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# Access to Rural Non-Farm Economic Activities: Results from a Field Study in Sri Lanka

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## INTRODUCTION

Data from various sources indicate that about 25 per cent of population in Sri Lanka lives below the national poverty line. The majority of them live in rural areas and depends on agricultural activities. However, recent evidence from Sri Lanka, India and other developing countries illustrates that the share of household income from rural non-farm activities is growing. Recent studies (Barrett *et al.*, 2001; Lanjouw and Shariff, 1999; Reardon *et al.*, 2001; Seddon and Subedi, 2000; Senanayake *et al.*, 2003) suggest that non-farm sources account for 30-40 per cent of the average rural household income in South Asia and 57 per cent in Sri Lanka. According to Lanjouw and Shariff (1999), in India not only is the non-farm sector an important source of income to the rural households, but different types of activities appear to be of different relevance to the poor. Such trends and patterns of diversification promote the modernisation of the structure of rural economies.

The problem is, however, how governments should respond to these changes and mediate to support the growth of the sectors such as non-farm activities in rural areas. Answering these questions needs greater understanding of the determinants of access by rural households (HHs) and individuals to rural non-farm economic activities (RNFEAs) and identification of the dynamics of diversification of a rural non-farm economy. Hence, the major research question that this paper addresses is: what are the key factors determining the access by households and individuals in rural areas (such as the Moneragala district in Sri Lanka) to non-farm income generation activities? The ultimate objective of this paper is to explore the kind of policies that can promote RNFEAs successfully in rural areas.

### *Why are Rural Non-farm Economic Activities Important?*

According to Berdegue *et al.* (2000), RNFEAs are a part of the solution to at least three major problems in rural areas in developing countries; namely, modernisation of the farm sector, transformation of the rural environment, and alleviation of poverty. However, the three major problems are interrelated.

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When one takes into consideration the modernisation of farming sector, the more modern and competitive the farm sector, the larger the contribution of secondary and tertiary activities to rural domestic product. Thus it helps to reduce poverty in rural areas.

Modern farming sector needs links with agro-industry in order to successfully meet the demanding quality and standards of international markets. It also requires new ways of thinking and access to management, administrative and advisory services in order to meet the new challenges in the world today.

The development of RNFEA helps to modernise the rural environment, through the development of industry and services. This process is a part of a more general process of urbanisation of rural areas, which also directly affects the cultural, demographic and other social characteristics. The process is also characterised by the growth of small towns and cities and through stronger links between them and their rural neighbourhood, via trade, and a wide range of services oriented to production, consumption and recreational needs. They are ultimately rural spaces that offer the residents a wide range of opportunities, including mainly better economic opportunities, which definitely help to narrow down the quality of life gap between the rural and urban areas.

Finally, the development of RNFEAs helps to solve one of the major problems in rural areas, which is poverty. Different studies in different countries particularly in South Asia, Latin America and the Caribbean have confirmed that poor rural households resort to non-farm activities to increase their total income. Those studies have confirmed that the existence of assets in poor rural households related to non-farm activities strengthens the multiplier effects of farm activities, and vice versa. As Reardon *et al.* (2001) concluded, these complex relationships are essential in order for the rural poor to survive. The evidence shows that rural non-farm income is a significant factor in rural household incomes and, hence, in food security, since it allows greater access to food.

*Determinants of Access by Rural Households (HHs) to RNFEAs*

Why do rural households decide to take part in RNFEAs? According to Ho (1986), the decision of the rural households to participate in RNFEAs is determined by a combination of push and pull factors. The push factors highlight the limited capacity of agriculture to absorb labour, specially given limited availability of land. The push factors basically include an inadequate farm output to sustain the livelihoods, the risks of farming, and also an absence or failure of farm input markets or input credit markets. The pull factors, on the other hand, are related to the availability of attractive and more profitable opportunities of working in the non-farm sector. Ho (1986) further argues that the relative importance of these factors depends partly on the stage of economic development. It may also vary from country to country and among regions in a given country.

In a broader level, Reardon *et al.* (1998, 2001) reveals that the decision of the rural households to take part in RNFEAs depends on two factors, namely, (1) the incentives structure within which they carry out the farming activities; and (2) the capacity of the households to undertake the RNFEAs. The capacity of the households is determined by the factors including the level of education, income, credit, infrastructure facilities, access to assets including land, and other demographic characteristics.

Therefore, in general, a rural household's decision to take part in RNFEAs depends on the level of household income, education, gender, access to assets (e.g., land size), access to infrastructure, and the dynamic regional economy (Ellis, 1998, 1999; Escobal, 2001; Reardon *et al.,* 1998, 2001; Swift, 1998 and Velazco, 2002).

Recent studies for India, Latin America and the Caribbean countries have illustrated that the level of income, age, education, land size and access to infrastructure are all significant factors of RNFEAs (Elbers and Lanjouw, 2001; Escobal, 2001; Fisher *et al.,* 1997; Lanjouw and Shariff, 1999). For instance, households with high agricultural income tend to have higher level of non-farm income. However, while wealthier households engage in more productive and profitable jobs because they have various types of assets including working capital, labour skills and education, social contacts, etc., the poor households are gaining access to non-farm *'refuge'* jobs, which are relatively less profitable and productive (Berdegue *et al.,* 2000). Nevertheless, even access to refuge non-farm jobs also allows the poor households to increase their income. Total income and the share of income derived from RNFEAs are often positively correlated. Increasing the income of middle-income rural households has the greatest effect on the non-farm sector through consumption linkages since the better-off are more likely to spend additional income on modern production inputs and consumer items whilst the lowest income segments will spend such additional income on food.

Human capital including education levels, health and social networks is another important determinant of access to RNFEAs. In particular, education is one of the more robust stylised facts affecting the access to RNFEAs. A number of recent studies (Islam, 1997; Lanjouw and Shariff, 1999; Vijverberg, 1995) have illustrated that the level of education is a very important factor in determining the access to RNFEAs. Households with higher levels of education gain access to the better paying RNFEAs, while those who have low educational levels have access only to low paid non-farm refuge jobs. The contribution of education in the development of non-farm sector tends to be greater than what is found for agriculture.

As noted above, recent studies also illustrate that demographic characteristics such as age and gender are powerful determining factors of access by rural households to RNFEAs. Gender has a significant effect in determining access to RNFEAs (Simon, 1999; Swift, 1998). Though women have greater access to low profitable and low paid jobs, men tend to have access to higher paid and profitable jobs. It is also important to notice that there are very significant links between gender and other

factors that always help to determine access to RNFEAs (Berdegue *et al.*, 2000). Men and women have different assets, access to resources, and opportunities. For example, men have better access to land, migration experiences, vocational training, etc. Age reflects generation pattern. In this respect, young people tend to participate more in RNFEAs as they could equip themselves with education, new technology and so on.

Access to lands and infrastructure facilities such as electricity, water, roads, etc., are also widely recognised as very important determinants of access to RNFEAs. Households with more land have higher levels of non-farm income while households without land tend to have access to low paid refuge jobs. However, households without land often depend upon such RNFEAs though they earn lower levels of income, mainly to sustain their livelihoods. Also the infrastructure facilities definitely help the rural households to have a greater access to RNFEAs.

## METHODOLOGY

This study employs household level data generated by a survey conducted in the Moneragala district in Sri Lanka. A sample of 200 households (HHs) from six villages representing three different types of irrigation facilities, namely, major, minor and rainfed was selected for the survey. Above 80 per cent of the population in this district is classified as rural. Some general information of the surveyed households is summarised in Table 1.

Participation of households in RNFEAs is analysed by estimating a logit model where the dependent variable indicates binominal: whether the HH participates in RNFEAs or not. As noted above, the model includes the HH level variables such as the levels of education, household income, gender, access to assets, access to infrastructure, etc. Accordingly, the model can be formulated in the following manner.

$$RNFEA_j = \alpha_0 + \sum_{i}^{3} \beta_i DCHHH_{ij} + \sum_{i}^{6} \gamma_i FC_{ij} + \sum_{i}^{2} \varphi_i HC_{ij} + \sum_{i}^{2} \tau_i TI_{ij} + \sum_{i}^{6} \varphi_i ALIF_{ij} + e_i$$

$$(j = 1,2,3,\ldots,200)$$

Dependent variable: As already noted, the dependent variable for this study is binominal: whether the household participates in RNFEAs or not.

Independent variables: As in the previous studies, the independent variables were grouped into five categories:

(1) Demographic characteristics of household head (DCHHH): age (years log form), gender (male = 1, female = 0) and level of education,

(2) Family composition (FC): household size, share of adult male, share of adult female and share of children and elderly, and household total income (log form),

(3) Human capital (HC): Level of education of family members, whether a family member temporarily resides away from home (Yes = 1, No = 0);

(4) Types of irrigation (TI): major, minor, and rainfed;

(5) Access to lands and infrastructure facilities (ALIF): Distance to the closest main road (1= less than 1 km; 0 = more than 1km), access to roads (Yes = 1, No = 0), access to water (Yes = 1, No = 0), access to electricity (Yes = 1, No = 0), house condition (Good = 1, Poor = 0), amount of cultivated per capita land.

TABLE 1. BASIC CHARACTERISTICS OF THE SAMPLE

| (1) | Major (2) | Minor (3) | Rainfed (4) | Total (5) |
|---|---|---|---|---|
| 1. Sample size | 65 | 69 | 66 | 200 |
| | (32.5) | (34.5) | (33.0) | (100) |
| 2. Average household size (Number of members) | 4.49 | 4.78 | 4.61 | 4.43 |
| 3.1 Average age of household heads (years) | 49.63 | 47.70 | 47.98 | 48.42 |
| 3.2 Age Distribution of household heads (years) | | | | |
| 21 – 30 | 6.15 | 10.14 | - | 5.50 |
| 31 – 40 | 15.38 | 15.94 | 31.82 | 21.00 |
| 41 – 50 | 30.77 | 37.68 | 39.39 | 36.00 |
| 51 – 60 | 29.23 | 21.74 | 13.64 | 21.50 |
| More than 60 | 18.46 | 14.49 | 15.15 | 16.00 |
| 4. Gender distribution (per cent) | | | | |
| Male | 46.39 | 50.93 | 54.46 | 50.65 |
| Female | 53.31 | 49.07 | 45.54 | 49.35 |
| 5. Household owners levels of education (per cent) | | | | |
| No education | 7.69 | 8.70 | 18.18 | 11.50 |
| Less than O/L | 61.54 | 73.92 | 71.21 | 69.00 |
| O/L passed | 16.92 | 14.49 | 10.61 | 14.00 |
| A/L passed | 9.23 | 1.45 | 0.00 | 3.50 |
| Degrees and above | 3.08 | 0.00 | 0.00 | 1.00 |
| Vocational training | 1.54 | 1.45 | 0.00 | 0.50 |
| 6. Household owners occupation (per cent) | | | | |
| Housewife | 6.15 | 8.70 | 1.52 | 5.50 |
| Farming | 72.31 | 69.57 | 84.85 | 75.50 |
| Semi-government jobs | 10.77 | 8.70 | 4.55 | 8.00 |
| Private sector jobs | 4.62 | 7.25 | - | 4.00 |
| Self-employment (non-farm) | 1.54 | 4.35 | 1.52 | 2.50 |
| Others | 4.62 | 1.45 | 7.58 | 4.50 |

Figures in parentheses indicate percentage to the total.

*Note:* O/L: Ordinary Level Examination, conducted at grade 10; A/L: Advanced Level examination, conducted at grade 12. Those who pass the A/L can apply in local universities.

## RESULTS FROM A FIELD STUDY IN SRI LANKA

Some of the summarised information related to the production characteristics and net income structure of the surveyed households is presented in Table 2.

As given in Table 2, the average land size of the rural household is below three acres. It reflects that the rural agricultural sector in Sri Lanka is characterised by small lands. However, the size of cultivated or operated lands is bigger than that of the owned lands, which implies that the rural farmers rent in lands and/or encroached

government lands for cultivation. For example, the average owned land size in major irrigation areas is 2.59 acres while their operated land size is about 3.65 acres. Highland (unirrigated) consists the major portion of the cultivated land and most of these are used for shifting (*Chena*) cultivation.

TABLE 2. PRODUCTION CHARACTERISTICS AND INCOME STRUCTURE OF THE SURVEYED HOUSEHOLDS

| (1) | Major (2) | Minor (3) | Rainfed (4) | Total (5) |
|---|---|---|---|---|
| 1. Land distribution (average acres) | | | | |
| Owned lands | 2.59 | 2.51 | 3.05 | 2.72 |
| Cultivated lands | 3.65 | 3.06 | 4.04 | 3.58 |
| Paddy lands | 0.72 | 0.83 | 0.36 | 0.64 |
| High lands | 2.97 | 2.36 | 3.88 | 3.06 |
| 2. Earning from farm activities (per cent) | 55.12 | 48.06 | 65.35 | 54.73 |
| From major crops | 7.37 | 5.86 | 18.97 | 9.28 |
| From minor crops | 1.83 | 1.91 | 6.65 | 2.88 |
| Other (unclassified) activities* | 45.75 | 39.25 | 38.85 | 41.93 |
| Livestock | 0.18 | 1.04 | 0.89 | 0.64 |
| Earning from non-farm activities | 41.75 | 47.78 | 28.56 | 41.14 |
| Income from relatives living away from home | 3.13 | 4.15 | 6.08 | 4.13 |
| 3. Total household income | | | | |
| Net cash income (average Rs.) | 1,86,152 | 1,50,111 | 91,749 | 1,42,565 |
| Net income including consumption (Average) | 1,93,318 | 1,60,541 | 1,00,058 | 1,51,234 |

*Note:* *The other (unclassified) activities mainly include casual works in farm sector, and renting out lands and tractors for farm activities.

In spite of smaller family farms in terms of the land size, the main source of income for rural household is farm activities. Overall, around 55 per cent of the household rural household incomes can be attributed to farm activities, while around 41 per cent of the incomes comes from non-farm sources (Table 2). The pattern of the non-farm incomes varies across the areas, i.e., while 48 per cent of rural household incomes in minor irrigation area can be attributed to non-farm activities, the figure for the rainfed area is nearly 29 per cent. Table 2 further shows that only 12.16 per cent of the total income is contributed by the crop sector, while 41.93 per cent of the total income is derived from unclassified (other) activities in the farm sector. These unclassified activities mainly include casual work in farm sector, and renting out of lands, buffaloes and tractors for farm activities.

Not surprisingly, government subsides including '*Samurdhi*'[1] are the main source of non-farm income for rural families. Income received from Samurdhi alone accounts nearly 25 per cent while, as the second source of non-farm income, around 20 per cent of the non-farm income can be attributed to non-farm self employment. The other important non-farm income sources are public sector salaries, wages from casual work, and money received from relatives who are temporarily residing away from their families (see Table 2). Income from non-farm self-employment constitutes the majority of non-farm income of the families in minor irrigation areas. Above 23

per cent of the non-farm income of the families in the minor areas can be attributed to non-farm self-employment. The share of government subsidies in total non-farm incomes is the highest in rainfed areas. Nevertheless, the government subsidies such as Samurdhi allowance and remittances from relatives living away from homes are not included in our regression model, because these cannot be taken as representing participation in RNFEAs.

Though the overall model is statistically significant (-2 log-likelihood = 97.92 and R square = 0.71), only a few individual coefficients are statistically significant. The estimated regression results are presented in Table 3. According to the estimated logit model, the following observations can be highlighted.

TABLE 3. ESTIMATED LOGIT REGRESSION RESULTS: PARTICIPATION IN NON-FARM ECONOMIC ACTIVITIES

*(Dependent variable: 1 = if household participates in non-farm economic activities)*

| Variable (1) | B (2) | S.E. (3) | p-value (4) |
|---|---|---|---|
| Irrigation type | | | 0.477 |
| Major irrigation area | 0.986 | 0.923 | 0.286 |
| Minor irrigation area | 0.673 | 0.683 | 0.324 |
| Gender (1= male, 0 = female) | -1.815 | 1.191 | 0.128 |
| Levels of education of household head | | | 0.058 |
| Levels of education of household head (1 = O/L and above; 0 = otherwise) | 1.78*** | 0.951 | 0.061 |
| Levels of education of household head (1 = formal education but less than O/L; 0 = otherwise) | 0.302 | 0.883 | 0.732 |
| Levels of education of household members (1= O/L and above, 0 = less than O/L) | 3.114* | 0.838 | 0.000 |
| Whether a family member temporarily resides away from home | 1.874** | 0.846 | 0.027 |
| Amount of cultivated per capita land | -0.774*** | 0.443 | 0.081 |
| Household access to water (1= Yes; 0 = No) | 0.946 | 0.748 | 0.206 |
| Household access to electricity (1= Yes; 0 = No) | -0.425 | 0.735 | 0.563 |
| Access to roads | 0.245 | 0.594 | 0.681 |
| Age of household head (years, Log) | -1.854 | 1.768 | 0.294 |
| Household size (number of family members) | -0.198 | 0.227 | 0.382 |
| House condition (1 = good- wall and roofs; 0 = otherwise) | -0.965 | 0.702 | 0.17 |
| Distance to the closest main road (1= less than 1 km; 0 = more than 1km) | 1.416*** | 0.81 | 0.081 |
| Share of adult male | -5.41 | 5.442 | 0.32 |
| Share of adult female | -2.777 | 5.652 | 0.623 |
| Share of elderly | -4.769 | 5.465 | 0.383 |
| Share of children | -5.032 | 5.005 | 0.315 |
| Household total income (Log) | 3.282* | 0.607 | 0.00 |
| Constant | -20.168** | 9.307 | 0.03 |

*Note* * p-value < 1 per cent; ** p-value < 5 per cent; *** p-value < 10 per cent.
-2 log likelihood = 97.9; Nagelkerke R square = 0.71.

Most importantly, human capital such as education and outside exposure (i.e., a part of social networks) play a very significant role in the rural household decision to take part in RNFEAs. These results are consistent with other studies in African and South Asian countries. According to these results household heads who have a relatively higher education level are more likely to participate in non-farm income activities. In addition, the educational levels of the other family members also have a positive impact on participation in non-farm activities. The study further identifies that the outside exposure of family members is an important determinant for the rural household decision to participate in non-farm income activities.

Land ownership is also a significant factor of household participation in RNFEAs. This study employs the size of per capita cultivatable land as an independent variable, and finds that it has a negative significant influence on household participation in RNFEAs (see Table 3). The major reason for the negative influence would be that the households often employ family labour for farming and, as a result, there would be no time for non-farming activities. Accordingly, if the size of per capita land of households is smaller, the probability of the House holds participating in RNFEAs is higher. However, previous studies in Africa and South Asia revealed that the total land size of a household has a positive impact on participating in RNFEAs because households with availability of more cultivatable lands are more likely to earn higher incomes from farming and hence have a possibility to invest in other economic activities and on family education and health.

As expected, the total household income and the share of non-farm income are positively correlated ($r_{\text{total income, non-farm income}} = 0.60$; p-value $< 0.01$). Moreover, according to the results of the estimated logit model (Table 3), a household having higher income is likely to participate in RNFEAs. However, poor households engage in temporary and casual non-farm wage earning jobs, rural wealthier households are gaining access to more productive and profitable non-farm jobs such as public and private sector jobs, and non-farm self-employment activities. The richer groups also earn more income from those non-farm income activities, while the poor can earn lower income from their non-farm income sources. Not only is the non-farm sector an important source of income to rural households, but, as discussed above, different types of activities also appear to be of differing relevance to the rural poor.

Previous studies in different countries indicated that access to infrastructure is another important determinant of participation in RNFEAs. This study found that House holds living closer to main roads are more likely to participate in RNFEAs. The variable is statistically significant and positive. However, this study is unable to recognise the availability of infrastructure facilities such as piped water and electricity as significant variables because in general, lack of access to infrastructure such as roads, markets, telecommunication, hospital and banking services in the surveyed areas is a major problem. Lack of infrastructure facilities is always problematic for participating in RNFEAs. However, comparatively, the study found

that the households in major irrigation areas, which relatively have greater access to infrastructure facilities, are more likely to engage in RNFEAs.

Family composition such as household size, share of adult male, share of adult female and share of children and elderly theoretically affect household decisions to participate in RNFEAs, but the results of the estimated logit model do not indicate any significant impact of these factors on decisions to take part in RNFEAs. Previous studies in different countries indicate that larger household have higher probability to participate in RNFEAs. It is also found that households with more adult males have a greater likelihood of participating in RNFEAs while those with more dependents, i.e., children and elderly, are less likely to be engaged in non-farm activities. One reason why these family composition variables do not have significant impact on the decision to participate in RNFEAs, could well be that these rural households have very high dependency ratios, i.e., these households have more dependents.

## CONCLUSION AND POLICY RECOMMENDATIONS

The results of the study indicate that RNFEAs contribute to rural household incomes and also play an important role in increasing rural employment though the poorest segments have access only to low paid and low profitable refuge jobs.

There are several factors that play an important role either directly or indirectly in determining participation in RNFEAs. Among them, education and infrastructure facilities are widely recognised as very important determinants of access to non-farm income generation activities in the rural areas. The other important factors include household composition, access to credit, social networks, and institutional set-up.

In a broader level, the study recommends that government should get involved in three major areas of development at regional level in order to stimulate RNFEAs: (1) investment in infrastructure such as roads, electricity, telecommunication, (2) investments in education including vocational training and new technology, and health, and (3) activation of micro- and small- credit. These are the key areas for the development of non-farm income generation activities in rural areas. However, more specifically policies and programmes can be designed to develop 'industrial clusters' in the rural areas because one of the key areas of RNFEAs is the development of self-employment, micro and small-scale enterprises

Local government, in particular, can also play an important role in promoting RNFEAs. Local governments could participate in labour training, as a part of the educational system, in public infrastructure works (electricity, water and tele-communication), in providing licences and registration for the establishment of non-farm rural-based enterprises, in providing technical assistance, and in the establishment of rural micro and small lending schemes, particularly small-group lending. The parties involved in micro and small lending programmes in rural areas should also look into the ways in which the informal sources of finance could be effectively combined with the formal sources such as banks.

The results of the study further highlighted that education levels are very important in determining the type of RNFEA for individuals, as well as their earnings. Education is more important for employment in the non-farm sector than in agriculture. Therefore, efforts to improve education levels in rural areas are necessary to promote employment into higher income and non-farm occupations. Action should be taken particularly to establish and strengthen facilities, service centres and institutions at local levels to provide inputs, credit, vocational education and training, information and marketing services.

Recently the greatest amount of attention by researchers studying on non-farm sector has been devoted to assess the strength of the numerous linkages between the non-farm sector and agriculture. The linkages suggest an important policy direction for the policy makers. While policies aimed at the rural non-farm sector should not be made without consideration of their impact on agriculture, nor should agricultural policies be made in isolation. Therefore, policy makers and planners should not see rural development policy as a choice between farm and non-farm investment: both sectors feed from each other; and have very strong links. In terms of its ability to absorb workers, previous studies suggest that farming, however, plays a much smaller role today than in the past decades. In addition, there is less willingness of the young and educated people to engage in farming. Nevertheless, one cannot forget farming sector because of its ability to provide basic conditions for economic growth. In this respect, new investments have to be encouraged for introduction of modern technology to the faming sector. It helps to absorb young and educated people and to increase productivity.

To conclude, this study has identified certain factors that could promote the development of RNFEAs. These factors mainly include education and basic infrastructure which have a high potential for a favourable impact on the development of RNFEAs. There is evidence that young and educated rural people are more likely to engage in non-farm income generation activities. Government policies should, therefore be directed at development of human capital through education and training, development of infrastructure facilities in rural areas, and development of credit, saving and business service institutions in those areas.

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NOTE

1. *Samurdhi* is the major poverty alleviation programme of the Government of Sri Lanka, which has been in operation since 1995, providing cash grants (a monthly relief allowance) to more than 2 million families annually. Different amount of cash grants are provided to the poor families, depending on the size of the families and the depth of poverty. According to Central Bank of Sri Lanka Annual Report (2002), the main objective of the *Samurdhi* programme is to improve the living standards of the poor with direct assistance to vulnerable groups and to assist in various other programmes such as small scale infrastructure development, training and financial and social security to raise the income levels of the poor.

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