robust in the cross-section studies. All data have confirmed the positive relationship between earnings in agriculture and earnings in rural non-farm activity (Paola, 1985; Chadha, 1986; Radhakrishna et al., 1988).

The above discussion brings out the importance of development in agriculture as a determinant of RNFE. If agriculture is prosperous, the RNFS can also be dynamic. Generally, rural development such as agricultural infrastructure, like irrigation, power, roads, education, research and extra farm activity will lead to RNFE. Agriculture will grow and along with it the non-farm sector, usually the infrastructure will support both agriculture and non-farm activity.

1.2.2.8 THE GENDER COMPOSITION OF RNFE

The literature on RNFE in India does not provide much evidence regarding gender effects. However, in the Indian context, two distinct features are observed at the village level.

Basant and Kumar (1989) explored the nature of RNFE in India and some of its characteristics, using data collected from NSS, Census of India and other social surveys. The authors dealt with the scope of rural non-farm activities and their importance in rural areas and the nature of employment. The study reveals that there has been a general growth of employment in the RNFS, which it is more pronounced for men than women.

Basant and Kumar (1990) argued that women's non-farm work being undercounted and classed as a secondary occupations may result in the under-estimation of the size of the RNFE. As these occupations are omitted from the Censuses and labour force surveys, the magnitude of the RNFE will be under-estimated. It is also true many women family farm workers are left out of labour force estimates, so the farm share of labour force could also be underestimated.
Dev (1990) too, testing various hypotheses originating from earlier studies of Krishnamurty (1984), Vaidyanathan (1986) and Basant and Kumar (1989), notes that there have been significant changes in industrial distribution of work force. The increase in the share of non-agriculture was mainly due to a decline in the share of work force in crop production. Industrial distribution of male work force, at the state level, shows that in all but three states viz., Assam, Punjab and Orissa manufacturing was the major sector in terms of its share in rural non-agriculture while for females, manufacturing had the highest share in rural non-agriculture in all but two states viz Gujarat and Orissa.

1.2.3 OTHER FACTORS AND RNFE

Other factors such as farm-size, caste status, migration which influence the RNFS are discussed in this section.

1.2.3.1 LAND OWNERSHIP AND HOUSEHOLD PARTICIPATION IN RNFE

In this sub-section the relationship between farm size and RNFE is considered. Ho (1985) asserts that a strong inverse relationship exists between farm size per household and non-farm activity at village level, as farm size declines, farm households become more involved in non-farm activities, in terms of both income earned from and employment time associated to non-farm activities. A strong inverse relation is also observed between farm size and non-farm income (as well as gainful earnings from non-farm activities). As the economy develops, farm households in general become increasingly involved in non-farm activities.

Rayappa (1986) observes that ownership of land and the size of holdings also determine the extent of participation in non-farm activities of members of households. Landlessness or marginal holdings will push families to seek a livelihood wherever they can, including in agriculture as labourers.

Islam (1987) hypothesized that the household dependence on non-farm employment varies inversely with the size of the operational holding. Further, he pointed out that this relationship appears to be fairly strong for villages in Bangladesh, India, and Pakistan (i.e., villages with smaller holdings positive, villages with higher RNFS share). Even for villages in Sri Lanka and Thailand where the relationship is not strong, the extent of dependence on non-farm employment is much higher for the landless and land poor households than for those with largest-size holdings. An inverse relationship is to be
expected because under a system of private ownership of land, access to land becomes a prime determinant of farm employment. However, landless labourers and land poor farmers could still have access to farm employment through wage employment, which is influenced by the interaction of technology (small holdings leads to more demand for labour per hectare which in turn leads to more farm opportunities of work, even for the landless). The limited labour-absorptive capacity of the agricultural sector compels the excess labour to seek alternative sources of rural employment.

Basant and Kumar (1989) using NSS data report that participation in non-agricultural work varies inversely with size of land owned by the households.

Thorat (1993) explored the relationship between land ownership status of rural households and their participation in non-farm activities both at the national and state levels. The study also examined the variations in the level of non-farm employment of rural households across the various landholding and landless households, and the changes in them over three rounds of NSS (1977-78 to 1987-88). An inverse relationship is upheld although in more detailed size-classifications, there is a nodding evidence of reversibility beyond medium-sized farms. He rightly hints that the nature and composition of non-farm activities, especially the self-mounted ventures among them, are markedly different among medium and large farms than those among the landless and marginal farming households. Some useful insights on the changing regional picture of non-farm development also follow from this study.

However, it is also arguable that at district level average land-holding size may have a positive relationship with non-farm employment. Agricultural output or income creates greater demand for non-farm goods and services (but there is no reason why the same household should therefore produce these RNFS goods), as well as generating surplus of income for investment in the non-farm sector.

The two separate hypotheses are (1) given total land(of given quality) and total village population; equal(small) farms lead to a larger RNFE share than unequal (big) farms; (2) for a given land distribution (Gini), if everybody has more land then demand for local non-farm products and, hence, the RNFE share is more.
1.2.3.2 MIGRATION INTO VILLAGES AND RNFE

Migration can also be an important factor in the rural labour market. Education by itself stimulates out-migration as it raises the level of aspirations and unsatisfied needs in the population of rural areas. An individual who has attained a high level of education in rural areas or smaller centres may have difficulty in finding a position corresponding to their level of skill and may thus be prone to migrate.

However, because industrial development requires unskilled manpower as well as educated and skilled persons, migration consists of both the educated and uneducated. Among seasonal migrants, it is observed that large numbers of them are illiterate when compared with other migrants. Low wage rates prevailing at the place of origin and lack of continuous work are some of the major reasons given for migration (Murty, 1990). It is hypothesized that out-migration will be greater than in-migration because of limited occupational opportunities in rural areas. Inward-migration will have a positive influence on RNFS.

Shukla (1991) perceives RNFS as a regional labour market competing for labour with spatially coterminous agricultural sector, and physically removed from urban sector that is nevertheless connected to rural sector through migration flows. It is argued that supply of labour to the RNFS is determined by regional population characteristics and in-migration or out-migration. In his econometric model, labour supply variable is ambiguous in its effect while in-migration variable is consistently positive and significantly affecting the share of non-farm in total rural employment.

1.2.3.3 CASTE STATUS

There are several demographic and social factors which can influence the supply of labour to the non-farm sector, including family size, age composition and caste status. For example if there are more adult members in the family, it is expected that there will be a greater supply of labour in the household. This provides the households with greater opportunities to diversify income and sources.

Caste position is important for entry into new jobs. Groups which belong to lower castes in the society have only inferior positions of influence in the village power structure. The Scheduled Castes (SCs), Scheduled Tribes (STs) washer man, dobies, vetiyan and even artisan castes belong to this category. In areas where marginal farmers
and landless labourers are drawn from these castes they are in a disadvantageous position in terms of employment opportunities.

Krishna and Sharma (1998) further pointed out that there are sub-groups among rural labourers who are 'even more vulnerable', and list bonded labour as the most exploited group; women workers are paid lower wages than male workers, migrant workers are exploited by their employers. SC and ST workers, deprived of land ownership and educational opportunities, are restricted to forms of labour with low returns and very low social status.

Murty (1996 p.854) writes: 'SCs are a disadvantaged group. They have relatively little access to education. The inhibitions of the people of this social class leave them docile and generally less enterprising. This group may not share in the benefits that follow from the spread of certain non-agricultural activities. It is therefore plausible that SCs are relatively few in rural non-agricultural activities. They are distanced from RNFE.'

Rayappa (1986) too, in the case of Karnataka, finds that caste appears to be the most important determining factor in non-farm work at micro level; Muslims are generally dependent on off-farm activities.

These studies have highlighted the role of caste as an important issue in the occupational pattern. This study also focuses on this issue in the primary data analysis of LOGIT models in chapter 5.

1.2.4 COUNTRIES' EXPERIENCE

A large number of empirical studies have shown that the movement of labour from agriculture to non-agriculture is characteristic of the process of economic growth in all countries. This strengthens the view that industrialisation is a key to economic growth in the developing countries so that rapid creation of wage employment is an effective answer to the employment problem. In this connection, it may be highly rewarding to look at some of the studies from the developing world so that important issues concerning the RNFS are thrown up in bold relief. These studies are both at the macro and micro levels.

Okafor (1983), based on his study of 36 Nigerian villages, argues that employment diversification has received scant attention. Involvement in non-farm activities by adults
and children alike is a common affair and the intensity of this involvement is positively correlated with the seriousness of population pressure; about 40 percent of total labour input is devoted to non-farm activities which vary according to the opportunities available, the location of the village and perhaps the skills and expectations of the members of the household. It is also seen that the level of involvement in these activities does not seem to be subject to seasonal fluctuations. One does not find readiness to leave agriculture intermittently to look elsewhere to supplement income from agriculture. Non-farm activities are both traditional and modern in character. The average peasant is involved in one or more money making activities mainly in the tertiary and service sector as capital input required is meagre. In some cases, non-farm activities are a hedge against having all eggs in one basket. Peasants want to escape from drudgery of agriculture and become fully involved in non-farm activities which to them show more promise of reducing poverty. The study shows that non-farm activity is a means of meeting the family’s food needs in rural areas of a developing country like Nigeria with scant agricultural potential.

Haggblade, Hazell and Brown (1987) look specifically at different types of issues with regard to RNFS in Sub-Saharan Africa. Using cross-section and time series data, they found that services, commerce, and food processing activities are the main and rapidly growing non-farm activities in rural towns of the region. The main stress is on linkages between agricultural and non-agricultural activities both in terms of demand and supply. Agricultural growth, like in other studies, is found essential for the growth of RNFS. The study finds no clear evidence on equity enhancement from rural non-farm earnings. Women’s non-farm earnings are not only substantial but are also most important among low income households. The size of rural non-farm enterprises is very small on the whole. With the development of rural markets, specialisation developed and there emerged independent non-farm enterprises along with the spatial concentration of population. As regards the correlates of the growth in the rural non-farm economy, the development of rural towns and the rise of non-farm enterprises are found to be interlinked. The level of infrastructure, population density, and per capita income also stimulate growth of such enterprises, although the intensity of influence varies across individual countries of the region. It is also found that wage and salary group is growing
while the self-employed and unpaid family workers are declining, thereby that own-household operated rural non-farm activities are declining while the out-of-the-home rural non-farm activities are growing.

Oshima (1986) in his study of post-war East Asian growth (Japan, Taiwan, South Korea and South East Asia) of off-farm employment and incomes finds that agricultural development, development of regional infrastructure and industrialisation are important for growth of off-farm employment. Institutional forces were also found to be responsible for off-farm employment. The impact of off-farm employment is highly favourable for the national and regional distributions of income, savings and consumption as off-farm activities offer work for those on smaller farms who are underemployed in agriculture, and who, because of low incomes, are most eager to take on additional work. Skills acquired help in raising the efficiency of those who later must migrate to full time work. However, as the process of development and urbanisation proceeds, the benefits of off-farm activities may diminish.

Khuda (1986) further finds that in a traditional Bangladesh village, the incidence of off-farm employment is lower compared to a developed village. However, the incidence is lower for females in both types of villages. Expectedly, the landless and the near landless spend more time on off-farm activities than those with land. Again off-farm employment is more prevalent during the slack agricultural season, when the demand for labour is lower than that during the busy season. He opines that off-farm activities can quite possibly contribute to equitable income distribution.

Jenson (1987), again in the case of Bangladesh, finds that seasonality of agriculture influences non-agricultural employment; increased impoverishment has a negative impact on the level of employment, especially in the handloom sector. Besides, it is pointed out that employment in non-agricultural sector is directly linked to the rate of growth in agriculture but this holds only if there is a continuous growth in agriculture which generates a complementary relationship between agricultural and non-agricultural sectors. It is argued that in Bangladesh, land scarcity, extreme impoverishment and high density of population may hinder development of the RNFS’s take off.

Ho (1986) for Taiwan finds that since 1960s rapid industrial development has provided farm household members with expanding work opportunities outside agriculture
both in terms of temporary and regular jobs away from the family farm. It is observed that nearly all the increases in real farm household income have come from off-farm sources. The off-farm employment opportunities are widely dispersed in the tertiary sector. It is argued that off-farm employment must have helped to keep Taiwan’s distribution of farm household income relatively equal. It is also seen that as the two sectors competed for resources, involvement in non-agricultural activities has tended to reduce farm productivity. However, members of farm households continue to work on farm though they work in non-farm activities as not all get absorbed in off-farm sector.

Islam (1987) for 15 villages in six developing Asian countries (Bangladesh, India, Pakistan, Sri Lanka, Thailand and Indonesia), shows that, in quantitative terms, employment in non-farm activities is very substantial for rural households and their working members. The quantitative importance of non-farm employment varies inversely with size of farm and the off-farm employment is mostly wage employment; wages are better in activities involving skill and training. There are cases where wages are even lower than those in the agricultural sector. It is also found that productivity of and returns to self-employment in such activities appear to be low indicating a growth of such activities being characterized by a kind of duality. Besides, growth of many of these activities in the poor densely populated agrarian economies is more a symptom of distress adoption to increasing poverty and landlessness than one of dynamic growth.

Besides, continuous rural-urban migration, loss of traditional handicrafts, severe seasonal fluctuations in demand for farm labour and so on, prevented farm workers from participating in off-farm activities on a regular basis, in sum, the small scale manufacturing operations in rural Korea, organised and promoted as the farm household side-business, are not the key to the generation of real off-farm employment opportunities.

In Thailand, income from non-farm sources is very significant both for poor and rich villages and the poor villages seem to depend relatively more on off-farm incomes (Onchan and Chalamwong, 1986). The relative importance of non-farm wage and other non-farm income varies across the provinces; for the country as a whole, in 1978-79, income from non-farm sources accounted for 43 per cent of the average total income of a typical farm household. Seasonality is also noticed, i.e., a significant withdrawal of males
for work in off-farm activities and of females for work in minor activity or during the slack agricultural season. There are fewer variations in non-farm employment than the non-farm enterprises as such. Males have a comparative advantage in off-farm work because of their ability to travel away from home and to earn a higher wage rate, while females discharge responsibilities relating to child caring, household work, and looking after other minor enterprises. The relationship between farm size and off-farm employment shows that the landless and small farming households depend greatly on non-farm and off-farm work.

China has a different experience as regards the development of the non-farm sector especially since 1978-79. Islam (1991), for post reform China, reports that individual and private enterprises attained the highest growth rates in the post-reform period compared to the collective enterprises. However, these industries have unleashed forces contributing to a widening of gaps in personal incomes; recruitment of workers has a built-in mechanism for fostering inequality. On the whole, regional variations in the level of development and growth of rural industries are influenced by infrastructure and factors related to agricultural productivity.

Chadha (1992) looks at different aspects of China’s rural industrialisation and analyses the issues related to labour productivity in agricultural and non-agricultural sectors in China. Labour productivity in non-farm activities is found to improve substantially as it did in agriculture and inter-sectoral productivity differentials became wider. It is found that labour productivity increases are discernible equally among the newly emerging enterprise ownership categories. Infrastructural support, technology in use and profit incentives and the policy regime have facilitated the improvement in labour productivity. The author further argues that time sequencing of developments holds the key to success, i.e., infrastructural expansions must precede the programme of industrial expansions; public investment must take cognizance of standard bottlenecks which restrict the expansion process in many cases; rural education programmes cannot be pushed through overnight. Demand in case of other non-farm sectors (construction, transport, communication and trade-services) have decisive impact on their labour productivity. The author looks at this in terms of rising peasant income which assures a wider market, a better utilization of existing productive capacity. Other factors of
significance are; size of the enterprise, duration of work, education and skills of workers, and infrastructure development. Inter-regional differentials in non-farm development are clearly visible, which is being branded as cyclical process of internal colonialism.

The above discussion reveals that there are commonalities of factors explaining the growth of non-farm sector. For instance, across countries, such enterprises face capital shortage, their size is small and they operate with backward technology. Also, there is evidence that population pressure is associated with intensity of participation in non-farm activities and seasonality of involvement is prevalent which give rise to monsoon hypothesis. The seasonality affects the female labour the most. Outside linkages and infrastructure development are also important for growth of non-farm activities. In most countries, returns to labour are still low in such activities. An inverse relation between non-farm employment and income and farm size is evident.

1.2.5 THE KEY POINTS WHICH EMERGE FROM THE LITERATURE REVIEW

Although many studies have been carried out in the past on various aspects of RNFS, this review of literature on RNFS conveys many research gaps that need to be plugged through field-based micro-level studies; Primary surveys would need to be organised in different regions; also more research on non-manufacturing sub-sectors e.g., transport, construction, trade etc., which have witnessed phenomenal growth need to be initiated. The review also reveals the relative absence of studies identifying the determinants of RNFE at the micro level. Most empirical research on RNFE in India is based on secondary data at all-India or State levels. There are few studies on the determinants of RNFE at the household level and studies on the composition of the RNFS are rare. It appears from the past literature that no attempt has been made so far to examine the determinants of RNFE in the agriculturally developed regions vis-à-vis agriculturally less developed regions and traditional RNFE vis-à-vis modern RNFE. However, household surveys cover a wide range of information which can provide a greater understanding of the magnitude as well as the structure of RNFS. This review points to the need for further data disaggregated at the district level and household level in order to find out causes of growth of RNFE. One of the main issues is whether or not non-farm activities are quantitatively and qualitatively important for rural development in
developing countries. Evidence of several studies in the Indian context indicates that RNFE is important for the poor. This study aims to contribute to the micro-level analysis of RNFE.

It can be concluded from the literature that the processes which encourage or prevent employment diversification in the rural economy are complex and difficult to analyse. However, the available studies and evidence show that there are possible hypotheses which can be tested. These cover various correlates and potential determinants of non-farm employment (such as seasonality, gender bias, linkages, migration, social factors like caste, urbanization, commercialization, poverty and distress diversification). Thus, the preceding discussion helps to formulate working hypotheses which can be tested in the context of the Tamil Nadu economy. In order to examine the relationship between the growth of agriculture and non-farm employment, the study tries to analyse the level, structure and functioning of the non-farm sector in situations characterized by varying levels of development and agriculture growth.

Given these broad features of the labour market and the rural economy it is possible to highlight two dimensions of the growth of non-farm activities in rural areas. The non-agricultural sector may develop in rural areas under 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-farm activities in the rural areas. Other processes (general growth and development linkages to RNFE shares and growth) such as urbanization and development of infrastructure, which emanate outside agriculture, levels of schooling, farm seasonality, and adoption of technology can also lead to the growth of non-agricultural activity within rural areas. Both processes lead to the shift of rural workers to produce jobs in the non-farm sector.

The RNFS is influenced by distress diversification as third cause. From the review of literature the diversity of results obtained from growth linkages or overall growth linkages or distress diversification suggests that possible growth in some parts of RNFS may be driven by agriculture or generalized growth linkages, whilst in other parts of RNFS the drive comes from the opposite lack of growth in agriculture or overall growth.
The current literature on non-farm sector, though deals with the issue mostly at the macro level of states/regions, has identified and evaluated a number of factors that can be broadly classified as 'pull' and 'push' factors. (Chadha, 1993) The most significant among them are: agricultural development/commercialisation (For example, Vaidyanathan, 1986; Hazell and Haggblade, 1991), land-man ratio/per capita, farm area, irrigation and literacy (For example Das Gupta, et. al., 1977; Jeyaraj, 1992; Thorat, 1993, Adams, 1994), land inequality, unemployment and average farm wage rates (Vaidyanathan, 1986), per capita income, urbanization and productivity per worker in agriculture (Deshpande, 1996) and organizational and locational factors (Jeyaraj, 1992; Basant, 1993; Mathur and Pani, 1993). Unfortunately, the current literature on the subject of rural non-farm employment continues to be overwhelmed with macro level issues concerned with the explanation of inter-regional and inter-temporal variations in non-farm participation (Chadha, 1993). Moreover, only a few studies have focused their attention on rural non-farm employment at the household level, For example, Chadha, 1993; Basant, 1993; Saleth, 1996) Particularly in Tamil Nadu, it is a pity that till recent years, the significance of rural non-farm employment, income especially among the weaker sections and women did not receive adequate attention. As a modest attempt to fill this gap, the present study has been focused on rural non-farm employment in Tirunelveli district. Hence, this thesis is titled as, “PROBLEMS AND PROSPECTS OF RURAL NON-FARM EMPLOYMENT IN TIRUNELVELI DISTRICT”.

1.3 IMPORTANCE OF MICRO LEVEL STUDIES

An extensive literature on non-farm sector relying on the secondary sources like Census and NSS could address the level and rates of change in the broad sectors of non-farm employment. Cross section studies based on the secondary data also could provide useful insights into some factors associated with these changes. They are mostly at macro level studies. Though these macro level studies are useful in their own way, they do not address some crucial aspects of non-farm employment in rural areas such as income effects, employment intensity etc. Moreover, it is well known that frequent changes in concepts and definitions have led to problem of comparability across Censuses and NSS rounds. Nevertheless, those studies relying on the NSS could not go beyond state level/regions due to data aggregation problems. Consequently, most of the studies fail to
focus on non-farm participation at the household level. Thus, micro level studies are needed to understand in greater detail the nature of change in rural non-farm employment, spatial variations in its level and the processes involved therewith in different parts of the country. Besides, the micro level studies are complementary to the macro level studies in this field. Hence, the present study has been approached at two levels, namely, micro and macro level analyses.

In this context, the present study will focuses on several issues relating to rural non-farm employment in the state of Tamil Nadu and Tirunelveli in particular. The choice of Tirunelveli district is in view of the fact that it is one among the fewer districts showing faster growth of both non-farm employment and casualisation of rural workforce. The central problem in the state of Tamil Nadu like other states is to provide jobs to the rapidly expanding workforce including the educated unemployed. It is recognized that agricultural sector cannot absorb all the surplus rural labour force, the development of rural non-farm needs to take place in creating productive employment and income earning opportunities for the rural poor and unemployed. Hence, the present study will attempt an overview of the potentials and constraints faced by the non-farm activities in Tirunelveli district of Tamil Nadu.

1.4 OBJECTIVES OF THE STUDY

In order to pay greater attention on the extent to which the regional patterns of growth and structural change resemble those at the national level, and to identify the peculiarities of the state’s macroeconomic scenario vis-a-vis that of the country as a whole, the macro level analysis will be undertaken. The analysis will be directed to the following dimensions which are to be explored in detail in the present study for India as a whole and then with special emphasis on the state of TN. Based on the preceding discussion, the objectives of the macro level study are categorically listed below.

1. To analyse the behaviour of sectoral shares and growth of total output in TN in the wider all India context.
2. To know the changes in the composition and shares of rural non-farm employment and its growth
3. To study the changes in the employment elasticity with respect to total output
4. To identify changes in occupational structure or industrial diversification over time in TN
5. To account for inter-district variations in the level and growth of RNFE share.
6. To get a clear picture of the level of the non-farm activities those prevail at household level.
7. To identify the factors that influence RNFE and
8. To study the nature of employment problem at the micro level in a predominantly agricultural region.

These (1 to 3) three dimensions will be explored here for India as a whole and then with special emphasis on the state of TN in order to focus attention on the extent to which the regional patterns of growth and structural change resemble those at the national level.

1.5 HYPOTHESES

Based on the objectives the following hypotheses have been formulated.

1. There is significant relationship between the degree of specialization and the prosperity of agriculture.
2. Levels of literacy is positively associated with modern RNFE and negatively associated with traditional RNFE.

1.6 METHODOLOGY

At this stage, a few words about the sources of data for the macro level analysis are to be mentioned here. The Decennial Censuses and the Employment –Unemployment surveys conducted by the National Sample Survey Organisation (NSSO) are the two main sources which have provided material for a great deal of research studies on the structure of work force. In addition to this, some other Government documents such as National Accounts Statistics (NAS), and Tamil Nadu Economic Appraisal have been used. The period of this study has been taken to account from 1971 to 2001 for Census and successive NSS quinquennial surveys on Employment and Unemployment from 1972-73 to 2009-10. However, two and three digit data for the industry wise classification of workers are not available yet from the census at national level as well as state level. Keeping in view the non-availability of secondary data at the micro level, particularly the NSS data, and the micro level study will mostly rely on a comprehensive field survey.
This brings to Part -II of the work plan. Whereas the micro level study is largely based on a comprehensive field work in Tirunelveli district employing appropriate questionnaire especially designed to extract the relevant information on individual at household level.

1.7 DISTRICT AND VILLAGE SELECTION CRITERIA

The choice of Tirunelveli district is in view of the fact that it is one among the fewer districts sharing faster growth of both non-farm and casualisation of rural workforce. The district chosen in the state of TN depicts two environmentally different situations. While the some Taluks/Blocks for e.g., Tenkasi, Sengottai, Ambasamudram of the district constitutes an irrigated and agriculturally well developed region, and the other Taluks/Blocks for e.g., Sankarankovil, Alangulam, V.K.Pudur of the district falls within a dry semi-arid region. That is the district has agriculturally well developed Taluks/Blocks/Villages. In addition to these reasons and apart from the familiarity of the researcher with this district, the Tirunelveli district seems well suited for the present study for two important reasons. First, the district has distinct regions in terms of modes of production. Second, there are marked regional variations in the non-farm sector. And also commercialization of the farm sector has especially developed in the northern part of the district compared to other regions.

Four Taluks out of eleven Taluks in the district are mainly selected for its capacity to reflect different patterns of rural development evident in the state of TN as a whole. Four villages, each from each selected Taluks in the district, have been selected in such a way as to represent its four agro-climatic zones. The selected villages represent the dam irrigation, tank, well and rain fed system respectively. Both the Taluks and Villages have been chosen on the basis of the share of RNFE.

1.8 POPULATION AND SAMPLE

Multistage Stratified Random Sampling Technique is adopted to select the study area and households in this study. In the first stage of sampling, four Taluks Viz., Ambasamudram, Tenkasi, Nanguneri and Sankarankovil are randomly chosen among the eleven Taluks in the district. In the second stage of sampling technique, one village has been randomly selected from each of these selected Taluks. Hence, the study area consists of four villages in total. The villages are namely Ayansingampatti from
Ambasamudram Taluk, Pattakurichi from Tenkasi Taluk, Alwaneri from Nanguneri Taluk and Thadiyampatti from Sankarankovil Taluk.

For the selection of households in the proposed field survey, a house listing of all the households in the study villages has been preferred with the help of the respective village Anganvadi staff. This constitutes the sampling frame from which fifteen per cent of the households have been randomly selected as the third stage of sampling technique. (During the house listing information has been collected on the major source of household income during the previous year. Based on this the households have been stratified into three categories viz., cultivators, agriculture labours and others (encaged in manufacturing or services including skilled, self-employed workers like masons, tailors etc.,).) Thus the ultimate sampling units consist of 387 HHS in four villages of four taluks in the district. The period of the study pertains to the year June 2009-May 2010.

Hence, the field survey was done from May 2010 to November 2010. Data for 387 households has been gathered from four villages i.e., Ayansingampatti (131 HHs), Pattakurichi (95 HHs), Alwaneri (88 HHs) and Thadiyampatti (73 HHs). The required information has been elucidated from the head or any one adult member of the HHS in person, using a well structure questionnaire.

1.9 TOOLS AND TECHNIQUES

A wide range of statistical tools have been used to analyse the data. In order to analyse the socio-economic characteristics of the sample households, extensive use have been made of simple percentages, cross tabulations, simple descriptive statistics such as simple mean, standard deviation and co-efficient of variation. To explain changes in occupational structure or industrial diversification Compound Growth Rate has been used as tools of analysis. To test the household involvement in RNFE, Factor Analysis, the Logit Model and Chi-square test have been used. The degree of workforce diversification has been measured using a modified Rodger’s Index. However, the detailed model descriptions are presented in the respective chapters.

1.10 THE STRUCTURE OF THE THESIS

The thesis consists of seven chapters. This introductory chapter outlines the problem, concepts of rural and non-farm employment, and the importance of RNFE. This chapter also provides a survey of the literature dealing with RNFE, mostly for India and
other South Asian countries. It deals with the theoretical approach of the research and addresses the issues through a review of the results of theoretical and empirical research regarding non-farm employment. It mainly reviews the links between agricultural development and output and employment growth in the RNFE and also reviews the factors which influence RNFE. The need for micro level studies and the limitations of macro level studies are also briefly discussed. It then briefly introduces the objectives, hypotheses, data base and methodology of the study, tools of analysis and lastly the structure of the thesis.

Chapter 2 describes the growth and structural changes in India and Tamil Nadu. This chapter also studies the workforce diversification and its inter-district variation in RNFE in Tamil Nadu. Thus this chapter is presented in two parts. Part one presents the growth and structural changes in India and Tamil Nadu. Part two examines the workforce diversification and its inter-district variation in RNFE in Tamil Nadu.

The profile of the Tirunelveli District has been portrayed in Chapter 3.

Chapter 4 provides a general description of socio-economic characteristics at the village level. Demographic characteristics, type of HHs, type of farmers, land holding patterns, per acre output, workers and dependents, traditional and modern RNFE, skill/unskilled, unemployed persons, sub-occupations, main workers according to Principal Status and Subsidiary Status, any other work done, mode of employment, place of work, migration/commuting, willingness to work inside or outside the village, distance work place, mode of transport, willingness to work in farm or non-farm and income are discussed. These profiles provide the background to understand the role of rural non-farm activities in the area under study.

Chapter 5 is divided into two parts. Part one provides an analysis of Factor and its results and discussion. In the present study the Factor Analysis has been mainly employed to identify representative variables from much larger sets of variables for use in subsequent multivariate analyses. Part two seeks to identify differences, among households in the four villages that account for differences in the probability that a household has a member who both (1) works for at least 183 days a year, and (2) has his or her main occupation in the RNFS. Next, the study looks for differences in the probability that a household has such a member in a) modern, b) traditional RNFE
separately. The possible determinants of probability of a household having a main worker in RNFE are analysed through FACTOR AND LOGIT Models for the four villages.

Chapter 6 deals with special features of certain non-farm activities based on selected individual households from four villages. The Chapter also presents some of the problems of RNFE in the selected villages, elucidating specific issues and using some of the findings to discuss some policy implications.

Finally, Chapter 7 ends with a short summary of main findings of the study and suggests some recommendations and implications for further research.

LIMITATIONS OF THE STUDY

This study is subject to the following limitations. Firstly, the present study focuses on several issues relating to rural areas only. Secondly, the secondary data relating to Census and NSS is based on the rural areas only. Thirdly, the NAS data on GDP/GSDP are based on 1990-91, 1999-2000 and 2004-05 years. Fourthly, the 2001 Census data on industrial classification is based on two digits and only overall diversification indices have been estimated; but this study did not estimate the major sectoral or within the sectoral diversification index. Lastly, the household members do not maintain any records for number of days worked, income, cost of cultivation and returns in the study area. Hence this study is based on the figures and facts of their memories and approximations.

This introductory chapter has outlined the problem, concepts, survey of the literature, the importance of RNFE and the micro level study. At the end, it has briefly introduced the objectives, hypotheses, data base and methodology of the study, tools of analysis, the structure of the thesis and some limitations of the study. This chapter is followed by the structural changes and workforce diversification in Tamil Nadu.