Developing Country Studies
ISSN 2224-607X (Paper) ISSN 2225-0565 (Online)
Vol.6, No.4, 2016

Patterns of Livelihood Diversification: The Case of Kembata Tambaro Zone, Southern Ethiopia

Baharu Gebreyesus
Department of Sociology, Mahatma Gandhi University, Meghalaya, India

Abstract
Population density has led to land scarcity in the rural farm households. This has adversely affected livelihood activities in agriculture leading to low income. Farm households in KTZ tend to rely on alternative income sources to improve their household income and increase agricultural production. However, the households level of livelihood diversification to different income sources beyond agriculture vary across land holding size. Thus, the aim of this article is to measure the level of diversification of farming household's livelihood into non/off-farm activities in the study area. A huge amount of farm level primary data was collected from the study area individual farmers through personal interview using structured questionnaire. A total of 252 sample households who were selected through a combination of purposive and stratified random sampling techniques were retained for subsequent analysis. The finding of the survey result indicates that ninety seven percent of the respondents in the study area diversified in to non-farm activities. The study has also shown that non-farm income accounts for 53% total income of rural households in rural Ethiopia. The Composite Entropy Index has been used for measuring livelihood diversification. The livelihood diversification index of 0.260 (CV 94) showed that majority of the household heads undertook one form of livelihood diversification strategies or another. It has been argued that there is a significant difference (at 1% level of significance) among different farm size with respect to level of livelihood diversification. It is evident that livelihood diversification is the highest among small land holding groups and small holders derive a higher proportion of their income from non-farm sources than large farm holders. Therefore, the smallholder farm households' participation in lucrative non-farm activities needs to be strengthened.
Keywords: Livelihood diversification, Composite Entropy Index, level of livelihood diversification, rural farm households, land holding size, Kembata Tambaro Zone, Ethiopia.

1. Introduction

The Ethiopian economy is largely dependent on the agricultural sector. Its contribution for GDP is 41 percent, export is 90 percent, employment is 85 percent and food security is high. The small-scale farming dominates the agricultural sector and accounts for 95 percent of the total area under crop and more than 90 percent of crop output. The livelihoods of 84% of the citizens depend on various agricultural productions (Fikremarkos, 2012). However, farming as a primary source of income has become failed to guarantee sufficient livelihood for most farming households in Sub-Sahara African countries (Babatunde, 2013). This is because the agricultural sector in the Sub-Saharan African countries is highly characterized by decreasing farm sizes, low levels of output per farm, and a high degree of subsistence farming (Jirstrom *et al*., 2011). Furthermore, the agricultural activities in rural Ethiopia is also dominated by smallholders, the majority cultivating less than 0.5 ha and producing mostly basic staples for the subsistence of their households (Arega *et al*., 2013). In view of this dependency on agriculture and the concomitant level of rural poverty, investigations in to the nature of livelihood diversification also clearly reflect the desire to understand better whether promoting diversification offers potential for livelihood enhancement and poverty reduction (Deiniger and Okid, 2000).

Thus, the diversity of rural households is an important feature of survival in rural areas (Belaineh, 2002). Because of primary dependence on subsistence crop production in Ethiopia, harvest failure leads to household food deficits, which in the absence of off/ non-farm income opportunities leads to asset depletion and increasing levels of destitution at the household level (Government of Ethiopia, 2009). Similarly, Reta and Ali (2012) indicated that in rural Ethiopia if there had not been other sources of income apart from agricultural production, the land scarcity by the farmers coupled with agricultural risks could not generate enough income to feed household members and they cannot fulfill household needs. Furthermore, livelihood diversification is believed to be a solution, and an effective strategy for the reduction of poverty and food insecurity in rural Ethiopia (Yenesew S.Y., *et al.,* 2015).

Diversified livelihood pattern is defined as combination of various livelihood activities, such as crops, livestock, off-farm, and non-farm. Livelihood diversification can occur by both agricultural diversification including producing more crops per year or high value crops; and non-agricultural diversification including migration, causal labor, business, and services. Rural livelihood diversification describes the phenomenon by which farm households takes up non-farm activities, or rely on non-farm income transfers to improve their standard of living (Ellis, 2005). Livelihood diversification includes both farm and non-farm activities which are undertaken to generate income, additional to that of the main household activity, via the production of

agricultural and non-agricultural goods and services, sale of waged labor, business or self-employment in small firms, and other strategies to minimize risk (Carter, 1997).

But what are the main patterns of livelihood diversification in a particular setting? According to Ellis (1998), these may vary substantially across different regions. For instance, Adugna (2008) and Fikru (2008) stated that farmers with smaller land size are more diversified into off-farm diversification activities in SNNPR and Oromiya region respectively while Kebede *et al*. (2014) showed that the opposite holds true in that households with large farm size opted for additional income to smoothen their farm operations in Northern Ethiopia. These mixed results call for further analysis, to better understand the situation in specific settings.

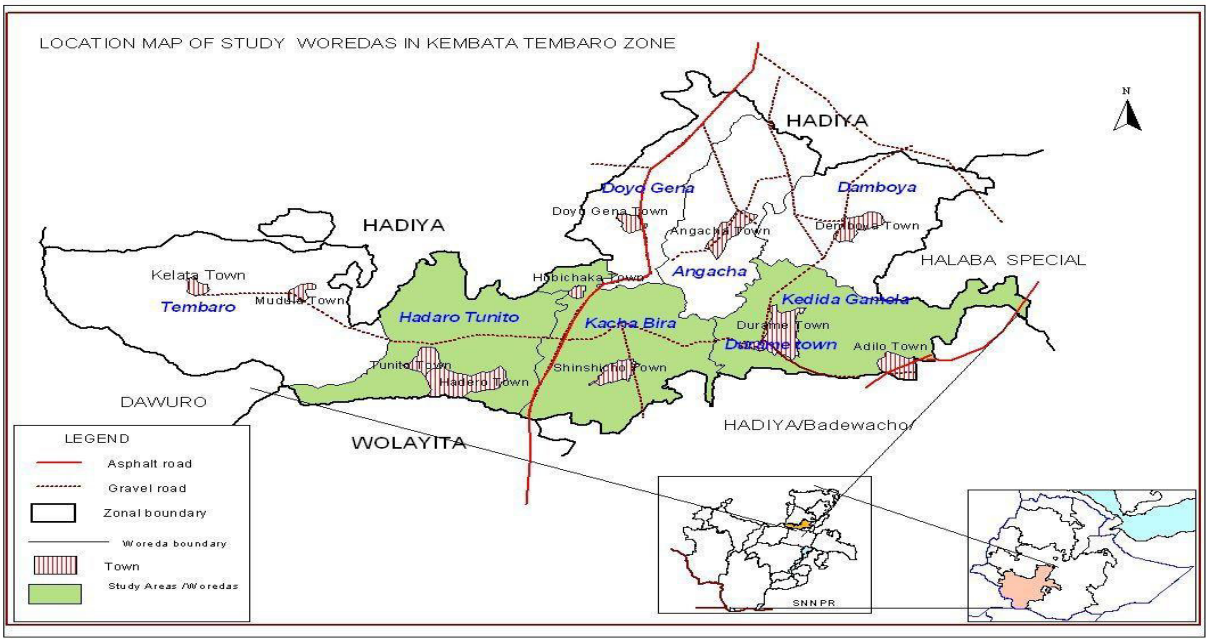
Due to the insufficient land resource to absorb the household's full labor force and the rainfall variability, the rural farming households in the study area are obliged to engage in different income generating non-farm activities like migration to Republic of South Africa and State Farms (Fincha, Dufti, …), trading, salary employed jobs and provision of services to supplement their cereal crops intensification and expand the household income. Even though, they are involved in diverse livelihood activities, the households level of livelihood diversification to different income sources beyond agriculture vary across land holding size. It is thus, so important to analyze the patterns of livelihood diversification and to measure the level of diversification of farming households' livelihood into non/off – farm activities in the study area to improve rural farm households' livelihood diversification strategies. Therefore, the objective of this paper is to assess the patterns and quantify the extent of livelihood diversification employed by the household heads.

2. Methodology

2.1. Descriptions of the study area

The study is conducted in Kembata Tambaro Zone which is found in SNNPR, Southern Ethiopia. The zone is located around 306 km south from the capital city of Ethiopia, Addis Ababa. Astronomically it is located or extends from $7^0$10'N to $7^0$50'N latitude and from $37^0$34'E to $38^0$08'E longitude. KTZ has an area of 1,356 km^2 with elevations ranging from 501 meter at Gibe River to about 3000 meter in the Ambaricho Mountain (SNNPR, BoFED, 2013). The weighted mean annual rainfall ranges from 1001-1400 mm. The spatial variation of mean annual temperature ranges from 12.6°C to 27.5°C (KTZ, DoARD, 2012). Based on the 2007 national census conducted by the Central Statistical Agency of Ethiopia, Kembata Tambaro Zone has a total population of 792,999. The crude population density of the zone is 585 persons/km^2 (CSA, 2007).

Fig.1 Location Map of Ethiopia, SNNPR, and Kembata Tambaro Zone



Source: SNNPR, BoFED: Data Collection Work Process (2013/14).

2.2. Data types, methods of collection and sampling procedure

Primary and secondary data were collected for the study. A huge amount of farm level primary data was collected from the study area individual farmers through personal interview using a well defined- structured questionnaire with close ended questions. Secondary data were obtained from different published and unpublished research journals, books and theses including reports of FAO and World Bank publications. The

sampling procedures employed were the purposive and stratified random sampling techniques to select the sample farmers. At the first stage, out of seven districts, Kachabira, Kadida Gamela and Hadero tunto Zuriya were selected for the study purposes. At the second stage, three villages were selected randomly from each district. Finally, at the third stage with in these three villages, 28 farm households from each village were selected randomly for interview by chance meeting with them at the time of field survey. Overall 84 respondents from each of three districts and totally 252 farmers were interviewed to collect the farm level primary data.

2.3. Methods of Data Analysis

To analyze the data, both descriptive and inferential statistics were used. To identify the existing livelihood diversification activities pursued by the farming rural households in the study area, the farm level data concerning farm income, non/off-farm income, level of livelihood diversification, non/off-farm income sources and income share were analyzed through descriptive statistics like frequency, mean, percentage and standard deviation. These were analyzed in the three farm size structures. Inferential statistics like F-test through ANOVA was used to see whether there are significant differences among farm size categories in relation to CEI and non-farm income. The Composite Entropy Index has been used for quantifying the level of livelihood diversification employed by the household heads. The descriptive and inferential data analyses were conducted using SPSS version 16.

For a more rigorous analysis, livelihood diversification of the farm households was calculated on the basis of proportion of the income of i^{th} activity relative to net income from all livelihood activities. A household with a higher number of income-generating sources can be said to be more diversified than a household with fewer income-generating sources, and a household that generates an equal amount of returns from each activity in which his members are involved in is more diversified than a household with the same number of income-generating activity but an unequal income share from each income source (P.S. Sujithkumar, 2007).

There are several measures of livelihood diversification being used in a number of empirical studies (Apata, T.G., 2010; Babatunde, R.O and Qaim, M., 2009; Babatunde, R.O., 2013; Dilruba, K. and B.C. Roy, 2012; Mandal, R., & Bezbaruah, 2013; Mathewos, M. 2013). They are Herfindahl Index, Ogive Index, Inverse Simpson Index, Entropy Index, Modified Entropy Index and Composite Entropy Index. Each of these measures has its merits and limitations. In the context of the present study, to portray patterns of livelihood diversification across different farm size holders, Composite Entropy Index appears to be most suitable. The index has been computed using the following formula:

C.E.I. = $- [\sum_{i=1}^{N} Pi\ Log_N Pi][1-(\frac{1}{N})]$

where, $Pi = \frac{Ai}{\sum Yi}$ Pi = Proportion of the income of i^{th} activity relative to all activities

Ai = Net income received from activity *i,* Yi = Net income from all livelihood activities

i =1, 2, ----N (N= number of different income sources)

CEI has an advantage in that it can be used to compare diversification across situations or cross-sectional units having different and larger number of activities since it gives due weight to the number of activities (Anna, 2002; Daniel & Johonson, 2004). The C.E.I. increases with rise in diversification and vice versa. It ranges between zero and one. Since the index uses $- log_N P$ as weights, it assigns more weight to lower quantity and less weight to higher quantity. It is to be noted that the maximum level of diversification is achieved, irrespective of the diversification measure used, when there is equal distribution of all livelihood activities. A combination of many activities with one activity dominating its income share would result in a lower value of livelihood diversification index. The value of the index will be higher when all livelihood activities income is distributed more equally among a larger number of activities.

3. Findings and Discussion

3.1. Socio-demographic characteristics of households

A demographic characteristic of any society is important for analyzing its livelihood system. Table 1 shows socio-economic characteristics of sample farmers. For descriptive data analysis, the sample farms were classified into three distinct size categories on the basis of operational landholdings as small farms having less than 1ha, medium farms with 1ha to 1.5 ha and large farms with more than 1.5 ha. Overall 51.6 percent of farms belong to the small farm size category while 33.3 percent were included in the medium and 15.1 percent are included in large farm size category. Average farm size for small farms category is 0.58 ha, for medium 1.2 ha and for large farm size category it is 1.88 ha. As farm size structure increases from small to large, the percentage of farm size decreases in all sample districts with similar pattern.

The socio-economic characteristics of the respondents' shows that 91.3% of the sample household heads were male, the highest percentage is found in large farms. The average age of the household heads was 45

and the youngest was found in small farms. The age of household heads of large farms is higher than that of medium and small farms. The average farming experience of household head is almost 20 years with the owners of large farms having higher experience than the owners of small and medium farms. Overall, there are on average 5.7 members in farm households. The large farms have higher family size (6.9) as compared to small (5.4) and medium (5.7) farms. Education is believed to be an important feature that determines the readiness of household heads to diversify his livelihood. On average, they spent 6.5 years on formal education (Table 1).

Table 1. Demographic and socio-economic characteristics of the sampled households

Characteristics of farm household	Small	Medium	Large	All
Total cultivated land size (ha)	75.05	100.65	71.38	247.08
Mean	0.58	1.20	1.88	0.98
Std.Dev.	0.19	0.17	0.28	0.51
% age of farms	51.6	33.3	15.1	100.0
Age (yrs)	42.86(9.09)	45.95(7.93)	49.34(7.98)	44.87(8.84)
Male (%)	85.4(0.35)	96.4(0.18)	100(0)	91.3(0.28)
Farming experience (yrs)	18.01(9.78)	20.67(9.59)	21.55(8.45)	19.55(9.61)
Family size (no)	5.36(1.52)	5.71(1.05)	6.87(1.65)	5.71(1.50)
Education of Head (yrs)	5.92(3.11)	7.18(2.47)	6.68(3.03)	6.45(2.95)
Av. Household annual total income (Br)	48045.01 (45499.55)	86093.13 (79610.78)	115248.06 (82952.77)	70861.51 (69423.79)
Av. Household annual farm income (Br)	21876.78 (13774.93)	38375.15 (25336.13)	60803.32 (29387.7)	33246.11 (25056.31)
Av. Household annual non-farm income (Br)	26168.23 (36892.04)	47717.98 (64995.35)	54444.74 (68781.8)	37615.40 (54209.72)
Share of non-farm income in total income (%)	54.47	55.43	47.24	53.08
Participation rate (%)	Participation in non-farm activities = 97 %			

Source: Authors survey data 2015 Note: Figures in parentheses are standard deviation.

3.2. Patterns of Livelihood Diversification: Household Livelihood Diversification and Sources of Income with Share

Total household income is approximately 70862 ETB per year from all income sources. Overall farm household income increases from almost 48045 ETB per annum in small farm size category to almost 115250 in large farm size category. The study revealed that there is also a significant difference in the farm income generation of farmers in different farm size categories with a lower farm income level in small farms. The implication of this result is that the share of farm income is lower (45.53%) in small farms as compared to large farms (52.76%). One way small farmers improve income generation is through livelihood diversification, as revealed by the study. The higher the diversifications the better off the farmers become. As a result, the average annual off/ non-farm income of the sample household in the study area was found to be about 37,615 Birr. The overall share of off/non-farm income in the total household income is 53%. This share is higher (54.47%) in small farms as compared to large farms (47.24%). This shows that small farms are more dependent on income from off/non-farm activities than medium and large farms (Table 1).

To show the importance of different income sources in household livelihood strategies among the sample households, off/non-farm income participation rates and share of income are presented in Table 2. Due to low economic returns from rain fed agricultural production system and land scarcity, 97% of the rural households diversified their livelihoods into several activities and earned significant amount of income from multiple sources. Findings from this study revealed that farming households employed multiple sets of non-farm livelihood portfolios to boost their income. Table 2 reveals that majority of the household heads were engaged in three non-farm livelihood activities. These are trading (48.02%), international migration (26.98%) and domestic migration (25.79%). Income share differ significantly across sources. International remittance contributed highest share (48%) to the household's non-farm income followed by trading (26%) and salary employment (8.5%). 25.79% participated in domestic migration but this source only contributes 5.69 to non-farm income. 19.44% participated in service provision and received only 3.26% income while 12.7% participated in rental income which contributed 4.28% income for sample farm household. Other income sources like handcrafts, artisanship, farm wage and gathering are of minor importance. While almost 30% derive income from these sources, they only contributed 4.5% to household off-farm income on average.

Table 2 Contribution of various income sources to farm household's non-farm income

Source of income	Freq-uency	Percen-tage	Annual non/off-farm income		Income share (%)
			Mean	Std. error	
Salary employment	34	13.49	23593.53	2485.44	8.46
Handcrafts	13	5.16	7269.23	1253.99	0.99
Artisanship	7	2.78	6907.14	1427.69	0.51
Domestic remittance	65	25.79	8294.77	298.09	5.69
International remittance	68	26.98	67004.41	8460.50	48.07
Trading	121	48.02	20162.48	1290.41	25.74
Service provision	49	19.44	6308.57	653.52	3.26
Rental income	32	12.70	12667.19	1340.69	4.28
Farm wage	27	10.71	6555.56	471.75	1.87
Gathering	27	10.71	3980	389.26	1.13

Source: Based on Author's survey data, 2015.

The different farm size holders, their level of livelihood diversification beyond agriculture and contribution of different sources of income in the study area are given in Table 3. Income share from different sources indicates the level of livelihood diversification. Several studies have used the Simpson Index and Inverse Simpson Index to measure livelihood diversification (Dilruba, K. and B.C. Roy, 2012, & Mathewos, M. 2013). Others used CEI to measure crop diversification (Saraswati P.A, *et al.,* 2012, & Mandal, R., & Bezbaruah, 2013). However, following Apata, T.G. (2010), this study used CEI to examine if livelihoods differ across districts. The statistically significant F-value of ANOVA indicates that livelihood diversification pattern is different across farm sizes in each district. The cumulative average value of the Composite Entropy Index for all districts was 0.2601 (Table 6). Table 3 reveals that households in Hadero tunto, Kadida gamela and Kachabira districts and their respective land holding categories differed significantly on CEI value. The highest average value (0.2646) of Composite Entropy Index was computed in Kachabira district followed by Kadida gamela district (0.2595) and Hadero tunto district (0.2563).

The study also examined dominant income sources and livelihood patterns across the three districts. There is no statistically significant difference in the average non-farm income earned from livelihood diversification among the sample districts. In the Hadero tunto district, international remittance and trading were the major sources of income contributing 51.2% and 23.5% to the household income, respectively (Table 3). The other important sources of income were rental income (6.1%) followed by salaried job (5.8%) and domestic remittance (5.4%). Livelihood sources were different in Kadida gamela district. International remittance and trading were the dominant sources of income contributing 38.6% and 36.8%. Besides, salaried job and domestic remittance contributed 7.2% and 6.7% to the household income followed by rental income (3.6%). In the Kachabira district, the maximum share (52.5%) in household off-farm and non-farm income came from international remittance, followed by trading (19.2%). Salaried job, domestic remittance and service provision accounted for 12.2%, 5.2% and 3.0% of total off/non-farm income, respectively.

Table 3. Level of livelihood diversification and income sources for different farm holders in Kembata Tambaro Zone

Farm size	N	Mean CEI	Average NFI in ETB /yr/hh	Share of different livelihood activities in household income (%)									
				Salaryem-ployment	Hand-craft	Artisan-ship	Dome-stic remit ance	Inter-national remit-tance	tradin g	Servic e prov-ision	Rental incom e	Farm wage	Gatherin g
Hadero tunto district													
Small farms	41	0.2900 (0.2379)	27387.07 (43902.05)	5.56	2.81	0.71	9.07	30.90	33.58	2.91	8.18	3.37	2.91
Medium farms	30	0.2674 (0.2489)	47212.00 (60804.28)	7.63	0.00	0.27	4.91	53.45	19.56	4.77	7.45	1.36	0.60
Large farms	13	0.1146 (0.1834)	65023.08 (89446.11)	2.96	0.00	0.00	1.30	74.53	16.56	3.11	1.06	0.00	0.47
Total	84	0.2563 (0.2401)	40292.02 (59772.29)	5.77	0.93	0.35	5.39	51.23	23.46	3.74	6.10	1.69	1.34
F-value of ANOVA		2.904 (p=0.061)	2.343 (p=0.103)										
Kadida gamela district													
Small farms	51	0.3040 (0.2420)	24785.69 (20574.86)	11.27	2.22	0.63	9.18	16.87	46.27	3.62	4.83	2.85	2.27
Medium farms	25	0.2187 (0.2411)	42968.00 (54881.66)	4.75	0.00	0.00	4.98	51.20	32.54	2.63	3.26	0.65	0.00
Large farms	8	0.1035 (0.1931)	44350.00 (63607.79)	0.00	0.00	0.00	2.82	77.51	16.01	2.25	0.00	0.00	1.41
Total	84	0.2595 (0.2435)	32060.36 (39371.18)	7.18	1.04	0.30	6.67	38.55	36.80	3.04	3.56	1.60	1.25
F-value of ANOVA		2.979 (p=0.056)	2.289 (p=0.108)										
Kachabira district													
Small farms	38	0.3615 (0.2491)	26708.68 (45660.48)	13.75	2.66	2.81	12.65	34.49	19.39	2.96	3.45	5.21	2.65
Medium farms	29	0.2321 (0.2285)	52336.21 (77903.10)	13.56	0.53	0.00	2.24	55.28	19.55	3.47	3.69	1.58	0.11
Large farms	17	0.1034 (0.1943)	51105.88 (54918.26)	7.83	0.00	0.00	1.70	68.49	18.53	2.07	1.38	0.00	0.00
Total	84	0.2646 (0.2501)	40493.81 (60968.93)	12.15	1.03	0.84	5.21	52.45	19.24	2.96	0.30	2.26	0.84
F-value of ANOVA		7.702 (p=0.001)	1.811 (p=0.170)										

Source: Field survey result and author computation, 2014-15. Figures in parentheses are standard deviation
N= Number of households NFI = Non/off Farm Income

A perusal of Table 4 shows that the share of income from all livelihood activities except international remittance decreases along with an increase in the land holding status. The share of off-farm and non-farm income other than international remittance is 73.2 percent among small land holdings where as it is only 27.5 percent for the large land holding group. The latter generates a major portion of its total household income from agriculture and for it, income from abroad migration for job, trading and salary employment are important sources of livelihood diversification income. International remittance contributed the largest share (72.5%) in household non-farm income for large land holders because they are in a better position to send their productive labor from family members to abroad perhaps due to their stronger asset base. Thus, it can be inferred that small farm households are more diversified than their larger counterparts and the level of diversification (CEI) is decreasing with an increase in the land holding status.

Table 4. Land holding size and composition of income from different sources

Farm size	Number of households	Share of different livelihood activities in household income (%)								
		Salary em-ploymen t	Hand -craft	Artisan -ship	Dom e stic remit ance	Inter-nationa l remit-tance	tradin g	Servic e prov-ision	Rental incom e	Far m wag e	Gatherin g
Small farms	130	10.12	2.54	1.31	10.18	26.76	34.06	3.19	5.52	3.72	2.60
Medium farms	84	9.10	0.20	0.10	3.92	53.54	23.03	3.70	4.90	1.25	0.25
Large farms	38	4.50	0.00	0.00	1.73	72.50	17.29	2.53	1.01	0.00	0.44
Total	252	8.46	0.99	0.51	5.69	48.07	25.74	3.26	4.28	1.87	1.13

Source: Field survey result and author computation, 2014-15.

The most important determinant of livelihood for any society is income. Diversification helps the household create a higher income profile by making better use of the available resources and skills. The statistically significant F-value of ANOVA indicates that livelihoods are highly diversified in Kembata Tambaro Zone. In the sample, the average non-farm income ranged from a low of 0 to 326050 ETB with a mean income

of 37615.40 ETB and a standard deviation of 54209.72. The mean non-farm income is the highest in large farms (54444.74 ETB), followed by medium farms (47717.98 ETB) and small farms (26168.23 ETB). The difference in the mean non-farm income among the land holding size is statistically significant at 5 percent level of significance (Table 5). This is due to the fact that CEI is influenced by the share of each income source and hence large farm households maintain more composition of income (international remittance) than their small counterparts. Hence, it should be noted that if international remittances are not considered, average non-farm income decreases with the decrease in level of livelihood diversification and vice versa as these are often sources that cannot be actively chosen by household members.

Table 5. Average non-farm income and land holding size in the overall study area

Farm size	Number of households	Non-farm income					
		Mean	Std.Dev	Min	Max	F	Sig
Small farm	130	26168.23	36892.04	2100.00	289000	6.457	0.002
Medium farm	84	47717.98	64995.35	0.00	326050		
Large farm	38	54444.74	68781.80	0.00	315000		
Total	252	37615.40	54209.72	0.00	326050		

Source: Field survey result and author computation, 2014-15.

The study also examined if livelihood diversification vary by land holding size. The statistically significant F-value of ANOVA indicates that livelihood diversification pattern is different across farm size (Table 6). In the sample, the Composite Entropy Index ranged from a low of 0.000 to a high of 0.671 with a mean value of 0.260 and a standard deviation of 0.244. The livelihood diversification index of 0.260 (CV 94) showed that majority of the household heads undertook one form of livelihood diversification strategies or another.

Table 6. Livelihood diversification and land holding size in the overall study area

Farm size	Number of households	CEI						
		Mean	Std. Dev	Min	Max	CV	F	Sig
Small farm	130	0.3173	0.2426	0.000	0.671	76	12.359	0.000
Medium farm	84	0.2407	0.2377	0.000	0.661	99		
Large farm	38	0.1072	0.1852	0.000	0.526	173		
Total	252	0.2601	0.2436	0.000	0.671	94		

Source: Field survey result and author computation, 2014-15.

Analysis found that small land holding households had the highest average value of CEI (0.3173) as compared to the medium land holding households with the average value of CEI 0.2407. The possible reason can be a smaller amount of cultivated land is not enough to the households to make a sufficient living from farm production alone, causing them to look for supplementary non/off-farm income generating activities. On the other hand, large land holdings may believe that they are secured against the vulnerability to shock and risk. They always want to augment their income by specialization rather diversification. Thus, they don't go for higher level of income diversification. The study found that average value of CEI for large household was 0.1072. There were significant differences (at 1% level of significance) in the average value of CEI among the three land sizes of households. Here, a clearly decreasing trend across land holding size is observable indicating that the households with large land size are participated less in non/off-farm livelihood diversification strategies and participated more on on-farm livelihood strategy only. These findings generally agree with those of previous studies in countries of Sub Saharan Africa, which have shown that farmers with smaller land size are involved in off-farm diversification activities because of shortage of land to support their livelihood (Adugna, 2008; Fikru, 2008; Yenesew, etal., 2015).

4. Conclusion and Recommendation

There are basically two ways through which diversification of economic activities takes place. An individual may diversify his work by shifting away from the agriculture sector towards non-agricultural sector or he may diversify by undertaking more than one activity at a period of time. It is the second type of the process that was found prevalent in the study area**.** Among household characteristics, landholding of the family and household size were found to be influential factors in determining the diversification choices of the individual. It is found that farm households who involved in off/non-farm activities were more likely to diversify their economic activities and undertake more than one activity to meet subsistence needs and expand income sources.

In this article, I have examined patterns of livelihood diversification among households in the study area. I found that almost all (97%) of the sample households are participated in off/non-farm livelihood diversification strategies to pursue their livelihood income. This indicates that in the study area, the agricultural crop production and livestock rearing alone without non/off-farm livelihood diversification is not enough to provide smallholder households income. On average, about 53% of total household income is generated from livelihood diversification, while the rest is coming from farming. This reflects that the rural farming households

in the study area are engaged in high profitable, high return and rewarding off/non-farm activities. Moreover, the livelihood diversification index of 0.260 (CV 94) showed that majority of the household heads undertook one form of livelihood diversification strategies or another. It has been argued that there is a significant difference among different study sites and different land size farms with respect to level of livelihood diversification. It is evident that livelihood diversification is the highest among small land holding groups and small holders derive a higher proportion of their income from non-farm sources than large farm holders.

These patterns suggest that diversification is a risk management strategy in the study area, as risks are generally more severe for small land holders. Moreover, diversification seems to be primarily a response to shrinking farm land availability. On the other hand, large farm households see diversification as a means to increase overall income, especially international migration because they are secured against the vulnerability to shock and risk. This is consistent with previous studies from Sub-Saharan Africa.

What is the policy implication of this finding? Livelihood diversification should be promoted in the study area in particular and in rural Ethiopia in general. Enhancing small land holders' access to non-farm activities is certainly important to support equitable rural development, since farming alone often cannot sustain a sufficient livelihood.

References

Adugna, E. (2008). Livelihood strategies and food security in Wolayta, Southern Ethiopia: The case of Boloso Sore district. A Thesis submitted to the School of Graduate Studies, Haramaya University.

Anna, C.R. (2002). "Rural household strategies in southern Mali": Determinants and contribution of income diversification to income level and distribution. World Bank working paper 2785:1-203 www.worldbank/anna

Apata, T.G. (2010). Linkages between Crude-oil Exploration and Agricultural Development in Nigeria: Implications for relevant qualitative data collection and analysis to improve rural economy. Department of Agricultural Economics and Extension, Joseph Ayo Babalola University. Retrieved from www.fao.org/fileadmin/templates/ess.../WYE_2010.4.3

Arega, B., Woldeamlak ,B., Melanie, N. (2013). Rural households' livelihood assets, strategies and outcomes in drought-prone areas of the Amhara Region, Ethiopia: Case Study in Lay Gaint District. Afr. J. Agric. Res. 8(46): 5716-5727. Available online at http://www.academic journals.org/AJAR.

Babatunde RO, & Matin Q (2009). Patterns of income diversification in rural Nigeria: determinates and impacts. *Quarterly Journal of International Agriculture. 48*(4): 305-320.

Babatunde R.O (2013). On-Farm and Off-farm Works: Complement or Substitute? Evidence from Rural Nigeria. Contributed paper for the 4th International Conference of the African Association of Agricultural Economists, September 22-25, 2013, Hammamet, Tunisia. URL: http://ageconsearch.umn.edu.

Belaineh, L. (2002). Rural livelihoods: Heterogeneous perspectives, objectives and constraints (Cases from Kersa and Babile woredas). *Journal of Development Research, 24*(2). Addis Ababa, Ethiopia.

Carter M (1997). Environment, Technology, and the social Articulation of Risk in West African Agriculture. *Economic Development and Cultural Change. 45*(3): 557-591.

Central Statistical Authority (CSA). 2007. Central Statistical Authority population estimates in Ethiopia, Addis Ababa. Retrieved from unstats.un.org/aicmd/Portals/0/Cen2007

Central Statistical Authority (2012). Agriculture Sample Survey 2011/2012 (2004E.C.) Volume IV. Report on Area and Production of Crops (Private Peasant holdings *Meher* Season). *Statistical Bulletin*. Addis Ababa. P. 318.

Daniel, S. and C. Johnson 2004. Livelihood options? The Political Economy of Access, Opportunity and Diversification. Overseas Development Institute (ODI) Working , Westminter, London UK. 233:112-216.

Deininger, K., & Okidi, J. (2000). Rural Households: Incomes, Productivity and Non-farm Enterprise. World Bank, Washington DC.

Dilruba K., and B.C. Roy (2012). Rural Livelihood Diversification in West Bengal: Determinants and Constraints. *Agricultural Economics Research Review, 25*(1), 115-124. Retrieved from ageconsearch.umn.edu/bitstream/126049/2/12

Ellis F (2005). Small-Farms, Livelihood Diversification and Rural-Urban Transitions: Strategic Issue in Sub-Saharan Africa. Paper presented for the research workshop on "The Future of Small Farms" in Kent, UK.

Fikremarkos, M. B. (2012). Ethiopia's World Trade Organization accession and maintaining policy space in intellectual property policy in the agreement on trade-related aspects of Intellectual Property Rights Era: A preliminary look at the Ethiopian patent regime in the light of the agreement on trade-related aspects of intellectual property rights obligations and flexibilities. *The J. of World Intellectual Property,* 15(3), 171–198.

Fikru, T. (2008). A Case Study of Non-Farm Rural Livelihood Diversification in Lume Woreda, Oromiya Reginonal State. A Master of Arts Thesis in Development Studies. Addis Ababa University, Ethiopia.

Government of Ethiopia (2009). Ministry of Agriculture and Rural Development.

Jirstrom, M., Andersson, A., & Djurfeldt, G. (2011). Smallholders caught in poverty – flickering signs of agricultural dynamism. In African Smallholders: food crops, markets and policy. (eds Djurfeldt et al.) London: CABI. Chapter, 4:74-106.

Kebede, M., Haileselassie, A.G., Haile, M., & Luchia T. (2014). Livelihood diversification strategies among men and women rural households: Evidence from two watersheds of Northern Ethiopia. *J. Agric. Econ. Develop., 3*(2), 017-025. Available online at http://academic research journals. org/journal /jaed .

Kembata Tambaro Zone, Department of Agriculture and Rural Development (2012). KTZ Agriculture and Rural Development department general agricultural activities reports. Unpublished.

Mathewos M. (2013). Determinants of livelihood diversification and its implication on food security in Kadida gamela district, Southern Ethiopia. Unpublished MSc thesis.

P.S. Sujithkumar (2007). Livelihood diversification : A case study in rural Tamil Nadu. *The Indian Journal of Labour Economics, 50*,(4).

Reta, H. & Ali, H. (2012). Livelihood Diversification among the Agricultural Land Scarce Peasants in the Central Highlands of Ethiopia. *Int. J. Agric.Sci. Res. Technol.2*(1):1- 8. Available online at: www.ijasrt.com.

Saraswati, P. A., H. Basavaraja, L.B. Kunnal, S.B. Mahajanashetti, & A.R.S. Bhat (2011). Crop Diversification in Karnataka: An Economic Analysis. Department of Agricultural Economics, University of Agricultural Sciences, Dharwad - 580 005, Karnataka. *Agricultural Economics Research Review, 24*, 351-357.

SNNPR, BoFED (2013). Annual Statistical Abstract 2012/13. Retrieved from www.csa.gov.et/index.php

Yenesew, S. Y., Eric, N. O., and Fekadu, B. (2015). Determinants of livelihood diversification strategies: The case of smallholder rural farm households in Debre Elias Woreda, East Gojjam Zone, Ethiopia. *African Journal of Agricultural Research*, *10*, 1998-2013. doi: 10.5897/AJAR2014.9192