

Chapter 6

Non-Farm Sector and Food Security in Assam

The chapter deals with the relationship between food security and non farm sector. First section deals with the relationship between food security and non-farm sector based on secondary data. Although the secondary data throws light on some kind of relationship from macro perspective but for an in-depth analysis an analysis of primary data is made in the next section. Firstly, we have analyzed the Food Security, Nonfarm Sector and Their Relationship with some non-Economic factors, followed by their relationship with some Economic factors. The last subsection tells about the relationship between food security and non-farm sector based on logistic regression.

6.1 Food Security and Non Farm sector: Analysis of Secondary Data

In short in order to ascertain the relationship between household food security status and non-farm employment of rural households in Assam a bivariate correlation coefficient is obtained. For this purpose we have taken variables like percentage of food secure households in a district to define household food security status of rural households and the percentage of rural non farm workers in a district as proxy variable for non farm sector. The data on these variables will definitely speak about the percentage achievements/failures in these respects.

Food Security Status of Rural Households: The percentage of food secure households in a district is very relevant for understanding the household food security status in a district. A high percentage of the food secure households imply a better state of food security in a district whereas a low percentage of the food secure households imply a worse state of food security in a district. For obtaining the data on percentage of food secure households in a district the sources like B.P.L Census, 2002, Ministry of Rural Development, Govt. of India is utilized. This census classified the rural households into five categories depending on the intensity of food security one being the percentage of households who fall under the category are considered for entry of figures against the category of food secure households for a particular district. A systematic entry of figures for twenty three districts generates the data for analysis of status of household food security in Assam. Thus, we have taken

variables like '*Percentage of food secure households in a district*' to define household food security status of rural households.

Significance of Nonfarm Sector: On the other hand, the percentage of rural non-farm workers in a district is deemed crucial for assessing the significance of non-farm employment in a district. While a high percentage would imply a higher level of non-farm employment, a lower percentage would imply a lower level of non-farm employment and hence would imply the significance of the non-farm sector on the economy of the district. To determine the percentage of rural non farm workers in a district we have deducted the number of cultivators and agricultural labourers from the total number of rural workers available in Population Census,2001 data and thus converted the data as a percentage of total workers to get the percentage of rural non farm workers in a district. A systematic entry of figures for twenty three districts generates the data for analysis of status non-farm employment in Assam. Thus, we have taken variables like the '*Percentage of rural non farm workers in a district*' as proxy variable for non farm sector.

The data thus obtained is used to perform a correlation exercise between food security status and nonfarm employment of rural households. The results are illustrated in the following table. As is evident from district level correlation matrix, the percentage of food secure rural households in assam is positively and significantly correlated with the percentage of rural workers engaged in the non farm sector.

Table 6.1
District level Correlation Matrix: 2001-02

Serial number	Variables	Percentage of food Secure Households	Percentage of Rural Non farm Workers
1	Percentage of food Secure Households	1	0.52*
2	Percentage of Rural Non farm Workers	0.52	1

Source: B.P.L Census, 2002 and Population Census, 2001

NOTE: 1. * indicates significant at 1 percent level of significance

2. Figures for the percentage of food secure households were taken from State level reports, B.P.L Census, 2002, Ministry of Rural Development, Government of India and figures for the percentage of rural non farm workers were collected from the Population Census, 2001, Directorate of Economics and Statistics, Government of Assam.

6.2 Food Security and Non Farm sector: Analysis of Inter-relationship

However, the analysis based on secondary data although confirms about the relationship between the food security status and non-farm sector but for understanding the direction and magnitude of the relationship of the i.e. to identify the impacts of non-farm sector on the status of food security at the household level in rural areas of the state we fit following logistic model taking food security status of rural households as the dependent variable. The model is as follows:

$$Y_1 = \frac{1}{1 + e^{-[\beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \beta_7 x_7 + U_i]}} \dots\dots\dots(6.1)$$

Where, $Y_1=1$, if the household is food secure,

= 0, if the household is food insecure.

$X_1 = 1$, if primary occupation is non farm

0, otherwise

X_2 = Value of Household productive asset endowments(in Rupees)

X_3 = Education of the head of the household (in completed years)

X_4 = Religion of the household (1 for Hindu, 0 otherwise)

X_5 = Accessibility to credit

X_6 = Social group of the household

X_7 = Gender of the head of the household

X_8 = Livestock (in Tropical Livestock Units)

X_9 = Impact of Government programmes

X_{10} = Landholding possessed by the household

U_i = Stochastic Error term.

Using this model the proposed study uses suitable econometric tools of regression analysis to the observed data for identifying the impact. In the model ten variables are considered which are theoretically deemed important in affecting the food security of a household.

6.2.1 Specification of the Model

(a) Dependent Variable

The food security status of rural households: As the study is mainly concentrated on unveiling the possible effects of non-farm sector on food security at the household level so 'The food security status of rural households' is taken as dependent variable. The dependent variable is a binary variable which takes value 1 when the household under consideration is food secure and 0 otherwise.

(b)Independent Variables

Non-farm income: food security at household level cannot rely exclusively on farm income only. This is due to the fact that farm sources cannot provide sustainable and steady income for considerable period of time as agriculture is still a gamble in the monsoon. This compels households to look for alternative income sources for sustainable livelihood. In such a situation, the rural non-farm sector has dire implications in boosting the purchasing power of the rural households and thus helps in attaining higher levels of food security. So, non-farm income is a crucial determinant of household food security status. A high level of non-farm income accumulated through engagement in non-farm sector is believed to provide more economic access to food and hence making a household less vulnerable to the food insecurity problems especially in a situation when there is low or no level of income from farm related activities. To capture the effect of non-farm activities on household food security status we have taken the percentage of non-farm income in total income of the household as explanatory variable. Higher percentages of non-farm income are expected to boost the household food security status in a positive way.

Availability of government sponsored rural development projects: Availability of government sponsored rural development projects like road construction, development of irrigation facilities etc. at village level will help in enhancing the income earning opportunities of the people and thereby improving the food security status of the people.

Size of Cultivable Land Holding: Land by far is the most important asset for rural families which can have important implications on household income. It is commonly believed that ownership of large tracts of agricultural land by a household has positive impact on household income and thus on food se. Thus, we have taken land productivity as explanatory variable with taking acre as unit of land.

Livestock: Livestock are important to food security as sources of manure, draught power, and cash income, food (milk and meat) and as long-term investments. Contribution of livestock to household's food security is vital. The important livestock types are cattle, chickens and goats, each of which serves different functions under different household circumstances for example Cattle are generally regarded as an investment and a production input while smallstock, especially goats, are viewed as a ready source of cash. We have taken Tropical Livestock Unit to measure the livestock.

Household productive asset endowments (only physical assets): Household food security status is believed to be crucially dependent on household productive asset endowment. Household productive asset endowment provides a cushion to the food shortage problem in terms of providing access to income which may be helpful in ensuring food security. The main physical type of assets considered here includes various types of agricultural and business equipment, houses, consumer durables, vehicles and transportation. The variable is measured in terms of the current money value of the durable Asset found under possession of the household.

Access to Credit: Access to credit is a dichotomous variable indicating whether the household had access to it or not. Credit has emerged as alternative source of cash income for rural households with financial constraints. Farmers need rural credit to purchase agricultural inputs such as chemical fertilizers, improved seeds, and farm

implements and for startup capital to participate in nonfarm income generating ventures. Also, during the crises of food shortage farmers need credit services to purchase food item and feed their family. Hence, access to credit services plays a significant role to ensure household food security.

Education of the Head of the Household: Most studies emphasizes that education has a significant role in enhancing household's income which is crucial for enhancing household's food security status.

Religion: The variable religion of the household is included in the regression analysis to see the impact of religion on household income and thus on food security. Normally the religion which has most contribution in population often tends to capture most of the earning opportunities and hence tends to become more food secure than other religions.

Social Group: a locality having more schedule caste and schedule tribe population may have more number of artisans like blacksmith, goldsmith etc. then a locality dominated by Brahmin population. So, a locality of former type may have more incidences of non-farm employment and hence reflecting a positive impact on household's income which will be crucial for enhancing household's food security status.

Sex of the Head of the Household: Sex of the head of the household exerts significant influence on the choice of livelihood. This is because women are often constrained by social norms and attitudes regarding the types of occupations that they can pursue. Moreover women in developing societies are usually more deprived than men with regard to their access to education which serves to narrow their scope for employment in activities requiring higher skills and training.

6.2.2 Result of the Model

The result of the binary logistic model is illustrated in Table 6.2. The results indicate that higher the value of assets, higher will be the food security status. Level of education attained by the head of the household raises the probability of a household being food secure at 5 percent level of significance. The religion of the household in

Table 6.2
Variables in the Equation

Variables	B	S.E.	Wald	df	Sig.
POCNF	1.569	.541	8.405	1	
Valueasset	.023	.042	106.450	1	.004
EducationHOH	.019	.051	.137	1	.007
Religion	.725	.549	1.744	1	.0411
Creditaccess	-.480	.530	.818	1	.0187
Socialgroup	.048	.151	.102	1	.0366
Sexhead	-.343	.369	.864	1	.074
Livestock	.003	.070	.002	1	.035
Governmentprogrammes	-1.041	.659	2.494	1	.009
Land	.215	.073	8.638	1	.0114
Constant	-6.454	1.442	20.024	1	.003
					.015

Source: Primary Survey, 2014-15

cases when it belongs to Hindus raises the probability of a household being food secure at 5 percent level of significance. The accessibility to credit decreases the probability of a household being food secure at 5 percent level of significance. The accessibility to credit decreases the probability of a household being food secure at 5 percent level of significance. Social group when the household belongs to forward castes seems to exert positive impact on the probability of a household being food secure. Sex of the head in female headed households seems to decrease the probability of a household being food secure. The possession of the livestock seems to exert a positive impact on the food security status. Government programmes' seems to have negative impact on the food security status of the households. Similarly the size of Land owned significantly increases the probability of a household being food secure. Lastly, the constant term exert negative pressure on the food security status. The constant term captures the effect of structural factors effect which is not included in

the model. Various measures of goodness of fit reflect that model is a good fit (Table 6.2).

6.3 Dynamisms around the Concept of Food Security and Non farm Sector

There are several inherent dynamisms around the concept of Food Security. To understand various dynamics of food security we have analyzed the relationship between non-farm Sector and various economic and non economic variables.

6.3.1 Food Security, Non farm Sector and Non-Economic Variables

To capture various aspects of food security, Nonfarm Sector we have analyzed the relationship between food security and various non-economic variables such as religion, household size, social group and educational level.

(a) Food Security, Non farm Sector and Social Group

The relationship between food security status, non farm Sector and social group of the household is analyzed in Table 6.3. In Table 6.3, among the General caste households 6 percent enjoyed low food security status along with low levels of dependence on non-farm sector, 16 percent enjoyed low food security status along with high levels of dependence on non-farm sector, 2 percent enjoyed high food security status along with low levels of dependence on non-farm sector, 76 percent enjoyed both high food security status along with high levels of dependence on non-farm sector.

Also, among the SC caste households 11 percent enjoyed low food security status along with low levels of dependence on non-farm sector, 11 percent enjoyed low food security status along with high levels of dependence on non-farm sector, 13 percent enjoyed high food security status along with low levels of dependence on non-farm sector, 66 percent enjoyed both high food security status along with high levels of dependence on non-farm sector. Also, among the ST caste households 3 percent enjoyed low food security status along with low levels of dependence on non-farm

sector, 13 percent enjoyed low food security status along with high levels of dependence on non-farm sector, 6 percent enjoyed high food security status along with low levels of dependence on non-farm sector, 79 percent enjoyed both high food security status along with high levels of dependence on non-farm sector. Also, among the OBC households 16 percent enjoyed low food security status along with low levels of dependence on non-farm sector, 13 percent enjoyed low food security status along with high levels of dependence on non-farm sector, 13 percent enjoyed high food security status along with low levels of dependence on non-farm sector, 58 percent enjoyed both high food security status along with high levels of dependence on non-farm sector (Table 6.3).

Table 6.3
Food Security Status ,Dependence on Non farm Sector and Social Group of the Household :2014-15

		Social group of the household				Total
		General	Scheduled Caste	Scheduled Tribe	Other Backward Class	
Level of Food Security Status and Dependence on Non farm Sector of the Household	(Low Food Security Status, Low Dependence on RNFS)	6 (8.0) [6.0]	4 (5.3) [10.5]	2 (2.7) [2.5]	63 (84.0) [16.4]	75 (100.0) [12.5]
	(Low Food Security Status, High Dependence on RNFS)	16 (20.3) [16.0]	4 (5.1) [10.5]	10 (12.7) [12.7]	49 (62.0) [12.7]	79 (100.0) [13.1]
	(High Food Security Status, Low Dependence on RNFS)	2 (3.2) [2.0]	5 (7.9) [13.2]	5 (7.9) [6.3]	51 (81.0) [13.2]	63 (100.0) [10.5]
	(High Food Security Status, High Dependence on RNFS)	76 (19.7) [76.0]	25 (6.5) [65.8]	62 (16.1) [78.5]	222 (57.7) [57.7]	385 (100.0) [64.0]
Total		100 (16.6) [100.0]	38 (6.3) [100.0]	79 (13.1) [100.0]	385 (64.0) [100.0]	602 (100.0) [100.0]

Source: Primary Survey, 2014-15

Note: Figures in parenthesis () and [] represent the percentages of row and column total respectively.

Low food security status along with low levels of dependence on non-farm sector is noticed more among OBC (84 percent), followed by General (8 percent), SC (8 percent) and ST (8 percent). Low food security status along with high levels of dependence on non-farm sector is noticed more among OBC (62 percent), followed by General (20 percent), SC (5 percent) and ST (12 percent). High food security status

along with low levels of dependence on non-farm sector is noticed more among OBC (81 percent), followed by SC (8 percent), ST (8 percent) and General (3 percent).. High food security status along with high levels of dependence on non-farm sector is noticed more among OBC (58 percent), followed by General (20 percent), ST (16 percent) and SC (7 percent) (Table 6.3).

(b) Food Security, Non farm Sector and Religion

The relationship between food security status, non farm Sector and religion of the household is analyzed in Table 6.4. In Table 6.4, among the Hindu households 14 percent enjoyed low food security status along with low levels of dependence on non-farm sector, 13 percent enjoyed low food security status along with high levels of dependence on non-farm sector, 11 percent enjoyed high food security status along with low levels of dependence on non-farm sector, 63 percent enjoyed both high food security status along with high levels of dependence on non-farm sector.

Table 6.4
Food Security Status, Dependence on Non farm Sector and Religion of the Household:2014-15

		Religion of the household			Total
		Hindu	Muslim	Christian	
Level of Food Security Status and Dependence on Non farm Sector of the Household	(Low Food Security Status, Low Dependence on RNFS)	75 (100.0) [13.6]	0 (0.0) [0.0]	0 (0.0) [0.0]	75 (100.0) [12.5]
	(Low Food Security Status, High Dependence on RNFS)	72 91.1) [13.1]	7 8.9) [18.9]	0 0.0) [0.0]	79 100.0) [13.1]
	(High Food Security Status, Low Dependence on RNFS)	59 (93.7) 10.7]	0 (0.0) 0.0]	4 (6.3) 26.7]	63 (100.0) 10.5]
	(High Food Security Status, High Dependence on RNFS)	344 (89.4) [62.5]	30 (7.8) [81.1]	11 (2.9) [73.3]	385 (100.0) [64.0]
Total		550 (91.4) [100.0]	37 (6.1) [100.0]	15 (2.5) [100.0]	602 (100.0) [100.0]

Source: Primary Survey, 2014-15

Note: Figures in parenthesis () and [] represent the percentages of row and column total respectively.

Also, among the Muslim households 19 percent enjoyed low food security status along with high levels of dependence on non-farm sector and 81 percent enjoyed both high food security status along with high levels of dependence on non-farm sector. Also, among the Christian households 27 percent enjoyed high food security status along with low levels of dependence on non-farm sector, 73 percent enjoyed both high food security status along with high levels of dependence on non-farm sector (Table 6.4).

Low food security status along with low levels of dependence on non-farm sector is noticed among Hindus (100 percent). Low food security status along with high levels of dependence on non-farm sector is noticed more among Hindus followed by Muslims. High food security status along with low levels of dependence on non-farm sector is noticed more among Hindus followed by Christians. High food security status along with high levels of dependence on non-farm sector is noticed more among Hindus followed by Muslims and Christians (Table 6.4).

(c) Food Security, Non farm Sector and Household Size

The relationship between food security status, non farm Sector and household Size is analyzed in Table 6.5. From Table 6.6, when there are low food security status and low dependence on rural nonfarm, majority (62 percent) of total households have small family size. Along with low food security status, when the dependence on rural non farm sector increases, 49percent households are small sized and 46 percent are medium sized household and 4 percent are large sized household. Also when there is high food security status and low dependence on rural non farm sector, 37 percent households are small sized and 54 percent are medium sized household and 10 percent are large sized household. Also when there is high food security status and high dependence on rural non farm sector, 24 percent households are small sized and 64 percent are medium sized household and 12 percent are large sized household.

It is seen that among the households having small household size 23 percent enjoyed low food security status along with low levels of dependence on non-farm sector, 19 percent enjoyed low food security status along with high levels of dependence on

non-farm sector, 11 percent enjoyed high food security status along with low levels of dependence on non-farm sector, 45 percent enjoyed both high food security status along with high levels of dependence on non-farm sector. Also, among the households having medium household size 8 percent enjoyed low food security status along with low levels of dependence on non-farm sector, 11 percent enjoyed low food security status along with high levels of dependence on non-farm sector, 10 percent enjoyed high food security status along with low levels of dependence on non-farm sector, 71 percent enjoyed both high food security status along with high levels of dependence on non-farm sector (Table 6.5).

Table 6.5
Food Security Status, Dependence on Non farm Sector and Household Size
:2014-15

		Household Size			Total
		Small(1-3)	Medium(4-6)	Large(7&above)	
Level of Food Security Status and Dependence on Non farm Sector of the Household	(Low Food Security Status, Low Dependence on RNFS)	47 (62.7) [23.4]	27 (36.0) [7.9]	1 (1.3) [1.7]	75 (100.0) [12.5]
	(Low Food Security Status, High Dependence on RNFS)	39 (49.4) [19.4]	37 (46.8) [10.8]	3 (3.8) [5.2]	79 (100.0) [13.1]
	(High Food Security Status, Low Dependence on RNFS)	23 (36.5) [11.4]	34 (54.0) [9.9]	6 (9.5) [10.3]	63 (100.0) [10.5]
	(High Food Security Status, High Dependence on RNFS)	92 (23.9) [45.8]	245 (63.6) [71.4]	48 (12.5) [82.8]	385 (100.0) [64.0]
Total		201 (33.4) [100.0]	343 (57.0) [100.0]	58 (9.6) [100.0]	602 (100.0) [100.0]

Source: Primary Survey, 2014-15

Note: Figures in parenthesis () and [] represent the percentages of row and column total respectively.

Also, among the households having large household size 2 percent enjoyed low food security status along with low levels of dependence on non-farm sector, 5 percent enjoyed low food security status along with high levels of dependence on non-farm sector, 10 percent enjoyed high food security status along with low levels of dependence on non-farm sector, 83 percent enjoyed both high food security status along with high levels of dependence on non-farm sector (Table 6.5).

(d) Food Security, Non farm Sector and Educational Level

The relationship between food security status, non farm Sector and educational level of the household head is analyzed in the Table 6.6. From Table 6.6, when there is low food security status and low dependence on rural nonfarm 5 percent are illiterates 16 percent have education up to secondary level, 69 percent have education up to higher secondary level and 10 percent have education up to graduate level. Along with low food security status, when the dependence on rural non farm sector increases, 3 percent are illiterate 15 percent have education up to secondary level, 58 percent have education up to higher secondary level and 24 percent have education up to graduate level. Also when there is high food security status and low dependence on rural nonfarm sector, 5 percent are illiterate 24 percent have education up to secondary level, 58 percent have education up to higher secondary level and 13 percent have education up to graduate level.

Also when there is high food security status and high dependence on rural non farm sector , 1 percent are illiterate 11 percent have education up to secondary level, 40 percent have education up to higher secondary level and 46 percent have education up to graduate level and rest 1 percent have others degree.

It is seen that among the households having illiterate head 29 percent enjoyed low food security status along with low levels of dependence on non-farm sector, 14 percent enjoyed low food security status along with high levels of dependence on non-farm sector, 21 percent enjoyed high food security status along with low levels of dependence on non-farm sector, 36 percent enjoyed both high food security status along with high levels of dependence on non-farm sector (Table 6.6).

Also, it is seen that among the households having heads education up to secondary level 15 percent enjoyed low food security status along with low levels of dependence on non-farm sector, 15 percent enjoyed low food security status along with high levels of dependence on non-farm sector, 18 percent enjoyed high food security status along with low levels of dependence on non-farm sector, 53 percent enjoyed both high food security status along with high levels of dependence on non-farm sector.

Table 6.6
Food Security Status, Dependence on Non farm Sector and Educational level of
the Head of the Household:2014-15

		Educational level of the Head of the Household					Total
		Illiterate	Secondary	Higher Secondary	Graduate and above	Others	
Level of Food Security Status and Dependence on Non farm Sector of the Household	(Low Food Security Status, Low Dependence on RNFS)	4 (5.3) [28.6]	12 (16.0) [14.5]	52 (69.3) [18.0]	7 (9.3) [3.3]	0 (0.0) [0.0]	75 (100.0) [12.5]
	(Low Food Security Status, High Dependence on RNFS)	2 (2.5) [14.3]	12 (15.2) [14.5]	46 (58.2) [15.9]	19 (24.1) [8.9]	0 (0.0) [0.0]	79 (100.0) [13.1]
	(High Food Security Status, Low Dependence on RNFS)	3 (4.8) [21.4]	15 (23.8) [18.1]	37 (58.7) [12.8]	8 (12.7) [3.8]	0 (0.0) [0.0]	63 (100.0) [10.5]
	(High Food Security Status, High Dependence on RNFS)	5 (1.3) [35.7]	44 (11.4) [53.0]	154 (40.0) [53.3]	179 (46.5) [84.0]	3 (0.8) [100.0]	385 (100.0) [64.0]
	Total	14 (2.3) [100.0]	83 (13.8) [100.0]	289 (48.0) [100.0]	213 (35.4) [100.0]	3 (0.5) [100.0]	602 (100.0) [100.0]

Source: Primary Survey, 2014-15

Note: Figures in parenthesis () and [] represent the percentages of row and column total respectively.

Also, among the households having heads education up to higher secondary level 18 percent enjoyed low food security status along with low levels of dependence on non-farm sector, 16 percent enjoyed low food security status along with high levels of dependence on non-farm sector, 13 percent enjoyed high food security status along with low levels of dependence on non-farm sector, 53 percent enjoyed both high food security status along with high levels of dependence on non-farm sector. Also, among the households having heads education up to graduate level 3 percent enjoyed low food security status along with low levels of dependence on non-farm sector, 9 percent enjoyed low food security status along with high levels of dependence on non-farm sector, 4 percent enjoyed high food security status along with low levels of

dependence on non-farm sector, 84 percent enjoyed both high food security status along with high levels of dependence on non-farm sector (Table 6.6).

6.3.2 Food security, Non-farm sector and Economic Factors

In this section we analyze Food security, Non-farm sector and their relationship with some Economic factors such as per-capita monthly income, asset ownership and land ownership pattern of the household.

(a) Food Security, Non farm Sector and Per Capita Income

The relationship between food security status, non farm Sector and per capita income of the household is analyzed in Table 6.7. In Table 6.7, household having very low per capita monthly income 51 percent have low food security status along with low levels of dependence on non farm sector for livelihood, 42 percent have low food security status along with high levels of dependence on non farm sector for livelihood, and 4 percent have high food security status along with low levels of dependence on non farm sector for livelihood, and 4 percent have high food security status along with high levels of dependence on non farm sector for livelihood. In case of household having low per capita monthly income 8 percent have low food security status along with low levels of dependence on non farm sector for livelihood, 15 percent have low food security status along with high levels of dependence on non farm sector for livelihood, and 25 percent have high food security status along with low levels of dependence on non farm sector for livelihood, and 53 percent have high food security status along with high levels of dependence on non farm sector for livelihood.

In case of household having medium per capita monthly income 0.4 percent have low food security status along with high levels of dependence on non farm sector for livelihood, and 2 percent have high food security status along with low levels of dependence on non farm sector for livelihood, and 97 percent have high food security status along with high levels of dependence on non farm sector for livelihood. In case of household having high per capita monthly income 50 percent have high food

security status along with low levels of dependence on non farm sector for livelihood, and 50 percent have high food security status along with high levels of dependence on non farm sector for livelihood (Table 6.7).

Table 6.7
Food Security Status, Dependence on Non farm Sector and Per Capita Monthly Income of the Household:2014-15

		Monthly Income of the Household (in rupees)				Total
		Very Low (0-7500)	Low(7500-16667)	Medium (16667-83333)	High (83333 & above)	
Level of Food Security Status and Dependence on Non farm Sector of the Household	(Low Food Security Status, Low Dependence on RNFS)	58 (77.3) [51.3]	17 (22.7) [8.1]	0 (0.0) [0.0]	0 (0.0) [0.0]	75 (100.0) [12.5]
	(Low Food Security Status, High Dependence on RNFS)	47 (59.5) [41.6]	31 (39.2) [14.8]	1 (1.3) [0.4]	0 (0.0) [0.0]	79 (100.0) [13.1]
	(High Food Security Status, Low Dependence on RNFS)	4 (6.3) [3.5]	52 (82.5) [24.8]	6 (9.5) [2.2]	1 (1.6) [50.0]	63 (100.0) [10.5]
	(High Food Security Status, High Dependence on RNFS)	4 (1.0) [3.5]	110 (28.6) [52.4]	270 (70.1) [97.5]	1 (0.3) [50.0]	385 (100.0) [64.0]
Total		113 (18.8) [100.0]	210 (34.9) [100.0]	277 (46.0) [100.0]	2 (0.3) [100.0]	602 (100.0) [100.0]
Contingency Coefficient		.660				

Source: Primary Survey, 2014-15

Note: Figures in parenthesis () and [] represent the percentages of row and column total respectively.

When there is low food security status and low dependence on rural non farm sector majority of household (77 percent) have very low levels of income and 23 percent have low levels of income. Along with low food security status when the dependence on rural non farm sector increases, 60 percent household very low levels of income and 39 percent household have low levels of income. Also when there is high food security status and low dependence on rural non farm sector 11 percent household have medium to high levels of income. Also when there is high food security status

and high dependence on rural non farm sector 70 percent of the household have medium to high levels of income (Table 6.7).

Also the Pearson Chi square test between the grouping of rural households in Assam according to the dependence status on non farm sector for livelihood of the households and the per capita monthly income (PCMI) of the households suggest that there is association between the two types of grouping. However, to measure the strength of association contingency coefficient is calculated. It reveals that association is strong. So it can be inferred that with the increase in the per capita monthly income, dependence on non-farm sectors the household and the food security status of the households also gets enhanced.

(b) Food Security, Non farm Sector and Asset Ownership

The relationship between food security status, non farm Sector and asset ownership of the household is analyzed in the Table 6.8.

In Table 6.8, among households having very low asset ownership 51 percent have low food security status along with low levels of dependence on non farm sector for livelihood, 41 percent have low food security status along with high levels of dependence on non farm sector for livelihood, and 4 percent have high food security status along with low levels of dependence on non farm sector for livelihood, and 5 percent have high food security status along with high levels of dependence on non farm sector for livelihood.

In case of household having low asset ownership 8 percent have low food security status along with low levels of dependence on non farm sector for livelihood, 15 percent have low food security status along with high levels of dependence on non farm sector for livelihood, and 25 percent have high food security status along with low levels of dependence on non farm sector for livelihood, and 52 percent have high food security status along with high levels of dependence on non farm sector for livelihood. In case of household having medium asset ownership 3 percent have high food security status along with low levels of dependence on non farm sector for livelihood, and 97 percent have high food security status along with high levels of dependence on non farm sector for livelihood.

Table 6.8
Food Security Status, Dependence on Non farm Sector and Asset Ownership
Pattern of the Household: 2014-15

		Asset Ownership Pattern of the Household					Total
		Very Low(0.0-0.20)	Low(0.20-0.40)	Medium(0.40-0.60)	High(0.60-0.80)	Very High(0.80-1.00)	
Level of Food Security Status and Dependence on Non farm Sector of the Household	(Low Food Security Status, Low Dependence on RNFS)	58 (77.3) [50.4]	17 (22.7) [8.2]	0 (0.0) [0.0]	0 (0.0) [0.0]	0 (0.0) [0.0]	75 (100.0) [12.5]
	(Low Food Security Status, High Dependence on RNFS)	47 (59.5) [40.9]	31 (39.2) [15.0]	0 (0.0) [0.0]	1 (1.3) [1.9]	0 (0.0) [0.0]	79 (100.0) [13.1]
	(High Food Security Status, Low Dependence on RNFS)	4 (6.3) [3.5]	52 (82.5) [25.1]	6 (9.5) [2.9]	0 (0.0) [0.0]	1 (1.6) [6.2]	63 (100.0) [10.5]
	(High Food Security Status, High Dependence on RNFS)	6 (1.6) [5.2]	107 (27.8) [51.7]	204 (53.0) [97.1]	53 (13.8) [98.1]	15 (3.9) [93.8]	385 (100.0) [64.0]
	Total	115 (19.1) [100.0]	207 (34.4) [100.0]	210 (34.9) [100.0]	54 (9.0) [100.0]	16 (2.7) [100.0]	602 (100.0) [100.0]
Contingency Coefficient		0.656					

Source: Primary Survey, 2014-15

Note: Figures in parenthesis () and [] represent the percentages of row and column total respectively.

In case of household having high asset ownership 2 percent have low food security status along with high levels of dependence on non farm sector for livelihood, and 98 percent have high food security status along with high levels of dependence on non farm sector for livelihood. In case of household having very high asset ownership 6 percent have high food security status along with low levels of dependence on non farm sector for livelihood, and 94 percent have high food security status along with high levels of dependence on non farm sector for livelihood.

When there is low food security status and low dependence on rural non farm sector majority of household (77 percent) have very low levels of asset ownership and 23 percent have low levels of asset ownership. Along with low food security status when the dependence on rural

non farm sector increases, 60 percent household very low levels of asset ownership and 39 percent household have low levels of asset ownership. Also when there is high food security status and low dependence on rural non farm sector 11 percent household have medium to high levels of asset ownership. Also when there is high food security status and high dependence on rural non farm sector 76 percent of the household have medium to high levels of asset ownership.

Also the Pearson Chi square test between the grouping of rural households in Assam according to the food security status, dependence on non farm sector for livelihood of the households and asset ownership of the households suggest that there is association between the two types of grouping. However, to measure the strength of association contingency coefficient is calculated. It reveals that association is strong. So it can be inferred that with the increase in the asset ownership, dependence on non-farm sectors the household and the food security status of the households also gets enhanced.

(c) Food Security, Non farm Sector and Land Ownership

The relationship between food security status, non farm Sector and land ownership of the household is analyzed in Table 6.9. In Table 6.9, households having very low land ownership 1 percent have low food security status along with low levels of dependence on non farm sector for livelihood, 17 percent have low food security status along with high levels of dependence on non farm sector for livelihood, and 1 percent have high food security status along with low levels of dependence on non farm sector for livelihood, and 81 percent have high food security status along with high levels of dependence on non farm sector for livelihood. In case of household having low land ownership 50 percent have low food security status along with low levels of dependence on non farm sector for livelihood, and 50 percent have high food security status along with high levels of dependence on non farm sector for livelihood (Table 6.9).

In case of household having medium land ownership 37 percent have low food security status along with low levels of dependence on non farm sector for livelihood, 6 percent have low food security status along with high levels of dependence on non farm sector for livelihood, and 22 percent have high food security status along with

low levels of dependence on non farm sector for livelihood, and 33 percent have high food security status along with high levels of dependence on non farm sector for livelihood (Table 6.9).

Table 6.9
Food Security Status, Dependence on Non farm Sector and Landholding
Possessed by the Household :2014-15

		Landholding possessed by the Household					Total
		Landless	Marginal(1.25-2.5 acre)	Small(2.5-5 acre)	Medium(5-10 acre)	Large (10 acre & above)	
Level of Food Security Status and Dependence on Non farm Sector of the Household	(Low Food Security Status, Low Dependence on RNFS)	4 (5.3) [1.0]	2 (2.7) [50.0]	30 (40.0) [37.5]	39 (52.0) [44.8]	0 (0.0) [0.0]	75 (100.0) [12.5]
	(Low Food Security Status, High Dependence on RNFS)	72 (91.1) [17.3]	0 (0.0) [0.0]	5 (6.3) [6.2]	2 (2.5) [2.3]	0 (0.0) [0.0]	79 (100.0) [13.1]
	(High Food Security Status, Low Dependence on RNFS)	5 (7.9) [1.2]	0 (0.0) [0.0]	18 (28.6) [22.5]	28 (44.4) [32.2]	12 (19.0) [85.7]	63 (100.0) [10.5]
	(High Food Security Status, High Dependence on RNFS)	336 (87.3) [80.6]	2 (0.5) [50.0]	27 (7.0) [33.8]	18 (4.7) [20.7]	2 (0.5) [14.3]	385 (100.0) [64.0]
	Total	417 (69.3) [100.0]	4 (0.7) [100.0]	80 (13.3) [100.0]	87 (14.5) [100.0]	14 (2.3) [100.0]	602 (100.0) [100.0]
Contingency Coefficient		0.633					

Source: Primary Survey, 2014-15

Note: Figures in parenthesis () and [] represent the percentages of row and column total respectively.

In case of household having high land ownership 45 percent have low food security status along with low levels of dependence on non farm sector for livelihood, 2 percent have low food security status along with high levels of dependence on non farm sector for livelihood, and 32 percent have high food security status along with low levels of dependence on non farm sector for livelihood, and 20 percent have high food security status along with high levels of dependence on non farm sector for livelihood. In case of household having very high land ownership 85 percent have

high food security status along with low levels of dependence on non farm sector for livelihood, and 15 percent have high food security status along with high levels of dependence on non farm sector for livelihood (Table 6.9).

When there is low food security status and low dependence on rural nonfarm sector 3 percent of total household have marginal landholding and 5 percent of the total household has no land. Along with low food security status, when the dependence on rural non farm sector increases, 90 percent household has no land and 6 percent household have small landholding. Also when there is high food security status and low dependence on rural non farm sector 65 percent household have medium to large landholdings. Also when there is high food security status and high dependence on rural non farm sector 87 percent of the household have no landholding (Table 6.9). Also the Pearson Chi square test between the grouping of rural households in Assam according to the food security status, dependence status on non farm sector for livelihood of the households and asset ownership of the households suggest that there is association between the two types of grouping. However, to measure the strength of association contingency coefficient is calculated. It reveals that association is strong. So it can be inferred that with the increase in the land ownership, dependence on non-farm sectors the household and the food security status of the households also gets enhanced.

Testing of Hypothesis: Based on the analysis carried out in the thesis about the relationship between household food security status and significance of non-farm sector there occurs enough evidence for accepting the positive hypothesis (Hypothesis Number 2) and conclude that the opportunities of non-farm employment exert positive impact on the status of rural household's food security level in Assam.

Remarks

In this chapter an enquiry of the relationship between household food security status and significance of non-farm sector is made. In order to ascertain the relationship between household food security status and non-farm employment of rural households in Assam primarily a bi-variate correlation coefficient is obtained. For this purpose we have taken variables like percentage of food secure households in

a district to define household food security status of rural households and the percentage of rural non farm workers in a district as proxy variable for assessing the significance of non farm sector. In the district level correlation matrix, the percentage of food secure rural households in Assam is positively and significantly correlated with the percentage of rural workers engaged in the non farm sector.

However, the analysis based on secondary data although confirms about the relationship between the food security status and non-farm sector but for understanding the direction and magnitude of the relationship i.e. to identify the impacts of non-farm sector on the status of food security at the household level in rural areas of the state we fit an logistic model taking food security status of rural households as the dependent variable and significance of non-farm sector as one of the independent variable. An insight into results provided by the Binary Logistic Model is illustrated below.

The probability of a household being food secure increases as the households' dependency on the non-farm activities, when taken up as a primary occupation, increases at 1 percent level of significance. This suggests that the non farm sector exert positive and significant effect on the household food security status of the household. Asset possessed by the households raises the probability of a household being food secure at 1 percent level of significance. The result indicates that higher the value of assets, higher will be the food security status. Level of education attained by the head of the household raises the probability of a household being food secure at 5 percent level of significance. The religion of the household in cases when it belongs to Hindus raises the probability of a household being food secure at 5 percent level of significance. The accessibility to credit decreases the probability of a household being food secure at 5 percent level of significance. Social group when the household belongs to forward castes seems to exert positive impact on the probability of a household being food secure. Sex of the head in female headed households seems to decrease the probability of a household being food secure. The possession of the livestock seems to exert a positive impact on the food security status. Government programmes' seems to have negative impact on the food security status of the households. Similarly the size of Land owned significantly increases the probability

of a household being food secure. Lastly, the constant term exert negative pressure on the food security status. The constant term captures the effect of structural factors effect which is not included in the model. Various measures of goodness of fit reflect that model is a good fit.