Determinants of Rural Household Income Diversification in Senegal and Kenya

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Abstract

This paper investigates the determinants of income diversification using data on rural farm households from two Sub-Saharan African countries; Senegal and Kenya. Data were analyzed using regression techniques. The results confirm that factors linked to education, agricultural potential and market access was important in determining the level of income diversification. Specifically, the analysis reveals that completing secondary or university education, access to farm capital and access to transport, access to markets for farm products, access to mutual or unpaid labor, access to migration opportunities and farm characteristics such as the farm size and irrigated farm area were the key factors in determining the level of income diversification. In particular, access to farm capital such as animal ploughs and irrigation were associated with increased participation in farm activities.

Key words: income diversification, regression analysis, Senegal, Kenya

Introduction

Agriculture is the predominant activity for most rural households in Sub-Saharan Africa (SSA), and it offers a strong option for spurring growth, overcoming poverty, and enhancing food security as stressed by the *World Development Report 2008*. This sector in SSA is mainly based on smallholder farms and contributes about 29% to GDP and employs up to 65% of the labor force (World Bank, 2007). However, recent studies examining agricultural dynamism in Africa find that only a small proportion of farms exhibit any dynamism in terms of intensification, extensification or expansion; with almost half of all surveyed farms stagnated (Djurfeldt et al., 2008). They find that the agricultural sector is characterized by decreasing farm sizes, low levels of output per farm, low productivity, a high degree of subsistence farming, with increases in production being driven mainly by area and not yield growth (Jirström et al., 2011).

In addition, demographic pressures and the resulting land constraints; the lack of capital related to poverty, and of missing markets and insufficient public goods are also key constraints (Barrett, Reardon and Webb, 2001). Other constraints to smallholder agriculture in SSA are linked to structural adjustment and market liberalization (Bryceson 2002; Ellis 2005), and the globalization of competition which have led to restructuring of agri-food markets (Reardon and Timmer, 2005), and growing differentiation between production and marketing structures (Losch et al. 2011). These structural shifts in which global marketing systems are transforming from commodity to product markets have opened new market opportunities for smallholder farmers, especially through production of nontraditional export crops and contract farming with agro-industry (Reardon and Timmer, 2005). However, it is likely that many smallholders who are unable to take advantage of these opportunities because of limited assets may be marginalized (Hazell et al. 2007; Barrett and Mutambatsere 2005).

It has been the conventional way of thinking for several years that increasing output and incomes from agriculture would be the catalyst for growth in other non-agricultural sectors (Ellis, 1999; Ellis and Biggs, 2001). However in the context of the above constraints, some sceptic authors argue that smallholder agriculture in SSA cannot replicate the Asian green revolution experience of the 1970s, nor can it be the sole engine for rural growth, employment and poverty reduction (Ellis, 2005). Therefore, it is argued that to ensure alternative sources of livelihood for the rural

poor, activities in the non-agricultural sector need to be enhanced; since most rural non-farm activity tends to be linked directly or indirectly to local agriculture or small towns (World Bank 2007; Reardon 1997; Ellis and Biggs 2001; Ellis 1999). Accordingly, the *World Development Report 2008* suggests pathways out of rural poverty besides agricultural entrepreneurship to include the rural labor market, the diversification of activities and migration (World Bank, 2007).

Diversification refers to the expansion of the range of rural activities outside the farm and is seen as a dynamic adaptation process created through pressures and opportunities (Ellis, 2000). The farm household expands its activities in order to increase farm income or to reduce income variability by exploiting new or existing market or non-market opportunities, including waged employment in the local nonfarm sector and the exploitation of natural resources (FAO and World Bank, 2001). Diversification may occur as a deliberate household strategy or as an involuntary response to crisis; and can be used both as a safety net for the rural poor or as a means of accumulation for the rural rich (Ellis, 1998).

Recent studies in SSA indicate that rural households are increasingly diversifying their income sources by combining farm and non-farm activities to sustain their livelihoods (e.g. Losch et al. 2011; Winters et al. 2010; Ellis 2005; De Janvry et al. 2002; Barett et al. 2001). That asset, activity and income diversification characterize the livelihood strategies of rural households in rural Africa (Barrett, Reardon and Webb, 2001). Incomes from non-farm sources have grown in importance and account for between 35–50% of rural household incomes in SSA (Haggblade *et al*. 2010; Reardon 1997), with reliance on non-farm income sources higher in some areas (e.g. as high as 80–90% in southern Africa) (Ellis, 1999). But the common pattern is for such activities to be prevalent in areas with good agricultural potential, good market access, close to urban areas and those with better infrastructure (Reardon 1997; Losch et al. 2011). This paper aims to test for the significance of some of these factors in determining income diversification using data from

rural farm households in two SSA countries (Senegal and Kenya). These rural households have

been found to display high levels of involvement in non-farm activities (Losch et al., 2011).

The components of rural household income can be classified using income from productive assets (earned income) (Barrett, Reardon and Webb, 2001). The authors specify a three-way classification by sector, by function or by space. Accordingly, by sector; *farm* (agricultural) or *non-farm* (non-agricultural) assignment concerns the nature of the product and the types of factors used in the production process, irrespective of the location, scale, technology or returns from the activity. *Farm income* is derived from the production or gathering of unprocessed crops or livestock or forest or fish products from natural resources and *non-farm income* is derived from all other sources of income, including processing, transport or trading of unprocessed agricultural, forest and fish products). While by function, activities in the rural labor market can be classified into *wage employment* or *self-employment*. With wage employment, people sell their labor services to an employer in exchange for a wage or salary, while those who are self-employed sell their labor services to themselves (Fields, 2010). However, for some rural activities, the distinction between the two may be difficult to make (Lay et al. 2008). On the other hand, the spatial distinction depends on where the activity takes place either *local (at home) or migratory (distant away-from-home).*

Two set of factors induce rural households to diversify their activities: *Push factors* and *Pull factors. Push factors* such as "risk and seasonality" are the two common reasons for rural farm households diversifying their activities outside agriculture as a means of dealing with agricultural risks and to smooth income and consumption (Ellis 2005; Barett, Reardon and Webb, 2001). In an agricultural environment full of uncertainty, rural households aim at lower covariate risk between different household activities to smooth consumption (Lay et al. 2008; Bryceson, 1999). However, in developing countries, many farm activities such as own farm production and farm

wage labor exhibit high risk correlations between alternative income generating activities, while nonfarm incomes in contrast can result in lower risk correlations between income generating activities (Ellis, 1998). In addition, diversification is used as a risk management strategy mainly due to lack of social insurance or safety nets from government transfers, non-government agencies, community or family members. Rural African households therefore substitute for social insurance by self-insuring through diversified income sources (Barrett, Reardon and Webb, 2001).

As regards seasonality; in the dry season, especially in semi-arid regions some rural households obtain remittances from seasonal migrants, incomes from local nonfarm activities and, cash from the sale of crop and livestock products (Reardon 1997; Ellis 1998). While some farm households can also allocate part of their labor during the rainy season where nonfarm labor pays better than farming and where farm households can count on food markets to buy food (Reardon 1997). Andersson (2012a) finds that in Kenya, the lack of nonfarm sources of income and the variation over time in consumption burdens made poorer households less food secure and more vulnerable to the seasonal changes in agricultural production and food prices, while some wealthier farm households that could access nonfarm incomes were able to profit from the seasonality through trade-based or barter exchanges of produce in agricultural markets.

Pull factors on the other hand, are opportunities for diversification of income sources linked to commercial agriculture, improved infrastructure, proximity to an urban area, better market access, etc. There is widespread agreement that smallholder farmers require improved access to agricultural markets to raise their farm productivity and living standards (Chamberlin and Jayne, 2012). Some studies find that market access is a key determinant of diversification of activities (Winters et al. 2009; Barrett et al. 2001). Those with access to adequate assets and infrastructure and faced with appropriate incentives engage actively in markets, while those who lack one or more of those three essential ingredients largely do not (Barrett, 2008). Proximity to markets provides opportunities to sell output, and purchase inputs, from self-employment activities as well as opportunities for non-farm wage employment (Winters et al., 2009). Barrett et al. (2001) argue that farmers with superior access to urban markets and those involved in contract farming

schemes with processing plants or exporters are better able to overcome factor market constraints to produce for market.

Opportunities available for farm households to engage into higher nonfarm income activities that can lead to accumulation seem to be more available in areas with better endowments in terms of agricultural potential, market access, proximity to urban centres and better infrastructure such as roads (Losch et al., 2011). Better infrastructure is linked to higher opportunities for farm and nonfarm employment (Escobal, 2001) and to increased agricultural production (Djurfeldt et al., 2008).

According to Ellis (1998), in practice the causes and consequences of diversification are differentiated by location, assets, income, opportunity and social relations. Social factors such as gender, social positions, networks, associations are also important (Ellis, 1998). For instance, poor uneducated women who lack social ties, may not enjoy the same access to remunerative opportunities like educated males with strong social networks in the community (Barrett, Reardon and Webb, 2001). Rapid population growth and the related pressure on the natural resource base, in particular land, have also been identified as major causes for the rise of non-farm activities in SSA (Lay et al., 2008; Ellis 2005). Lay et al. (2008) find that declining farm sizes and related declines in soil fertility force land poor households to diversify into nonfarm activities to ensure survival. Other drivers include supply factors, such as technological advances and the expansion of educational attainment (Reardon, 1997). Educational attainment is one of the most important determinants of nonfarm incomes, especially from high return salaried and skilled employment. Skills and education act as entry barriers to high return nonfarm waged employment in rural Africa (Barrett, Reardon and Webb, 2001).

Barrett et al. (2001) find that inter-household heterogeneity in terms of constraints and incentives are key determinants of livelihood diversification behavior in rural Africa. They find that complete reliance on own agricultural production is rare, except among the wealthiest rural African households. Non-farm income sources are most extensively used by households in agro-ecologies of lowest potential (higher risk & drier areas), likely because agricultural productivity is relatively low. While in the higher potential regions (more humid, high agricultural areas), patterns of non-farm income dependence have more to do with local market conditions and

household characteristics. In poor areas with significant liquidity constraints and high transport demands to reach major markets, relatively high income households were heavily engaged in trades and commerce than the lower or middle-income households. The poorest households in their study were mostly dependent on retained output of their own agricultural production.

Incomplete markets for assets such as land, labor, credit or insurance are major causes of diversification behavior (Barrett, Reardon and Webb, 2001). For instance, input credit market failure can lead households to diversify their income sources to pay for farm inputs such as, seeds, fertilizer, labor, farm capital like irrigation (Reardon et al., 1994), and animal traction (Savadogo et al., 1995). Some farm households may also undertake local farm and nonfarm investments by selling their labor in the migratory labor market and then use the remittances to set up nonfarm businesses, buy farm capital and to invest in education (Reardon, 1997).

Methodology

The conceptual framework

The conceptual framework for this study is drawn from the Sustainable livelihoods framework (SLF). In this framework, assets, activities, and their access, are altogether are required for a means of living by an individual or a household to construct a livelihood (Ellis 1999; Chambers and Conway, 1991). The framework shows how, in different contexts, sustainable livelihoods are achieved through access to a range of livelihood assets which are combined in the pursuit of different livelihood strategies to achieve certain livelihood outcomes such as increased incomes (Alinovi *et al.*, 2010). Households can access a range of assets or resources (physical, natural, economic, human and social capital) which they can use to engage in farm or non-farm activities or both (Scoones, 1998). The decision of rural households to participate in non-farm activities is influenced by individual or household specific factors, as well as other social, economic and environmental factors (Barrett et al. 2001; Barrett, Reardon and Webb 2001; Escobal 2001; Lay et al. 2008; Idowu et al. 2011; etc). Various social relations, institutions, organizations, policies, as well as trends, shocks and seasonality modify access to and ability to convert livelihood assets into livelihood outcomes (Vedeld *et al.,* 2012).

Data and Sources

This study uses a quantitative cross sectional survey database on Senegal and Kenya collected in 2008 by a CIRAD/World Bank program called *RuralStruc* (see Losch et al., 2011). The main goal of the *RuralStruc* Program which lasted between 2007 and 2010 was to provide a renewed perspective on agriculture and its role for development by reconnecting the issues related to trade liberalization, rural transformation and the evolution of rural economies within a rapidly globalizing world. The data was collected from about 8000 households in 26 regions across seven countries at different stages in the liberalization and economic integration process, out of which 1770 households were from Senegal and Kenya. The *RuralStruc* data was collected to illustrate the regional dynamics relevant for understanding the processes of rural change in each country. Different criteria were used depending on the country, but all related to market access (infrastructures and proximity to cities), the presence of integrated value chains, the level of public investments and public goods, and the situation regarding natural resources.

The dataset contains information on demographic characteristics of household and composition, home property and ownership, quality of housing, Household main and secondary economic activities, migrations and remittances, public subsidies /supports, social capital, assets and agricultural production factors, labor force, agricultural equipment , other property than principal residency, property disposal, on-farm activities and related activities, crop production (permanent and seasonal crops), perspectives for children and evolution of living conditions, livestock resources, on-farm processing, fishing, hunting, and picking (fruits, medicinal plants, mushrooms etc.), extension services and institutional support, marketing contracts for crop and livestock, foods/diet, expenditure, credit & savings, evolution of food security, other structural expenditures & access to services , exceptional expenditures and sending remittances, household credit and savings, agricultural insurance, evolution of household economic activities and living conditions.

Data Analysis

Many quantitative studies on living conditions and diversification have used the tool of regression analysis in which a dependent variable (e.g. often income or consumption as proxies for overall well-being) is estimated, based on the value of one or more independent variables (i.e. different types of production factors, assets, and strategies) (e.g. Barrett et al. 2001; Lay et al. 2008; Escobal 2001; Idowu *et al.* 2011; Winters *et al.* 2009). Regression analysis has the

advantage of identifying the strength and significance of the relationship(s) between variables (Ansoms and McKay, 2010). Other empirical quantitative studies also try to account for livelihood diversity by comparing different settings (e.g. Barrett et al. 2001; Awudu and CroleRees 2001; Orr and Mwale 2001; Winters *et al.* 2009; Losch *et al.* 2011). Most studies use either univariate or multivariate regression models to estimate the determinants of diversification with mainly income diversification as the dependent variable and is regressed against a set of explanatory variables. The extent of household livelihood diversification in the literature is commonly quantified using income diversification. The most common measure of income diversification used in several studies is income using the vector of income shares associated with different income sources (e.g. Barrett et al. 2001; Lay et al. 2008; Escobal 2001; Idowu *et al.* 2011).

Other studies use an alternative measure of the extent of diversification; the Herfindahl-

Hirshman index, equal to the sum of the shares across each possible income source (Barrett et al. 2001; Barrett and Reardon 2000). The index measures the number of income sources or the level of income diversification. A value of one indicates complete dependence on a single income source while a value of 1/k represents perfectly equal earnings across income sources, where there are k different income source categories analyzed (Barrett et al. 2001). Other studies use the inverse of the Herfindahl index (Losch et al. 2011; Ersado 2003; Ellis 2000; Idowu *et al.* 2011) because it measures not only the number of income sources but also the evenness of income shares, with the parameter determining the weight of the number of sources versus evenness in the distribution of shares. This index measures the degree of concentration of household income into various sources; and it thus measures the level of income diversification. In this study, a Tobit regression model (Greene, 2003) is used to estimate the determinants of income diversification. The inverse of the Herfindahl index is used as the dependent variable, and is regressed against a set of explanatory variables that are hypothesized to be important in determining income diversification. Following Idowu *et al.* (2011), the inverse of the Herfindahl index is specified as follows;

The reduced form econometric model of household income diversification is specified as;

),

Where;

is the explanatory variable,

is the standard cumulative normal with mean zero and variance .

Where = Inverse of Herfindahl index (values representing the level of income diversification) where as provided in equation (2). The dependent variable is a continuous variable.

S_j = Income share of the jth non-farm activity in total income, where zero values mean that households do not participate in the non-farm activity. is the observed censored variable, which is equal to the unobserved latent variable when

Results and Discussion

The shares of incomes from different farm and non-farm activities are presented in the table 1 below. Both farm and non-farm activities were important sources of income for all rural households in the sample. Crop and livestock production were the most important source of farm incomes, followed by farm wage labor. Income from farm processing and natural resources like hunting, fishing and gathering were less prevalent (less than 1%). Diversification into non-farm sources contributed 48.8% and 58.8% to total household income in Senegal and Kenya, respectively. In both countries, the results indicate that self-employment followed by non-farm wage labor were the most important sources of non-farm income. This confirms findings in other studies on diversification in Africa (e.g. Reardon 1997; Barrett, Reardon and Webb 2001; Losch et al. 2011; Idowu *et al.* 2011). Migration remittances were mostly prevalent in Senegal with a contribution of about 6.8% to total household incomes. Rents from land and other property contributed less than 2% to total household incomes in both samples. Public transfers were the least important source of non-farm income; they were non-existent in Senegal, and only contributed 0.04% to total household incomes in Kenya.

Table 1. Income shares from the diversification of activities (%)

	Senegal	Kenya
Crop production	38.32	25.97
Livestock production	10.94	13.32
Processing of farm products	0.31	0.00
Hunting, fishing & gathering	0.84	0.79
Farm wage labor	0.74	1.62
Farm income share	**51.2**	**41.7**

Non-farm wage labor	8.11	21.33
Self-employment	32.09	34.92
Public transfers	0.00	0.04
Migration remittances	6.82	0.50
Rents	1.81	1.50
Non-farm income share	**48.8**	**58.3**

The results of the regression analysis conducted to estimate the determinants of income diversification are presented in table 2. The results indicate that asset variables such as education level, access to farm capital, access to transport, access to markets for farm products, access to mutual or unpaid labor, access to migration opportunities and farm characteristics such as the farm size and access to irrigation are the factors which were significant in determining the level of income diversification among the rural households sampled in Senegal and Kenya.

Table 2. Tobit Parameter Estimates of the determinants of rural household income diversification

Variables	Coefficient	Standard Error	t-values
Constant	0.1183	0.0739	1.6
Country dummy (1 = Senegal, 0=Kenya)	-0.0666	0.0539	-1.24
Human Assets			
Gender of household head (1=male, 0=female)	-0.0203	0.0360	-0.56
Number of members in the household	0.0001	0.0012	0.08
Highest level of education among household members:			
(1= started primary, 0=otherwise)	0.0134	0.0205	0.66
(1= completed primary, 0=otherwise)	0.0140	0.0228	0.61
(1=started secondary, 0= otherwise)	0.0127	0.0267	0.48
(1=completed secondary or university, 0= otherwise)	0.0708	0.0376	1.88*
Physical assets			
Farm capital:			
Household has access to a tractor (1=yes, 0=no)	0.0063	0.1499	0.04
Household has access to animal plough (1=yes, 0=no)	-0.0579	0.0193	-3.01***
Market access variables:			
Household has easy access to transport all year	0.0747	0.0244	3.05***
Household has easy access to transport only some months	0.0455	0.0271	1.68*
Household has difficult access to transport all year	0.0784	0.0245	3.21***
Households who sold any farm products (1=yes, 0=no)	0.0954	0.0292	3.27***
Households with marketing contracts (1=yes, 0=no)	0.0116	0.0211	0.55
Financial Assets			
Household has savings account (1=yes, 0=no)	0.0112	0.0249	0.45
Household has credit (1=yes, 0=no)	-0.0047	0.0318	-0.15
Social assets			
Network Index of household head (sum of memberships)	0.0026	0.0318	0.46
HH uses mutual/unpaid labor (1=yes, 0=no)	0.0532	0.0150	3.55***
HH with migrants (1=yes, 0=no)	0.0965	0.0146	6.63***
Natural assets			
Farm size (hectares)	0.0055	0.0032	1.69*
Irrigated farmland area (hectares)	-0.0069	0.0035	-1.94*
Ownership of livestock (1=yes, 0=no)	0.0127	0.0204	0.62
Log likelihood	-25.0530		

Chi-Squared	119.54***
Pseudo R2	0.7046
Number of observations	916

The results show that higher levels of education among household members such as completing secondary school or university education had a positive and significant effect on the level of income diversification among the rural farm households in the sample (at 10% level of significance). This is probably because school education increases the human capital levels and provides the necessary skills which enable the entry into more remunerative labor markets especially for non-farm activities such as non-farm wage labor or self-employment. This result is consistent with the results from other studies on diversification behavior in Africa (e.g. Barrett, Reardon and Webb 2001; Lanjouw et al. 2001; Awudu and CroleRees 2001; Winters et al. 2009; Idowu *et al.* 2011) where education was found to be a key determinant of the diversification of income generating activities.

Physical assets such as access to farm capital and market access were also important. Access to an animal plough had a negative and significant effect (at 1% level of significance) on the level of income diversification. This result is probably because accessing farm capital is an important investment which is necessary for increasing farm production. Therefore those farm households that can access animal ploughs for farm land preparation are less diversified in their income sources and are probably more involved in farm activities. This relates to Barrett et al. (2001) where complete reliance on own agricultural production was found common among the wealthier rural African households. Such households are those that are able to access better farm capital.

Market access variables linked to transport accessibility, and ability to sell farm products in the market were positive and significant determinants of income diversification. Farmers that were able to sell their farm products had significantly more diversified income sources implying that they were better able to access market opportunities and to engage in non-farm activities as indicated by other studies (e.g. Winters et al. 2009; Barrett et al. 2001). Access to transport, whether easy or difficult, significantly increased the level of income diversification at 1% level of significance, while being able to access transport easily only some months in the year had a positive significant effect at 10% level of significance. Households with easy access to transport

all year round to other areas had significantly higher levels of income diversification. This is probably because easy access to transport suggests that such farm households can easily access opportunities to engage in other income generating activities outside their own location. Easy access to transport could also imply proximity to other urban areas or nearby towns which are hubs for non-farm activities. These results are consistent with those of Barrett et al. (2001) and Winters et al. (2009) where better access to markets significantly increased participation in non-farm activities. Asmah (2011) also finds that better access to local community markets and to public transport were positive and significant in promoting non-farm activities and that more diversified households enjoyed higher welfare as a result. On the other hand, even households with difficult access to transport all year round to other areas also had significantly higher levels of income diversification. This result can be attributed to those households which are relatively better off; enough to access urban areas or nearby towns for trade even when transport is relatively difficult. This result corroborates the findings of Barrett et al. (2001) where in poor areas with high transport demands to reach major markets, relatively high income households were more heavily engaged in trades and commerce compared to lower or middle-income households.

Social capital variables related to mutual/unpaid labor and migration significantly increased the level of income diversification at 1% level of significance. Availability of mutual aid or unpaid labor reduces both the time spent and the labor costs of the household in farming, and probably gives the household members more time to participate in other activities off the farm. Households with migrants usually maintain social ties with the resident household, and when they send remittances it increases the incomes of the household, and such remittances have been found to be an important source of livelihood especially in areas where agricultural incomes are insufficient due to low agricultural potential or seasonal changes, as indicated by the review findings of Reardon (1997).

Farm characteristics which were used as proxies for agricultural potential such as the size of the farm and the irrigated farmland area were found to be significant in determining the level of income diversification at 10% level of significance. Farm households with larger farmland areas under irrigation were more likely to have less diversified sources of income, suggesting that such

households were more focused on agricultural production. On the other hand, households with larger farm sizes were more likely to have diversified sources of income. As an indicator of wealth, the larger farm size suggests that wealthier households were more likely to have higher income sources of diversification. Barrett, Reardon and Webb (2001) indicate that there is a positive relationship between the share of rural household income obtained from non-farm sources and the size of land holdings, indicating the presence of entry barriers into high income nonfarm activities for those households that lack such assets. Idowu et al. (2011) find that higher per capita land holdings were important in determining diversification into non-farm activities such as skilled and unskilled wage labor, and social and community service. However, larger land holdings have mainly been linked to increased participation in agricultural activities as found by several studies (e.g. Reardon 1997; Winters et al. 2009; Andersson, 2012b).

Conclusion

Based on the results of the sample of rural farm households from Senegal and Kenya, the results of this paper confirm the hypothesis that factors linked to education, agricultural potential and market access are important in determining the level of income diversification. Specifically, the analysis reveals that completing secondary or university education, access to farm capital such as an animal plough, access to transport to other areas, access to markets for farm products, access to mutual or unpaid labor, access to migration opportunities and farm characteristics such as the farm size and irrigation farm area were the key factors in determining the level of income diversification. In particular, access to farm capital such as animal ploughs and irrigation were associated with increased participation in farm activities.

Therefore initiatives that seek to increase access to farm capital for rural farm households need to be strengthened to enhance opportunities for farm production. In addition, higher education needs to be strengthened to enhance skills and opportunities for better paying non-farm jobs. The infrastructure environment which is important for market access, especially in terms of transport facilities need to be improved to increase access to a range of opportunities both on the farm and outside the farm to improve the livelihoods of rural households. The next step to deepen this analysis will be to investigate the nature of the rural farm household activities and the types of diversification as linked to the objectives of pursuing different livelihood strategies.

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