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Rural Non-Farm Employment in India and Thailand

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Introduction

Of late, in most of the developing countries in general, and Asia, in particular, agricultural and the modern formal sectors are not in a position to absorb the growing labour force due to rising capital intensity. Employment in the public sector in these economies, is also failing to grow rapidly. In fact, the governments in some of these countries are under tremendous pressure to reduce employment in the public sector as a result of structural adjustment programmes. Elasticity of employment with respect to output has been diminishing in most economic sectors in many such economies, particularly in agriculture and the formal manufacturing sector. This falling elasticity of employment with respect to agricultural and the formal sector output, the existing high level of disguised unemployment and underemployment in agriculture in rural areas, make rural non-farm sector seen as a viable sector for solution of the problems of the rural unemployment and rural poverty in these economies.

After the path-breaking 1978 World Bank study on Rural Non-Farm Employment (RNFE) in developing economies, a large number of micro and macro studies have been undertaken to understand the dynamics of this sector. However, many of these studies were conducted either in the eighties or in the early nineties. During the past one decade, studies on this sector have been to some extent overlooked particularly with respect to South-east Asia. Any scholar, who wants to make an Asian case for Rural Non-Farm Employment, cannot make his case complete without studying the dynamics of RNFE in South Asia and South-east Asia. India is a good representative case for South Asia and also Thailand for the South-east Asia. In early 1970s, the share of RNFE in rural employment in both these countries was almost the same (See the section on 'Comparison and Policy Implication' in this paper). During the last three decades, both the countries have traveled a long way in their pursuits for development and growth. Therefore, we feel, an examination of RNFE situation will be useful in understanding better the comparative dynamics of this sector in both these countries particularly and Asia in general.

The Concept of Rural Non-Farm Employment

Non-Farm employment refers to all non-agricultural employments in the private and public sector undertaken by workers either as principal or subsidiary occupations. Broadly speaking, Rural Non-Farm Employment can be defined as all types of employments in rural non-agricultural activities. This necessitates a definition of Rural Non-Farm Activities. However, in the rural areas there emerges a complex pattern of different activities, with widely varying degrees of emphasis on farm and non-farm work. These complexities, are difficult to embrace in any specific set of definitions or through any established system of collecting data about enterprises, occupations and employment status (Basant and Kumar, 1994). Besides, there are practical difficulties in analysis owing to the limitations of the aggregate data obtained from census returns and labor force surveys. (ILO, 1983:86) It is probably due to these problems that a well established and consistent definitional framework to measure and analyze rural non-agricultural activities does not exist (ILO 1983:6; World Bank 1978:13).

In the background paper for the World Development Report 1995, Rural Non-Farm Sector is defined as the sector which includes all economic activities in rural areas, except agriculture, livestock, fishing and hunting The most common convention is to include animal husbandry, hunting and trapping forestry and logging and fishing, in agriculture and accordingly, all other economic activities in rural areas would constitute RNFS (Chadha, 1993, pp. 296-327). Therefore, in the present study, RNFE implies broadly, all rural employments in non-agricultural activities, such as mining and quarrying, household and non-household manufacturing, processing, repairs, construction, trade and hotel, transport, storage and communications, and community, personal and other services in rural areas.

Study Area, Methodology and Objectives

In this paper, the study area comprises India in South Asia and Thailand in South-East Asia. Here, non-farm employment is considerably in the rural sectors only. For India, the census classification of areas used are rural and urban. For Thailand, we go by the Municipal and Non-Municipal classification of areas and non-municipal areas are considered as rural areas. The period of study was 1972-73 to 1900-00 for India and 1971-2000 for Thailand.

The methodology of this study consists of: (i) surveying the available literature on RNFE in the context of Thailand and India. This is required to get a better understanding of the present status of RNFE in both the countries. (ii) the collection of secondary data from the government and private sources i.e. census and labor force surveys and other statistical handbooks and publications. In the Indian situation, NSSO (National Sample Survey Organization) data were collected and used for the study. For Thailand, the National Statistics Office data for labor force were used. Besides these data sources, a number of other casual publications were also referred to and used. (iii) Organizing the data and creating a database on selected aspects of RNFE for analysis. (iv) Qualitative and quantitative analysis of this database. To find out the trends in and composition of RNFE, we have resorted to simple percentages and tables. To analyze the determinants of RNFE, we used multiple linear regression models. (v) Synthesis of the findings and formulation of policy guidelines.

The specific objectives of the study are (i) to assess the trend, nature and magnitude of RNFE in Thailand and India, (ii) to explain the determinants of RNFE in Thailand and India and (iii) to derive policy implications in the light of this comparative study.

Growth, Composition and Determinants of Rural Non-Farm Employment in India

A Brief Review of Literature

Ever since the World Bank made the first formal cross country study on RNFE in 1978, interest on it has since then increased manifold and is reflected in the growing body of research undertaken by academicians and policy makers all over the world including India. Almost all the studies undertaken at the national and provincial levels confirm an increase of the share of RNFE in total rural employment over various time periods. (Vaidynathan 1986, Basant and Kumar 1989, Jayraj 1989, Uni 1991, Chadha 1993, Mitra 1993, Bhalla 1993, Visaria and Basant 1994, Dev 1994, Visaria 1995 and 2002, Samal 1997, Rao, 1997, Chadha, 2002). Chadha (2002) using NSSO data, estimates the share of male non-farm employment in total rural male employment has increased from 22.5 per cent in 1983 to 28.6 percent in 1999-00, whereas such share for female non-farm employment has marginally increased from 13.5 percent to 13.7 percent over the same period of time. This implies that rural India has undergone employment diversification over time.

A large number of studies have also been undertaken both at the macro and micro levels to derive the determinants of RNFE in India. Majority of these studies have been undertaken at the regional (state) or district levels, whereas few have been undertaken at the village or household levels. Whereas, there are a number of common determinants across a number of regions, there are also differences in them across many regions. In the mid-1970s, John Mellor (1976) talked of farm and non-farm linkage and postulated that, due to growth in productivity in agriculture, income from agricultural sector would rise and would expand the consumption demand in terms of farmers for labor-intensive goods. This would encourage the growth of Rural Non-Farm Sector. Mellor also talked of backward and forward production linkages of agriculture sector with the non-farm sector. The backward linkage works via the demand of the agriculturists for inputs such as plows, agricultural tools. The forward linkage works via processing of agricultural produce. Agricultural growth as a determinant of RNFE was also proved in studies undertaken by Vaidyanathan 1986, Papola 1987 &1992, Singh 1989, Unni 1989, Dev 1990, Shukla 1991 & 1992, Hazell and Haggblade 1991 and Rao 1997. Other important factors identified as the determinants of RNFE are Urbanization (Sharma and Saxena 1984, Jaya Raj 1989, Singh 1989, Unni 1989, Shukla 1991 & 1992, Hazell and Haggblade 1991, Rao 1997 and Srivastav and Dubey 2002), Education (Samal 1997, Rao 1997, Lanjouw and Shariff 2002 and Moorthy *et.al.* 2002), Infrastructure (Singh 1989, Shukla 1991 & 92, Murty and Durga 1992, Rao 1997 and Srivastav and Dubey 2002), Commercialization of agriculture (Vaidyanathan 1986, Jaya Raj 1989, Sankaranarayan 1980) and Distress diversification (Dev 1980, Verma and Verma 1995, Bhaumik 2002).

Trends in Non-Farm Employment in India

The National Sample Survey Organization in India conducts its surveys in rounds and we have used these data to analyze non-farm employment. These data are available for six points of time i.e. 27th round (1972-73), 32nd round (1977-78), 38th round (1983), 43rd round (1987-88), 50th round (1993-94) and 55th round (1999-00). Analysis of these data (Table 1) clearly shows that the share of RNFE has gradually increased in the country from 14.3 percent in 1972-73 to 23.8 percent in 1999-00. This implies that rural India has experienced employment diversification over the last three decades. However, there was a slight halt to this increasing trend in between the periods of 1987-88 to 1993-94. This also happens to be the period when India embraced liberalization and privatization of its economy. Things on RNFE front thereafter have started looking encouraging.

Table 1
Trends in Rural Non-Farm Employment in India

Year	Percentage Share of RNFE to Total Rural Employment		
	Persons	Males	Females
1972-73	14.3	16.8	10.3
1977-78	16.5	19.4	11.9
1983	18.4	22.4	12.3
1987-88	21.7	25.5	15.3
1993-94	21.6	25.9	13.9
1999-00	23.8	28.7	14.8

Source: NSSO,1977, *sarvekshana,* Vol.1, No-2, October; 1981, *Sarvekshana,* Vol.5, Nos. 1 and 2, July-October; 1990, *Key results of Employment and Unemployment Survey*, All India 43rd Round(July 1987-June 1988); NSSO, Report No 409 and 458(Part I and II)

When we analyze male and female shares of such employment it is clear that male RNFE has been above the female percentage all through this period 1972-73 to 1999-00. The increase in male RNFE has also been more pronounced over this whole period. Increase in the percentage share of female RNFE has been very slow. It has even undergone a decrease during the period 1987-88 to 1993-94.

The annual growth rate (Table 2) of female RNFE is much less in comparison to the growth rate of male RNFE for both the time periods i.e. 1973-2000 and 1983-2000. Hence, the gender bias is much evident in rural employment diversification process in India.

Coming to the state specific situations, amongst the major 15 states (except Punjab), there has been an increase in the share of RNFE in total employment over this period of time i.e. 1973 to 2000 (Table 3). With regard to male RNFE this increase is evident in all the 15 states and is more pronounced. With regard to female RNFE, the situation is totally different. Out of these 15 states, in ten states, the share of female RNFE has decreased over this period. The decrease has been the sharpest in Punjab

Table 2
Growth Rate of Rural Non-Farm Employment in India

RNEE Type	Annual Growth Rate*	
	1973-2000	1983-2000
Males	3.05	2.94
Females	1.68	2.08
Persons	2.71	2.74

Source: Author's calculation based on NSSO estimates for round 27th, 38th & 55th.

*Growth rate has been calculated by applying the formula $r_g = (P_n/P_o)^{1/n-1}$

(23.8 percentage point). Kerala and Madhya Pradesh are the states having the highest and the lowest percentage shares in RNFE all through this period 1972-73 to 1999-00. This is also true for male RNFE share. With regard to the share of female RNFE, in 1972-73; West Bengal was having the highest share (43.9 %) and Madhya Pradesh had the lowest share (5 %); in 1983, Kerala had the highest share (29.1%) and Madhya Pradesh had the lowest share; in 1999-00, West Bengal had the highest share (46 %) and Maharastra had the lowest share (6.1%). An overview of these data, thus, shows regional variation in the concentration of RNFE in India.

Table 3
Trends in Rural Non-Farm Employment (in per cent) Across States in India

States	Persons			Males			Females		
	1972-73	1983	1999-00	1972-73	1983	1999-00	1972-73	1983	1999-00
Andhra Pradesh	16.5	19.87	21.3	19.3	22.6	25.6	12.6	16.3	15.7
Assam	14.9	20.2	32.2	15.2	20.7	35.3	12.3	17.9	20.7
Bihar	16.6	16.5	19.4	17.2	18.7	21.1	15.0	11.7	14.3
Gujarat	13.8	14.8	20.3	16.4	20.3	28.6	10.0	7.1	7.9
Haryana	18.7	22.9	32.2	20.0	28.5	41.2	16.4	10.0	7.9
Karnatak	13.5	15.7	18.0	15.6	18.3	21.6	10.5	11.7	12.1
Kerala	43.7	37.0	52.0	45.0	42.2	57.3	41.3	29.1	40.3
M.P.	8.2	9.2	12.0	10.6	12.7	15.8	5.0	4.4	8.6
Maharastra	14.8	14.3	17.4	19.8	20.3	26.2	8.6	7.0	6.1
Orissa	18.0	20.82	21.9	17.6	21.8	23.2	18.7	18.9	19.6
Punjab	24.5	17.6	23.5	20.7	22.6	36.2	33.2	7.2	9.4
Rajasthan	12.7	13.4	22.3	15.9	19.2	32.7	8.9	6.1	8.0
Tamil Nadu	21.6	25.7	32.0	25.4	31.3	37.7	16.3	18.2	24.1
Uttar Pradesh	17.2	17.6	23.9	18.7	21.0	28.2	13.6	10.2	12.4
West Bengal	26.9	26.3	36.3	22.7	26.8	33.5	43.9	24.8	46.0
All India	14.3	18.4	23.8	16.8	22.4	28.7	10.3	12.3	14.8

Source: Author's calculation based on NSSO estimates for round 27th, 38th & 55th

Composition of RNFE in India

From Table 4, it is evident that, so far as male RNFE is concerned, at both the periods of time i.e. 1983 and 1999-00, manufacturing, services, wholesale and retail trade and constructions have been the important sectors of employment generation.

However, the sectors of construction, wholesale and retail trade and transport, storage and communications have been the dynamic sectors responsible for much of the male RNFE increase during this period. The percentage shares of these three sectors have increased in 1999-00 in

Table 4
Percentage Distribution of RNFE in India: 1983, 1999-00

Sector/Industry	Males		Females	
	1983	1999-00	1983	1999-00
Mining & Quarrying	2.7	2.1	2.5	2.0
Manufacturing	31.5	25.4	52.5	51.4
Electricity, gas and water	0.9	0.7	0.0	0.0
Construction	9.9	15.7	5.7	7.4
Wholesale and retail trade	19.8	23.7	15.6	13.5
Transport, storage and communications	7.7	11.1	0.8	0.7
Services	27.5	21.3	23.0	25.0

Source: Author's calculation based on NSS estimates

comparison to 1983. With regard to female RNFE, the manufacturing sector alone accounts for more than 50 percent of the total such employment in both these periods of time. Manufacturing, wholesale & retail trade and services sectors have been the important sectors of female RNFE generation. One important thing that distinguishes the trend in female RNFE composition from male RNFE composition over this period is that the former has experienced a decrease in its percentage share of employment in wholesale and retail trade sector by 2.1 percentage points, whereas the latter has in fact experienced an increase by 3.9 percentage points.

Determinants of RNFE in India

Before formulating any meaningful employment policy, it is desirable to understand the reasons for the variation in the growth of RNFE across regions. In other wards, it is desirable to understand the factors which determine the growth of RNFE. A survey of literature on the determinants of RNFE in India reveals that agricultural growth, education, urbanization, infrastructure, distress diversification are the important factors determining rural non-farm employment. This has already been shown earlier in this paper in the brief review of the literature. However, these factors are not universal and their influence differs from region to region and study to study. The materials on this front are so abundantly available that we do not feel the necessity of undertaking any fresh investigation in this regard.

Growth, Composition and Determinants of Rural Non-Farm Employment in Thailand

A Brief Review of Literature

A number of studies (World Bank 1978, TDRI 2003) confirm the steady increase in the share of RNFE in Thailand. Similarly, factors identified as determinants of RNFE at the micro level are agricultural growth (World Bank 1983 and Luechai, Suward and Thongchai 1986), farm size (Yongyuth 1982) and education (Banno 1982).

Trends in Rural Non-Farm Employment in Thailand

Rural Thailand has undergone a massive employment diversification over the last three decades (Table 5). Non-farm employment was 12.08 percent in 1971, which has increased to 38.74 percent in 2000. It means that non-farm employment has increased by 25.66 percentage points during the period 1971-2000. The share RNFE in total rural employment has continuously gone on increasing till 1996. However, for two consecutive years, i.e. 1997 and 1998, it has decreased. This is so because of the economic crisis of 1997.

Table 5
Trends in Rural Farm and Non-Farm Employment in Thailand

Farm (F) Non-Farm(NF)	Percentage Share				
	1971	1981	1983	1991	2000
F	87.92	81.82	78.70	71.87	61.26
NF	12.08	18.18	21.30	28.13	38.74

Source: Author's calculation based on Labor Force Survey, Round 3, 1971, 1981, 1983, 1991 and 2000

The average annual growth rate of RNFE during the period 1971-2000, has been 6.22 percent which is otherwise a good rate of growth. However, the decade 1991-2000 experienced a reduced growth rate in comparison to previous two decades, because of the economic crisis that Thailand experienced in 1997 and its aftermath (Table 6).

Table 6
Growth Rate of Rural Farm and Non-Farm Employment in Thailand

Farm (F) Non-Farm(NF)	Growth Rate				
	1971-81	1981-91	1991-2000	1983-2000	1971-2000
F	2.93	0.67	-1.52	-0.46	0.71
NF	7.95	6.54	3.32	4.65	6.22

Source: Author's calculation based on Labor Force Survey, Round 3, 1971, 1981, 1983, 1991 and 2000

Trends in Male and Female RNFE

Male RNFE share during the period 1971-00 has increased by 24.62 percentage points, where as female RNFE share has increased by 29.01 percentage points. Female RNFE share was below male RNFE share in 1971, 1981 and 1991. However, in 2000 it has surpassed male RNFE share (Table 7).

Table 7
Share of Male and Female RNFE in Total Male and Female Employment in Thailand

Male (M) Female(F)	Percentage Share				
	1971	1981	1983	1991	2000
M	13.45	19.89	19.42	28.66	38.07
F	10.58	16.31	18.80	27.50	39.59

Source: Author's calculation based on Labor Force Survey, Round 3, 1971, 1981, 1983, 1991 and 2000

Over the period 1971-2000, the average annual growth rate of Male RNFE has been 5.94 percent, whereas the same for female RNFE has been 6.60 percent (Table 8). This implies that the degree of female employment diversification in rural Thailand is more pronounced than the degree of male employment diversification.

Table 8
Annual Growth Rate of Male and Female RNFE in Thailand

Male (M) Female (F)	Annual Growth Rate			
	1971-81	1981-91	1991-2000	1971-2000
M	7.64	6.14	3.21	5.94
F	8.36	7.05	3.44	6.60

Source: Author's calculation based on Labor Force Survey, Round 3, 1971, 1981, 1983, 1991 and 2000

Trends in RNFE Across Regions in Thailand

In 1971, in terms of share of RNFE, the Central Region, Southern Region, Northern Region and North Eastern Region were ranked in descending order. Their shares of RNFE were 23.5 percent, 11.3 percent, 8.3 percent and 7.3 percent respectively (Table 9).

In 2000, after 29 years, there is no change in this ranking. In 2000, the Central Region is having the highest share (67.7 percent) of RNFE and it has maintained its supremacy in this respect. The North Eastern Region is on the bottom and its share of RNFE is 29 percent only. This reveals that there is regional variation with regard to the incidence of RNFE in Thailand.

Composition of RNFE in Thailand

The composition of RNFE has changed over time (Table 10). In 1971, it was the services sector, which has the highest percentage share (4.24%) among all the sectors of RNFE, followed by the Commerce sector (4.02%). In 1983, it was again the services sector (6.52%) followed by the commerce

Table 9
Farm and Non-Farm Employment in Different Regions in Thailand: 1971-2000

Year	Farm Employment(%)				Non-Farm Employment(%)			
	CR	NR	SR	NER	CR	NR	SR	NER
1971	76.5	91.7	88.7	92.7	23.5	8.3	11.3	7.3
1981	68.2	84.9	75.2	91.4	31.8	15.1	24.8	8.6
1983	63.3	81.0	74.7	89.4	36.7	19.0	25.3	10.6
1991	49.4	74.5	67.3	84.3	50.6	25.5	32.7	15.7
2000	32.3	60.3	51.9	71.0	67.7	39.7	48.1	29.0

Source: Author's calculation based on Labor Force Survey, Rd.3, 1971, 1981 and 1985-2000.
Note: CR-Central Region, NR-Northern Region, SR-Southern Region, NER-North Eastern Region

Table 10
Sector-wise Composition of RNFE in Thailand: 1971-2000

Industry Category	Percentage Share in Total Rural Employment				
	1971	1981	1983	1991	2000
Mining & Quarrying	0.11	0.26	0.19	0.19	0.13
Manufacturing	2.38	5.15	5.37	8.51	12.23
Constructions, Repair and Demolition	0.72	1.57	1.68	3.50	3.84
Electriciy, Gas, Water and Sanitary Services	0.02	0.17	0.28	0.19	0.30
Commerce	4.02	5.07	5.84	7.63	10.66
Transport, Storage and Communication	0.59	0.96	1.39	0.84	1.62
Services	4.24	5.00	6.52	6.27	9.96
RNFE as a Whole	12.08	18.18	21.30	28.13	38.74

Source: Author's calculation based on Labor Force Survey

Sector (5.84%). However, in year 2000, manufacturing sector's share in RNFE is the highest (12.23%) followed by commerce sector (10.66%). This implies that there is also sect oral diversification of employment within the rural non-farm sector.

In analyzing the growth rate of the various sectors in RNFE over different periods of time (Table 11), it is seen that in the seventies and nineties, employment in electricity, gas, water and sanitary services sector and in the eighties in manufacturing sector, experienced the highest growth rates.

During the period 1971-2000, the growth rate in electricity, gas, water and sanitary services (EGWSS) was the highest (13.00 %), whereas during 1983-2000 such growth rate was highest in constructions sector followed closely by the manufacturing sector. In the nineties, growth rate of employment in many of the important RNFE sectors like commerce, constructions, manufacturing has gone down. It has even become negative in case of transport, storage and communications sector. The economic crisis of 1997 is mostly responsible for this state of affairs.

Table 11
Growth Rate of Various Sub-sectors of RNFE in Thailand

Industry Category	Annual Growth Rate				
	1971-81	1981-91	1991-2000	1991-2000	1983-00
Mining & Quarrying	13.06	-0.98	-4.27	2.72	-1.14
Manufacturing	11.96	7.24	4.5	8.55	6.04
Constructions, Repair and Demolition	12.09	10.45	1.19	3.90	6.06
Electriciy, Gas, Water and Sanitary Services(EGWSS)	31.21	3.03	5.88	13.00	1.42
Commerce	6.11	6.24	4.17	5.54	4.66
Transport, Storage and Communication	8.91	8.86	-1.43	5.69	1.93
Services	5.40	4.31	5.80	5.09	3.57
RNFE as a Whole	7.95	6.54	3.32	6.22	4.65

Source: Authors' calculation based on Labor Force Survey

With regard to composition of male RNFE, it is seen from Table 12, that employment in the Services sector forms the highest percentage share in 1971, 1981 and 1983. However, Manufacturing sector replaced this sector as the leading sector of employment in 1991 and 2001. Annual growth rate of different sectors of male RNFE reveals that during the period 1971-2000, it was the EGWSS sector and during 1983-2000, it was Construction sector which experienced the highest growths. The next highest growth rate was in the Manufacturing sector in both these periods of time. On the whole, all through this period of 1971-2000, the sectors of Manufacturing, Constructions, Commerce and Services have emerged as the important sectors in respect of Male RNFE.

In the front of composition of female RNFE (Table 13), the commerce sector was the leading sector in 1971, 1981, and 1983. However, in 1991 and 2000, the percentage share of employment in the manufacturing sector outweighed all other sectors. In terms of sector wise growth rate of employment in female RNFE, during 1971-2000 and 1983-2000, manufacturing sector and constructions, repairs and demolition sector topped the list with an annual growth rate of 6.50 and 9.34 percents respectively. On the whole, in the field of sector wise composition of female RNFE, all through the period 1971-2000, sectors of manufacturing, commerce and services have emerged as the dynamic sectors of employment creation.

Table 12
Composition of Male RNFE in Thailand: 1971-2000

Industry Category	Percentage Share in RNFE					Annual Growth Rate	
	1971	1981	1983	1991	2000	1983-00	1971-00
Mining and Quarrying	0.17	0.40	0.31	0.26	0.20	-1.42	2.66
Manufacturing	2.09	5.13	5.35	7.36	10.83	5.61	7.96
Constructions, Repair and Demolition	1.24	2.57	2.64	5.46	5.93	6.26	7.69
Electricity, Gas, Water and Sanitary Services	0.03	0.30	0.48	0.30	0.46	1.00	11.98
Commerce	3.32	3.94	4.42	6.20	8.79	5.49	5.53
Transport, Storage and Communications	1.11	1.73	2.45	3.12	2.72	1.88	5.25
Services	5.49	5.82	7.06	5.96	9.14	2.87	3.89
RNFE as a Whole	13.45	19.89	22.70	28.66	38.07	4.44	5.94

Source: Authors' calculation based on Labor Force Survey

Table13
Composition of Female RNFE in Thailand: 1971-2000

Industry Category	Percentage Share in RNFE					Annual Growth Rate	
	1971	1981	1983	1991	2000	1971-00	1983-00
Mining and Quarrying	0.04	0.10	0.05	0.01	0.05	2.53	0.51
Manufacturing	2.71	5.16	5.40	9.87	13.97	7.57	6.50
Constructions, Repair and Demolition	0.14	0.48	0.60	1.19	1.21	9.34	5.00
Electricity, Gas, Water and Sanitary Services	0.00	0.03	0.06	0.05	0.10	–	4.78
Commerce	4.80	6.31	7.46	9.32	13.00	5.24	4.04
Transport, Storage and Communications	0.00	0.12	0.20	0.34	0.28	–	2.50
Services	2.84	4.11	5.94	6.62	10.97	6.52	4.41
RNFE as a Whole	10.53	16.31	19.71	27.49	39.58	6.60	4.91

Source: Authors' calculation based on Labor Force Survey

Determinants of RNFE in Thailand

An analysis of the determinants of RNFE at the country level based on data for the last 15 years i.e. from 1985 to 2000 from Labor Force Survey and Agricultural Statistics of Thailand has been undertaken here. Initially it was planned to have this analysis using the cross section data for two different time periods. Unfortunately, such data for Thailand are not available in any published reports. Efforts to prepare such a data base proved unsuccessful as neither the census report nor the labor force survey provide industry-wise employment data for rural non-municipal areas for all the 76 provinces. Province-wise census reports although provides such industry-wise employment data, but these data don't have the urban and rural break-ups. Hence, the need was felt to prepare a time series data base of industry-wise employment of workers in non-municipal areas for the whole Kingdom based on labor force survey with some other selected economic indicators derived from reports of Labor Force Survey and Agricultural Statistics of Thailand. This data base includes year-wise data from 1985 to 2000 on (i) percentage of rural non-farm employment to total rural employment (Y), (ii) Yield per rai of crops (food and non-food) (X_1), (iii) Irrigation ratio (Total irrigated area/Gross cropped area) (X_2), (iv) Average land holding size (in Rais) (X_3), and (v) Percentage of literate workers to total workers in rural non-farm sector (X_4).

This data base has been used to run a linear regression in which percentage of rural non-farm employment to total rural employment (Y) is the dependent variable and the rest are independent variables. The linear regression model run is as follows:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + U$$

Where Y = percentage of rural non-farm employment to total rural employment
a = the intercept, b_1 to b_4 = the regression coefficients
X_1 = Yield per rai of crops (food and non-food)
X_2 = Irrigation ratio (Total irrigated area/Gross cropped area)
X_3 = Average land holding size (in rais)
X_4 = Percentage of literate workers to total workers in rural non-farm sector
U = Disturbance term

The results of this regression run are as follows:

$$Y = 235.682 + 0.695X_1 + 0.213X_2 - 0.363X_3 - 0.241X_4$$
$$(1.658) \quad (4.021)^* \quad (1.270) \quad (-2.443)^{**} \quad (-1.388)$$

$F = 44.932^*$, $R^2 = 0.942$, Adjusted $R^2 = 0.921$, d (Durbin-Watson) = 1.591
Figures in the parenthesis are 't' values.
* *Significant at 1 percent level, ** Significant at 5 percent level.*

This regression analysis reveals that the predictive value of this model is very good as it explains 94 percent variation in Y (the % of non-farm employment to total rural employment). Yield per rai[1] of crops (X_1) and average land holding size (X_3) are the two statistically significant explanatory variables determining the level of RNFE in Thailand. The coefficient for the former is positive and the latter negative. This implies that in Thailand the growth of rural non-farm employment is attributed to agricultural prosperity and land constraints.

1. One rai in Thailand is approximately equal to 0.40 acres.

Comparison and Policy Implications

A comparative account of the results of our study is given below.

INDIA	THAILAND
The share of RNFE in total rural employment has increased over the last three decades which essentially reveals the process of employment diversification in rural India. RNFE has increased by 9.5 percentage points over the last 27 years i.e. from 1972-73 to 1999-00.	Rural Thailand has undergone a massive employment diversification over the last three decades. RNFE has increased by 26.66 percentage points over the last 29 years i.e. from 1971 to 2000. Thailand thus has undergone better employment diversification in comparison to India.
There is gender bias in the RNFS in India. Share of male RNFE has been above the female percentage all through this period 1972-73 to 1999-00. The increase in male RNFE has also been more pronounced over this whole period. Increase in the percentage share of female RNFE has been very slow. It has even undergone a decrease during the period 1987-88 to 1993-94.	The female RNFE share was slightly below male RNFE share in 1971, 1981 and 1991. However, in 2000 it has surpassed male RNFE share. Male RNFE share during the period 1971-2000 has increased by 24.62 percentage points, where as female RNFE share has increased by 29.01 percentage points. Thus, there is no gender bias in the RNFS in Thailand.
There is regional variation with regard to the incidence of RNFE. Both in 1972-73 and 1999-00, the southern state of Kerala is having the highest share of RNFE (43.7 and 52.00 percents respectively) and the central state of Madhya Pradesh is having the lowest share of RNFE (8.2 and 12.0 per cents respectively).	The regional variation in the incidence of rural non-farm employment is very much evident. Both in 1971 and 2000, the Central Region is having the highest share of RNFE (23.5 and 67.7 percents respectively), where as the North Eastern Region is having the lowest (7.3 and 29.0 percents respectively).
For males, the sectors of construction, trade, and transport, storage and communications have become the dynamic sectors of RNFE. In case of the females, the most dynamic sector has been the 'services sector'.	In respect of Male RNFE, the sectors of manufacturing, constructions, commerce and services have emerged as the important sectors of employment. In respect of female RNFE, sectors of manufacturing, commerce and services have emerged as the dynamic sectors of employment generation.
Agricultural growth, availability of infrastructure, education, urbanization, rural unemployment and underemployment rates, have been identified as important determinants of RNFE in India. This has been confirmed from studies undertaken at the macro and micro level.	Agricultural growth and average size of land holding are the two most important determinants of the growth of RNFE in Thailand.

General Policy Implications

As there exists an intimate link between the rural farm and non-farm sectors, policy makers should work on this link in such a manner that the two sectors mutually reinforce each other and the expansion of one strengthens the expansion of the other, leading to creation of more avenues of job in rural non-farm sector. Secondly, non-farm sector is heterogeneous across activities and regions. Hence, one uniform policy measure may not be desirable to promote this sector and employment in it. Public policy therefore should be activity-specific and region specific. Thirdly, regional disparity with regard to the incidence of RNFE should be reduced. Although it is felt that some degree of regional variation in RNFE is natural going by the resource endowment of the respective regions, but we can not justify the secular continuance of this variation. The variation incidence because of historical accidents or policy bias and sheer negligence needs to be offset and overcome.

Lessons for India

Employment diversification in Rural India has not been at par with Thailand during the period under study i.e. 1971-72 to 1999-2000. How is it that Thailand has achieved better employment diversification in rural areas, which India could not? From field experience in visiting cases of good practices in rural industrialization and employment diversification and interaction with officials of government and non-government organizations in Thailand; some plausible explanations are offered below.

(a) Thailand in comparison to India, has worked more effectively on the farm and non-farm linkage. Much of the growth of Thailand's rural non-farm sector is because of agricultural prosperity. This has been made possible because of the liberal economic policy, more particularly the liberal trade policy of 'export led growth' pursued by Thai government in the late seventies and eighties, when the govt. of India was pursuing the policy of self sufficiency in agriculture. Because of this export led growth policy in Thailand, a number of agro-processing industries were established in rural and semi-rural areas.
(b) Thailand's rural development program in the eighties and nineties has been more focused and well implemented in comparison to India. Creation of socio-economic infrastructures like education, roads and electricity has been reasonably good in comparison to India.

The implication for India is to improve the quality of its agricultural products, diversify farm production and work effectively on farm and non-farm linkages. Besides, it needs to make its rural development program more focused.

Further, there is a gender bias in the growth of RNFE. The share of male RNFE in total rural employment has been above the female percentage all through this period 1972-73 to 1999-00. The increase in male RNFE has also been more pronounced over this whole period. Increase in the percentage share of female RNFE has been very slow. It has even undergone a decrease during the period 1987-88 to 1993-94. This bias needs to be overcome. Along with spread of education, specific intervention strategy for encouraging and empowering women to undertake more of non-farm employment should be formulated.

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