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**Research Article****OUT-MIGRATION AND REMITTANCES IN NEPAL: IS THIS BOON OR BANE?****R. R. Kattel<sup>1\*</sup> and N. Upadhyay<sup>2</sup>**<sup>1</sup>Agriculture and Forestry University, Rampur, Chitwan, Nepal<sup>2</sup>Nepal Agriculture Research Council, Kathmandu, Nepal**ABSTRACT**

Out-migration of labour force and remittance earning are common phenomenon in current Nepalese economy. However, there is lack of information on its socio-economic implication including agricultural production and effective management of remittance. This research attempts to examine the impacts of remittance earning and out migration on socio-economic condition and agricultural production in Nepal. Farm and household level data were obtained from Nawalparasi and Dhading districts of Nepal during 2013. The research employed the Probit and multi-regression income models to gauge the determinants of remittance earning and its impact on the farm income. The results from the Probit model revealed that household size and extension services played a significant and positive role on household decision to migrate members for better job opportunity to abroad. However, farm income and poor had negatively significant determinant on the household decision to migrate. Findings from income function econometric model identified that the household members migration dummy had negatively significant on farm income while controlling extension services, total land holding and poor dummy variables. Finding revealed that the farm income decreased by 358% among migrated households as compared to non-migrant households. Findings of this research suggests that government and policy makers should develop better policy to utilize remittance and promote commercial agriculture farming to cope the bane situation of Nepalese agriculture.

**Key words:** Agricultural production, income function, Nepal, Probit

**INTRODUCTION**

Foreign employment has emerged as the largest component of service sectors in recent years. Up to 1990s, it was very small both in terms of the numbers of people leaving the country and the amount of remittance that they sent. In the last decade, there has seen a tremendous growth in foreign employment resulting in billions rupees in remittance inflow. The top destinations for Nepali workers are Korea, Malaysia and the Gulf countries namely Saudi Arabia, United Arab Emirates, and Qatar (IIDS, 2009). Though there are various estimates of number of Nepali migrant workers, the Nepal Migration Survey (2009) puts the number at about 2.1 million. Given the growth in foreign job seekers every year, this number is likely to be much higher. There has been a growing debate on how often the voluminous migrant remittances are used and to what extent they contribute to the development of the migrant's country of origin (Ratha, 2003). Nepal's migration rate is 3.3 and Nepal rank 31<sup>st</sup> from migration point (CIA factbook, 2014).

According to Shishido (2011), almost half of households (55%) have at least one migrant abroad or a returnee whereas remittance was the largest source of foreign exchange, accounting for 25% of Gross Domestic Product (GDP) in Nepal. One third of economically active male population was migrated abroad. In 2012, measured by remittance income as a share of GDP, Nepal ranked third among the countries receiving remittance. Among countries with at least 10 million people, Nepal was first in terms of remittance.

Migration is one of the three components of the population change. Any change in the volume and flow of migration will change the social, economic and demographic structures both in sending and receiving areas (Khatri-Chhetri, 1998). Barajas et al. (2009) examined the impact of remittances on growth in 84 recipient countries, based on annual observations in the period 1970-2004. Giuliano and Ruiz-Arranz (2009) investigated the relationship between remittances and growth. They found that remittances promoted growth in less financially developed countries. Combes and Ebeke (2011) analyzed a cross-sectional panel of 87 developing countries over the period 1975-2004 to estimate the impact of remittances on consumption instability and found that they significantly reduce such instability, the impact being stronger in less financially developed countries.

Adams and Page (2005) stated that international migration and remittance can significantly reduce the level, depth and severity of poverty in the developing world. Despite a constant rise in remittance

\* Corresponding author: rrkattel@afu.edu.np

earnings, the productive use of remittances has been the matter of concern. While the direct economic impact of remittances to alleviate poverty is not much controversial, the non-pecuniary consequences of remittance, such as impact on health, education, gender issues, social participation, politics, women empowerment, and cultural and social changes in origin societies have been still under-plowed areas. Apparently, for instance, the increased income resulting from remittance inflow urges households to reconsider their decision on health and education expenditure. In addition, the increase in household consumption resulting from remittance income, provided that they occur locally, can transmit positive impacts to other households in the community through increased economic activities (de Haas, 2005). Besides, the increased number of migration help raise local wage rate leading to the direct benefits to the people stay behind in the community. To address such back drops, this paper seeks to assess the impacts of remittance earning and out migration on socio-economic condition and agricultural production in Dhading and Nawalparasi districts of Nepal. The specific objectives of this study were to analyses the impact of remittance on socio-economic and farm income status of the households; and to investigate the determinants of the remittance earning by the resource-poor households.

## MATERIALS AND METHODS

### Study site and sampling design

The study was conducted in two purposively selected districts namely, Nawalparasi and Dhading of Nepal. From each district, one Village Development Committee (VDC) having sufficient migration and remittance earning households was purposively selected. Household level primary data were collected by using simple random sampling technique from 63 non-migrant and 62 migrant Households (HH) from Phulkharka VDC of Dhading and Ramnagar VDC of Nawalparasi in 2013. Pretested semi-structured interview schedule was used to collect field data. Data collected from face to face interview was cross validated using focus group discussions ensuring participation of migrated people, co-operative member, bank officer, non migrant's and intellectual person. These focus group discussions were done for Strength, Weakness, Opportunity and Threat (SWOT) analysis and to check the validity of empirical evidences. Secondary data were collected from different publications of relevant organizations. Both primary and secondary data were entered in SPSS (Version 16.0) and analyzed by using SPSS and Stata (Version 12.0).

### Analytical techniques

Binary Probit model was used to analyze the factors influencing migration decision of households. Binary Probit model, a popular statistical technique in which the probability of a dichotomous outcome (such as adoption or non-adoption) is related to a set of explanatory variables has been widely applied in adoption studies (Vasco, 2011). In this study, researchers assumed that farmers are risk-neutral and that their remittance earning and out migration is based on the comparison of their expected profit with and without out-migration for remittance earning

$$d_i^* \equiv E(\Pi_i^1) - E(\Pi_i^0) > 0 \quad (1)$$

Where, the latent variable,  $d_i^*$ , is not observed, and  $\Pi_i^1$  and  $\Pi_i^0$  are the profit with and without out migration and remittance earning, respectively. We assume that farm  $i$ 's expected net benefit from out-migration and remittance earning can be modeled as follows:  $d_i^* = \mathbf{X}_i\gamma + \varepsilon_i$ , where the vector  $\mathbf{X}_i$  includes characteristics of the household, farmer and its environment. The decision model for farmer  $i$  is thus written as,

$$d_i^* = \mathbf{X}_i'\gamma + \varepsilon_i \geq 0. \quad (2)$$

Similarly, the probability that household  $i$  out-migration for remittance was estimated using the following Probit model:

$$d_i = F(\mathbf{X}_i'\gamma) + v_i, \quad (3)$$

Where,  $d_i$  equals 1 if the expected net benefit  $d_i^*$  is positive, and 0 otherwise. Function  $F$  is the cumulative distribution of the  $\varepsilon_i$  error term, assumed standard normal. Finally, the Probit model of following structure was designed for the study:

$$\text{Pro}(y=1|x) = \beta_0 + \beta_1 \text{Age}_i + \beta_2 \text{Gender}_i + \beta_3 \text{Caste}_i + \beta_4 \text{Education}_i + \beta_5 \text{Household size}_i + \beta_6 \text{Land}_i + \beta_7 \text{Farm income}_i + \beta_8 \text{Poor}_i + \beta_9 \text{Extension}_i + \beta_{10} \text{Membership}_i + \beta_{11} \text{district}_i + \varepsilon_i \quad (4)$$

Where  $\beta_0$  is constant,  $\beta_1, \dots, \beta_{10}$  are the coefficient and  $\varepsilon_i$  is the error term

Where  $y$  is probability for  $y$  to be 1,  $R$  is function which value strictly varies  $x_i$ ,  $x_i$  is set of the predictor which affect  $y$ . Note if remittance earning  $y=1$  if not earning  $y=0$ .

Explanatory variable were socio demographic factor (like age, gender, education level, cast, household size, dependency ratio) institutional factor (training facility, extension visit, organizational membership) physical assets owned, gender issues, information etc.

The following income regression model was used to assess the impact of remittance on income from farming sector..

$$\ln Y_i = a_0 a_0 + a_1 a_1 Migration_i + a_2 a_2 Poor_i + a_3 a_3 Gender_i + a_4 a_4 Training_i + a_5 a_5 Extension_i + a_6 a_6 Land_i + a_7 a_7 LSU_i + a_8 a_8 Physical Assests_i + \varepsilon_i \quad (5)$$

Where,  $\ln Y_i$  = Annual household income from agriculture and livestock sectors (NRs. in Natural Log),  $a_0$  is constant,  $a_1, \dots, a_8$  are the coefficients and  $\varepsilon_i$  is the error term. Description of variables used in these previously stated models is presented in Table 1.

**Table 1. Description of variables used in the models**

Variable	Description of variable	Expected Sign
<i>Migration</i>	Migration status of the sample households (1=migrated, 0=non-migrant)	`
<i>Age</i>	Age of the household head (year)	-
<i>Gender</i>	Gender of the household head (1=Male, 0=Female)	-
<i>District</i>	Study district (1=Nawalparasi, 0=Dhading)	+
<i>Education</i>	Year of schooling of the household head (Year)	-
<i>Caste</i>	Caste of the household head (1=Higher caste, 0= Other)	+/-
<i>Family</i>	Type of family ( 1=Joint, 0=Nuclear)	+/-
<i>HHsize</i>	Total household size (Number)	+
<i>Land</i>	Total land holding size (Ropani)	-
<i>Training</i>	Training received by the respondents (1=Yes, 0=No)	-
<i>Extension</i>	Extension service (1=Easy access, 0=Otherwise)	-
<i>Member</i>	Membership in community level organization (1=Yes, 0=No)	-
<i>Poor</i>	Household is poor (1=Poor, 0=otherwise)	+
<i>Farm income</i>	Annual farm income of households (NRs.)	-
<i>Lnfarm income</i>	Natural log of Annual household income from agriculture and livestock sectors (NRs. In Natural Log)	-
<i>Physical assets</i>	Total farm physical assets of household (number)	-
<i>LSU</i>	Livestock holding (LSU)	+

## RESULTS AND DISCUSSION

### Socio-demographic characteristics of the respondents by migration status

Socio-demographic characteristics of respondents by migration status are presented in Table 2. Among the variables used in comparison by migration, the age of household head, gender of the household head, caste of household head, number of household members, household member with secondary and intermediate level education, total educated female member in household, poor and farm income were found significantly different between the migrants and non migrants. The age of the household head was 42 years which was lower for migrant household than non-migrant household and was significant at 10% level. Average percent of the male household head was 65% which was found lower in migrant household (56%) as compared to non-migrant household (73%). The average of the member with secondary level education was 1.65 with slightly more in the migrants' household than non-migrants' household. The average number of female educated members in household was 2.0 which was found higher among migrant household as compared to non-migrants that was statistically significant at 10% level.

The average household size was 5.8 which was more in migrants than non migrants and found statistically significant at 10% level. Concerning to the average number of person doing service was 0.4 which was more in non-migrating household as compared to migrating household. Most of the migrant households were from higher caste<sup>3</sup> (65%) as compared to non-migrant (50%) and found significantly

<sup>3</sup> Brahmin, Chettri and Takuri are the higher castes in Nepal



different at 5% level. About 43% of surveyed households were living below poverty line. The poor<sup>4</sup> was found lower among migrant household (19%) compared to non-migrant household (68%). On an average, annual household income from agriculture and livestock sectors was found NRs. 33042 which was lower among migrant household (NRs. 24080) as compared to non-migrant household (NRs. 42148). Remittance and out migration have negative effect on agriculture production and income due to lack of labor forces and shifting the household profession (Table 2).

**Table 2. Socio-demographic characteristic of sample respondents by migration status**

Variable	Total (N=125)	Migrants (n=63)	Non migrants (n=62)	Mean difference	T value
Age of the household head	42.07	40.20	43.92	-3.71	-1.77*
Gender of the household head	0.65	0.56	0.73	-0.17	-1.99**
Caste	0.58	0.65	0.5	0.15	1.71**
Household size	5.84	6.35	5.32	1.02	2.24**
Number of member of age group between 15-59 years	3.25	3.50	3.00	0.50	1.60
Number of the household member doing agriculture	2.25	2.10	2.40	-0.80	-1.20
Total educated male in HH	2.15	2.30	2.00	0.10	1.30
Total educated female in HH	2.00	2.20	1.80	0.30	1.60*
Number of organization in which HH is member	1.11	1.21	1.00	0.21	1.29
Poor <sup>5</sup>	0.43	0.19	0.68	-0.05	-6.25***
Training	0.18	0.17	0.19	-0.02	0.27
Extension service	0.30	0.34	0.24	0.10	1.31
Membership	0.85	0.86	0.84	0.02	0.28
Total cultivated land <sup>6</sup>	11.38	9.92	12.86	-2.93	-1.60
Physical assets	14.37	13.22	15.53	-2.31	-1.54
Livestock standard unit <sup>7</sup>	5.93	5.53	6.33	-0.79	-0.91
Farm income <sup>8</sup>	33041	24079	42148	-18068	-2.87**

\*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1.

(Source: t-statistics results from field survey data, 2013)

Annual household income from different sectors by migrants and non migrants household are presented in Table 3. It was found that income from agriculture, livestock and business were found higher among non-migrant households as compared to migrant household which were significantly different between two groups. Total household annual income was found NRs. 308,789 which was higher for remittance earning migrant household as compared to non-migrant household and statistically significant at 1% level. Concerning to farm income the average was NRs. 14,009 and it was found more in case of non migrant household (NRs. 17,155) than migrants (NRs. 10,864). Average annual household income from livestock was NRs. 19,105 which was also found lower among migrant households than non-migrant household this value was also statistically significant at 10% level. Average farm income from agriculture and livestock was found NRs. 44,643. The farm income was lower in case of migrant household than non-migrant household which was also statistically significant different at 1% level. Employment income in non migrants was higher than migrant household and was found significant at 1% level. The average total of annual farm income was NRs. 44643. It was highly significant among the migrants and non migrants.

<sup>4</sup> Poor variable has been defined as those household member had less than USD 1 per day per person income (less than USD 1/person/day income=1, 0=otherwise)

<sup>5</sup> A household is considered poor if its income is lower than USD 1/person/day

<sup>6</sup> 19.97 Ropani = 1 Hectare

<sup>7</sup> LSU is Livestock Standard Unit (based on cattle equivalent: 1 cow/cattle= 10 goats/lambs,= 4 pigs and = 143 chicken/ducks)

<sup>8</sup> 1 USD = Nepalese Rupees (NRs.) 93 during research period.

**Table 3. Annual household incomes from different sectors by migration status (NRs.)**

Sources of income	Total	Migrants	Non- migrants	Mean difference	T value
	(n = 125)	(n = 63)	(n= 62)		
Agriculture	14009.5	10864.3	17154.8	-6290.5	-1.65*
Livestock	19104.6	13215.6	24993.6	-11778	-1.67*
Farm	44643.4	31050.6	58236.2	-18069	-2.16***
Off farm	9419.9	13136.5	5703.2	7433	0.68
Business	20380.7	6896.8	33864.5	-26968	-1.71*
Employment	33598.5	13888.9	53308.1	-39419	-2.54***
Remittance	210984	421968	0	-421968	10.31***
Others	211.9	214.2	209.6	4.6	0.02
Total	308789	480185	137393	342791	7.20***

\*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1.

(Source: t-statistics results from field survey data, 2013)

### Perceived boon from out-migration and remittance

Perceived benefits of the migration from view point of both migrants and non-migrants are presented in Table 4. The benefits were listed out through focus group discussion and statement was asked to the respondent. It was found that respondent were in favor of statement in migrant help to pay school fee (60.8%), family income increased (72.8%), migrant's get better job opportunity (66.4%), migration provide more land space for farming in rural area (65.6%), Migrants introduce methods of disease control (55.2%), migrants were happy of being family member out (66.4%), migration helps to understand other people culture (61.6%), migrants gets better job quality of food than previous (61.6%), the migrants helps you to pay school fee (60.8%), migration increases prestige in the society (55.2%), migration removes credit constraints (55.2%), migrants able to purchase food during low production (50.2%) and migration makes the culture to be widely known (50.2%). Rests of benefit were not in favor of the statement. Among the favorable statement migrants get better job opportunity de Haas (2006) and migrants tell how to get credit were significantly different among two districts. Rests of variables were not statistically significant.

**Table 4. Perceived benefits of the out migration by survey district**

Benefits type	Full sample (N= 125)	Survey district		Chi-Square Value
		Nawalparasi (n=64)	Dhading (n=61)	
Your family income increased because he/she migrated	91(72.8)	49(76.6)	42 (68.9)	0.94
You are happy that you have a migrant in your family	89 (71.2)	42 (68.8)	47 (73.4)	1.44
The migrant get better job opportunity	83 (66.4)	36 (59.0)	47 (73.4)	2.9*
It provide more land space for farming in rural area	82 (65.6)	37 (60.6)	45 (70.3)	0.36
Migrants gets better quality foods than previous	77 (61.6)	38 (62.3)	39 (60.9)	0.02
The migrant help you to pay school fees	76 (60.8)	42 (65.6)	34 (55.7)	1.28
It increases prestige in the society	69 (55.2)	32 (52.4)	37 (57.8)	0.36
Migration removes the credit constrains	65 (52.2)	34 (55.7)	31(48.4)	0.01
Migrants able to purchase foods during low production	63 (50.4)	22 (36.1)	41 (64.1)	0.34
It exposes you to new devise and how to operate them	54 (43.2)	26 (42.6)	28 (43.7)	0.01
Increase business relationship	49 (39.2)	26 (42.6)	23 (35.9)	0.58
Improved seed varieties are brought by the migrants	45 (36.0)	24 (39.3)	21 (32.8)	0.09
The migrant tells you how to get credit facilities in town	42 (33.6)	25 (40.9)	17 (26.5)	1.29*
The migrant pay the house/land rent	32 (25.6)	14 (21.9)	18 (29.5)	0.96

Notes: Figures in parentheses indicate the percentage. \* p < 0.1. Questions were asked for both out-migrant and non-migrant households

### Perceived bane of out migration and remittance

Perceived problems of out migration are presented in Table (5). The problems list was also prepared by similar ways as benefit. The problems like miss love one (74.4%), migrants family waste money (67.2%), the movement decrease labor force (Osita-Kjoku and Chikere, 2015) for farm work (66.4%), increase in wage rate hence cost of production (65.6%), movement left more for you to do (65.6%), difficult to cope with city life style (60.8%), brings about harmful chemical (57.6%), Migrants misses family festival (55.2%), Increase transportation cost (55.2%), Insecurity of family member (52.0%), Increase in crime shows the favorable attitude toward the statement (50.4%), while rest of these show un-favorable attitude. Comparing to district wise increase in wage rate, insecurity of family member, land of village are sold at cheaper rate to stranger and use of machines destroy soil structure were statistically significant at 5% level.

**Table 5. Perceived problems of out migration by survey district**

Problem type	Full sample (N= 125)	Nawalparasi (n =64)	Dhading (n =61)	Chi-Square Value
Miss love one	93 (74.4)	50 (78.1)	43 (70.4)	0.96
Migrants family waste money	84 (67.2)	43 (67.1)	41 (67.2)	0.00
The movement decrease labor force for farm work	83 (66.4)	44 (68.7)	39 (63.9)	0.33
Increase in wage rate hence cost of production	82 (65.6)	50 (78.1)	32 (52.4)	9.11**
Difficult to cope with city life style	76 (60.8)	38 (59.3)	38 (62.3)	0.11
Migrants misses family festival	69 (55.2)	36 (56.2)	33 (54.1)	0.06
Insecurity of family member	65 (52.0)	27 (42.1)	38 (62.3)	5.06**
Increase in crime	63 (50.4)	32 (50.0)	31 (50.8)	0.01
Migrants demands more from house after migration	61 (48.8)	31 (48.4)	30 (49.1)	0.01
Migrants family incur more debt	53 (42.4)	25 (39.1)	28 (45.9)	
Land of village are sold at cheaper rate to stranger	51 (40.8)	19 (29.6)	32 (52.4)	6.70**
Migrants refuses to come back	41 (32.8)	21 (32.8)	20 (32.7)	0.00
Use of machine destroy land / soil structure	38 (30.4)	33 (51.5)	5 (8.2)	3.01*

Notes: Figures in parentheses indicate the percentage. \*\*  $p < 0.05$ , \*  $p < 0.1$ . Questions were asked for both out-migrant and non-migrant households

### Reason for out migration

In order to analyze various reasons for migration a four focus group discussion was performed in surveyed districts. The various reasons along with their index are presented in Table 6. The focus group discussion conducted on the topic specified above shows that index value of better employment was highest and thus was ranked as major cause of out migration. Similarly, next cause was last livelihood option, followed by lack of cash, political conflict and previous out-migration of relatives.

**Table 6. Rank for reasons for out-migration**

Reasons for migration	Assigned level scales					Weight	Index	Rank
	5	4	3	2	1			
Better employment	72	25	2	16	10	508	4.064	I
Last livelihood option	35	49	25	14	2	476	3.808	II
Lack of cash	24	22	31	22	26	371	2.968	III
Political conflict	14	29	6	48	28	328	2.624	IV
Previous out migration of relatives	5	2	55	25	38	286	2.288	V

**Note:** Respondents were asked to rank main cause of out-migration from high to low by assigning five point scales. The scale values considered were 5 for very high, 4 for high, 3 for medium, 2 for low and 1 for very low level.

(Source: Field Survey and FGDs, 2013)

### Determinants of migration and household farm income

Average values of variables used in the econometric models are presented in Table 7. Econometric models were used to determine factors affecting migration and remittance earning by using Probit model and income function regression, respectively.

**Table 7. Average level of different dependent and independent variables used in models**

Variable	Mean (n=125)	Std. Dev.
Migration	0.5	0.5
Age	42.04	11.79
Gender	0.64	0.48
District	0.51	0.5
Education	6.12	5.74
Caste	0.57	0.49
Family	0.53	0.5
HHsize	5.84	2.6
Land	11.37	10.28
Training	0.18	0.38
Extension	0.29	0.45
Member	0.84	0.36
Poor	0.43	0.49
Farm income	33042	47252
Lnfarm income	8.3	4.57
Physical assets	14.36	8.4
Livestock holdings	5.92	4.83

This analysis focused on the 125 migrant and non migrant households from Nawalparasi and Dhading districts. The Wald test for the model indicated that the model had good explanatory power at the 1% level. The Pseudo R<sup>2</sup> is 0.47. The overall predictive power of the model (86.4%) and explanatory power (46.97%) were quiet high. The area under the ROC curve for the model was 0.91 which revealed that the model present adequate discrimination. The link test presents results according to the expectation. The interpretation based on the coefficients in a Probit model that presents a linear regression of the z-score of decision probability on the independent variables can be problematic. So, the marginal effects were derived from the regression coefficients, calculated from a partial derivative as a marginal probability. Among the eleven variables hypothesized to influence the migratory decision, the four variables were found statistically significant These were household size, farm income, poor and extension services. Table (8).

The estimates showed that the decision about whether or not to migrate was positively and significantly determined by household size and extension whereas farm income and poor had negatively influenced on households' decision to send their member for remittance earning. Holding other factors constant, when household size increases by 1 number, there is an increase about 11% in the probability that household member will decide to migrate. Similarly, if the household member gets extension service easily then probability to migrate will be increased by 37.6% as compared to those have not received extension service. The probability to migrate decreases by 11% among the poor households as compared to non-poor household. This might be due to low bearing capacity to accommodate the travel expenses. Farm income was an important variable, with negatively significant coefficients at 1% for migration decision. If farm income from agriculture and livestock sectors increased by one percent, the probability to migrate decreases by 10.6%. The negative correlation was found in age, gender and survey district. But, Table 9 shows that higher the age of household head lower will be migration, higher caste results to more migration, more years of schooling of household head lowers migration and people of terai region adopt lower migration. But, these are statistically non-significant in their impact.

**Table 8. Determinants of remittance earning and out-migration in study area**

Variable	Coef.	Std. Err.	Z	P>z	dy/dx
<i>Age</i>	-0.022	0.015	-1.43	0.152	-0.008
<i>Gender</i>	-0.390	0.347	-1.12	0.261	-0.143
<i>Caste</i>	0.488	0.360	1.36	0.175	0.185
<i>Education</i>	-0.005	0.030	-0.18	0.855	-0.002
<i>HHsize</i>	0.290***	0.078	3.72	0.000	0.109***
<i>Land</i>	0.016	0.018	0.93	0.352	0.006
<i>Lnfarm income</i>	-0.281***	0.129	-2.17	0.030	-0.106***
<i>Poor</i>	-2.121***	0.372	-5.7	0.000	-0.702***
<i>Extension</i>	1.151***	0.419	2.75	0.006	0.376***
<i>Member</i>	0.56	0.427	1.31	0.190	0.219
<i>District</i>	-0.44	0.421	-1.05	0.296	-0.165
Constant	2.025	1.387	1.46	0.144	-0.008
Number of obs =			125		
LR chi2(11) =			81.40***		
Prob > chi <sup>2</sup> =			0.000		
Log likelihood =			-45.940		
Pseudo R <sup>2</sup> =			0.469		

Notes: dy/dx is the marginal probability after Probit. \*\*\*p<0.01

(Source: Field survey, 2013)

### Determinants of farm income

The value of coefficient of multiple determination showed that 22% of the variation in the annual farm income explained by the independent variables included in the income function regression model (Table 9). In addition, findings showed that the F-statistic (4.10) confirmed the stability of the overall regression equation and joint significant at 1% level in explaining farm income as well as also confirmed the coefficients to changes in specifications. Variance Inflation Factor (VIF) presents results according to expectation with its value 1.35 and none of the variables has VIF value higher than 2. It means there is no multicollinearity between independent variables included in the model. The regression model presented in Table 9 shows that the migration status of the household, poor, extension service and land were the statistically significant variables on determinants farm income from agriculture and livestock sectors. However, training received, gender, livestock standard unit and physical farm asset were not found significant.

The farm income decreased by 358% among migrant households as compared to non-migrant household and it was significant at 1% level. The poor was negatively and significantly determining farm income (Maharjan et al., 2013). Poor households have 169% less annual farm income as compared to non-poor households. It was significant at 10% level. Similarly the extension service had positive significant impact on farm income. Household getting extension services had 187% more farm income than household not getting the extension services. It was highly significant at 1% level. Land also has positive significant impact on farm income. As the land size increases by 1 ropani the farm income will be increased by 10%.

**Table 9. Regression results for determinants of farm income (NRs. in natural log)**

Variables	Coefficient	Std. Error	T	P>t	Expected sign.
<i>Migration</i>	-3.576***	0.884	-4.04	0.000	-
<i>Poor</i>	-1.688*	0.891	-1.90	0.061	-
<i>Gender</i>	-0.025	0.81	-0.03	0.975	+
<i>Training</i>	0.862	0.9815	0.88	0.381	+
<i>Extension</i>	1.868***	0.879	2.12	0.036	+
<i>Land</i>	0.101***	0.042	2.39	0.018	+
<i>LSU</i>	0.125	0.099	1.26	0.210	+
<i>Physical assets</i>	0.014	0.059	0.25	0.803	+
Constant term	8.024***	1.213	6.61	0.000	+/-
Summery statistics					
Number of obs.			125		
F( 8, 116)			4.10***		
Prob > F			0.000		
R-squared			0.22		
Adj R-squared			0.166		
Root MSE			4.177		
Variance Inflation Factor			1.35 (Mean VIF)		

\*\*\*<0.01, \*\*<0.05 and \*<0.1

(Source: Field survey, 2013)

### CONCLUSION

Findings of this study concluded that the remittances obviously increases the total household income and family expenditure, but negatively affects the education, agriculture production, farm income social harmony and labor relationship. Remittance is an alternative way of livelihood and food security for the rural poor as it is playing positive role in women empowerment and the decision making. The findings further revealed that out migration and remittance earning have great contribution for reducing household poverty. On an average, the poverty line was found 43%. Poor members were found higher among non-migrant households as compared to migrant households. The results from the Probit model revealed that household size and extension services played a significant and positive role on household decision to migrate. However, farm income and poor were negatively affecting household decision to migrate. Extension service had contributed about 37.6% for determinant on out migration in study area. Poor households had negatively and significantly contributed to out-migration and remittance earning. Furthermore, the findings from income function econometric model identified that the extension services and total land had positively significant on annual household income from agriculture and livestock sector while poor and migration status played significant but negative role on farm income. The farm income decreased by 358% among migrant households as compared to non-migrant household and it has statistically significant at 1%level. This study recommended that positive and significant variables should be considered the key measure for better out migration and remittance earning policy formulation in the national context.

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