Household Livelihoods Strategies of Descendants of Transmigrants in Jambi Province, Indonesia

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Abstract

The implementation of transmigration as one of population programs in Indonesia has been going on for a long time. Especially in Jambi Province, it has been started since 1940. Today, most of the former transmigration areas are already occupied by descendants of transmigrants households. These households have limited land (due to the inheritance/ distribution of land from their parents as first generation transmigrants) and decreased fertility land. This has an impact on the welfare of families in ex-transmigration villages. Based on this situation, it is necessary to conduct a study related to the livelihood strategies of descendants of transmigrants household. Livelihood strategy study has to be linked to household characteristics and social capital as the most important capital own by rural agriculture communities. The study aims to analyze the livelihood strategies of descendants of transmigrants households in Jambi Province. The data were obtained from a survey of 300 descendants of transmigrants households in six ex-transmigration villages in Jambi Province. Analytical tools in this study are descriptive statistical tools and multinomial logit regression model. The results found that the livelihood strategy most frequent to be carried out by descendant of transmigrants households was dual income patterns (39.33 percent), followed by agricultural livelihood engineering (31.00 percent) and migration (29.67 percent). Factors that significantly influence the choice of livelihood strategy by the households are the education level and age of head of household, the number of household members, the proportion of working household members, and social capital.

Keywords: agriculture; dual income patterns; migration; transmigration; transmigrant

1. Introduction

Transmigration as one of the population programs and regional development programs in Indonesia has been going on for quite a long time, starting from the era of Dutch East Indies government in 1905 (transmigration was known as 'colonization'). In its implementation, the program has shown various successes, both in improving the welfare of transmigrants and in regional development.

Research by Najiyati et al. [1] and Najiyati and Mujianto [2] showed an increase in the welfare of transmigrants. On the creation of employment opportunities, transmigration is not only able to create employment opportunities in the agricultural sector, but also in the other non-agricultural sectors both upstream and downstream [3]. In the context of regional development, new growth centers have developed in transmigration areas. They have become the center of agricultural production, the center of plantation production, and even the government center.

In their research, Najiyanti and Mujianto [2] stated that of the total 1,406 Transmigration Settlement Units (Unit Permukiman Transmigrasi/UPT), 520 UPT (37 percent) became centers of food production while other UPT have developed into centers of production of other commodities, especially plantation crops.

One of the transmigration placement areas in Indonesia is Jambi Province. Transmigrant placement in Jambi Province has begun in 1940 and been continuing. Based on the 2017 data, the number of transmigrants placed reached 100,260 households in 209 transmigrant placement areas in Jambi Province. It made Jambi Province as one of the main areas for transmigrant placement.

However, it should be understood that the transmigration program only provides land for one generation. Due to its long period of transmigration program, ex-transmigration settlements today have been occupied by descendants of transmigrants both second generation transmigrant and third generation transmigrant. If the descendants are still living in the ex-transmigration area, it will certainly have an impact on the land division within the family (from their transmigrant parents' land). With the land being divided and becoming a smaller area, and followed by soil fertility decline, of course descendants of transmigrants will have difficulty to meet their needs only from agricultural sector. In the next phase, this will have an impact on the family welfare in the ex-transmigration area.

To overcome the negative impacts due to changes in land ownership and in land fertility, it is necessary to conduct studies related to the household livelihood strategies of descendants of transmigrants. Livelihood strategy approach does not only analyze income and occupation, but also tries to have better understanding on the life of the household, their priorities in life, and the things that help them to survive.

Livelihood strategies consist of lievelihood ways, the activities, the assets, and the access that jointly determine the living gained by an individual or household [4], [5], [6]. Livelihood strategies denote the range and combination of activities converting possessed livelihood assets into expected livelihood outcomes [7]. It includes choices of sources of income in society. The more diverse the choices, the more possible the creation of livelihood strategies in the community/household.

According to Dharmawan [8], in defining livelihood strategies it should be emphasized on the definition of livelihood strategy rather than means of living strategy. Conceptually, livelihood strategy is a strategy designed/carried out by individuals or groups to maintain their lives and is still in accordance with social infrastructure, social structure, and the cultural value system.

In livelihood strategy concept, there is livelihood asset. According to Scoones [9], there are four types of livelihood assets, namely Natural Capital, Human Capital, Financial Capital and Substitutes, and Social Capital, while Ellis [5] added Physical Capital in addition to the four assets mentioned, so according to Ellis, there are five types of livelihood assets. while Ellis [5] also suggested that there are three groups of sources of income, namely: a) Farm Income refers to income generated from own-account farming, whether on owner-occupied land, or on land accessed through cash or share tenancy; b) off-farm Income refers to income generated from other farm; includes labor payments in kind, such as the harvest share systems and other non-wage labor contracts that remain in agricultural sector, and c) Non-farm Income refers to non-agricultural income sources, such as retirement salary, trade, etc.

Furthermore, a number of scholars have created various classifications of livelihood strategies. Approaches of classifying livelihood strategies incorporate the asset-based approach, income-based approach and activity choice approach. The asset-based approach classifies livelihood strategies from the perspective of input according to asset allocation across different activities [10] or asset portfolios [11]. The income-based approach classifies livelihood strategies from the perspective of output according to income from a certain source [12], [13], [14], [15]. The activity choice approach classifies livelihood strategies from the perspective of the process. Livelihood strategies connect livelihood assets and livelihood outcomes through a sequence of income-generating activities [16], [17]

Carner [18] classified livelihood strategies into: a) doing various types of jobs even those with low wages; b) taking advantage of kinship ties; c) migration. Widodo [19] suggested two classifications of livelihood strategies, namely: a) economic strategies, including dual income pattern, mobilization of family labor to work, and migration, and b) social strategies including making use of local welfare institutions and social networks. Furthermore, Dharmawan [8] divided livelihood strategies into: a) Legal livelihood strategies, namely positive activities/actions based on socio-economic activities, for example, production activities, migration, substitution strategies and b) illegal livelihood strategies, namely negative activities/actions that violate the law. These activities are robbing, stealing, prostitution, corruption, etc. On the other hand, Scoones (1998) divided livelihood strategies into three categories, namely: a) Livelihood engineering. It includes various efforts in the utilization of the agriculture sector more effectively and efficiently, both through the addition of external inputs in the form of labor or technology (extensification) or by expanding production land (intensification); b) Dual income patterns, by diversifying livelihood patterns by finding other jobs or side jobs to increase income (job diversification); and c) Migration. It is an effort to earn a living by moving/migrating.

Livelihood strategy chosen by descendants of transmigrants is inseparable from the household characteristics and their capitals. In the context of rural agricultural households, one of the most important capitals is social capital. Therefore, the study of livelihood strategies must also involve household characteristics and social capital as factors influencing it. Several studies have shown that social capital has become a tangible capital in developing a variety of livelihood strategies to support agricultural household sustainable living [20], [21].

Through livelihood strategy approach associated with household characteristics and social capital as the most important capital in rural agricultural communities, the study is expected to be a basis that is beneficial to the formulation of policies to improve community welfare in ex-transmigration settlements, especially in Jambi Province

2. Research Methods

2.1. Research Location

Location of the research was in ex-transmigration villages in Jambi Province. Considering the large number of ex-transmigration villages in Jambi Province, six villages were designated as research locations. The determination of these villages was based on the main commodity and the development stage of the village (refer to the study of Junaidi [22] (Table 1).

Table 1. Villages as Research Locations

Name of Village	Sub-district	Regency	Main commodity	Stage
Mekar sari	Kumpeh Ilir	Ma. Jambi	Rice	Low
Bandar Jaya	Rantau Rasau	Tanjabtim	Rice	High
Bukit Mas	Sungai Bahar	Ma. Jambi	Palm oil	Low
Rasau	Renah Pamenang	Merangin	Palm oil	High
Sungkai	Bajubang	Batanghari	Rubber	Low
Rimbo Mulyo	Rimbo Bujang	Tebo	Rubber	High

Main data of this study is primary data derived from respondents from the descendant households in the sample locations of ex-transmigration villages. Population in this study is all households of descendants of transmigrants in ex-transmigration villages of the study in Jambi Province. Samples were determined at five percent of the total population, and then 300 households were selected. Sampling was done by random sampling.

Instrument for data collection is questionnaires to analyze the socio-economic characteristics and livelihood strategies of the households in Jambi Province

2.1. Analysis

Descriptive statistical analysis was carried out to analyze household socioeconomic characteristics, social capital, and livelihood strategies of descendants of transmigrants in Jambi Province.

Multinomial logit regression is used to analyze the influence of socioeconomic characteristics and social capital on the livelihood strategies of descendants of transmigrants households in Jambi Province. Given that there are three categories in livelihood strategies, two models are formed in the following equations:

$$z_1(x) = ln\left(\frac{\Pr(Y=1:x)}{\Pr(Y=0:x)}\right) = \beta_{10} + \beta_{11}X_1 + \beta_{12}X_2 + \beta_{13}X_3 + \beta_{14}X_4 + \beta_{15}X_5 + e_{1i}$$

$$z_2(x) = ln\left(\frac{\Pr(Y=2:x)}{\Pr(Y=0:x)}\right) = \beta_{20} + \beta_{21}X_1 + \beta_{22}X_2 + \beta_{23}X_3 + \beta_{24}X_4 + \beta_{25}X_5 + e_{2i}$$

Where:

Y = 0 is agricultural livelihood engineering (as base category)

Y= 1 is dual income patterns

Y= 2 is migration

X_1 = education level of head of household

X_2 = age of head of household

X_3 = number of household members

X_4 = proportion of working household members

X_5 = social capital

2.3. Measurement of Research Variables

2.3.1. Education Level of Head of Household: Education is level of education of transmigrant descendant who is the head of family. It is measured based on the latest level of education completed by him/her and it is grouped into four categories, namely: 1) =< Elementary school; 2) Junior High School; 3) Senior High School; 4) University/Higher Education

2.3.2. Age of Head of Household: Age is the age of transmigrant descendant who is the head of family. Age is grouped into three categories: 1) =< 34 years old; 2) 35 – 44 years old; 3) >= 45 years old.

2.3.3. Number of Household Members: Number of household members is the number of household members who are dependency load of the head of family, both those who live together or separately with the household.

2.3.4. Proportion of Working Household Members: It is the percentage of working household members compared to the total number of household members (including the head of household). It is grouped into four categories, namely: 1) =< 20 percent; 2) 20.99 – 40.99 percent; 3) 40.99 – 59.99 percent; 4) => 60 percent.

2.3.5. Social Capital: Social capital is a social and economic networking in community between individuals and groups, both formally and informally, that becomes beneficial.

Social capital is measured in three components, namely trust, networks, and norms. These components will be analyzed using a modified questionnaire from the questionnaire by Hastuti et al. [23]. All statements and answers per item are evaluated = 1 (never), = 2 (sometimes), = 3 (often), and = 4 (always).

Furthermore, the average value for each component and in total are grouped into three categories, namely: 1) low (score <2.00); 2) moderate (score between 2.00 - less than 3) and 3) high (score> = 3.00)

2.3.6. Livelihood Strategies: Livelihood strategies refer to the concept by Scoones [9] and are measured on a nominal scale, namely: 1) agricultural livelihood engineering; 2) dual income patterns; 3) migration. To assess and classify households into these three livelihood strategies, it will be based on the following characteristics:

The characteristics in order to classify the households into three livelihood strategies are presented below:

- Agricultural Livelihood Engineering
  1. There are efforts in order to increase the productivity of agricultural land
  2. Owning agricultural land other than the main land
  3. Mobilization of household members as labor to work on agricultural land
  4. Involving wage labors to work on agricultural land
  5. Participation in agricultural activity trainings
  6. Borrowing money to farm
  7. In order to increase the production or facilitate agricultural activities, regular replacement of agricultural equipment or use/add modern technology are done.
- Dual income patterns
  1. Head of the family has side job in agricultural sector
  2. Side jobs in agricultural sector generate greater income
  3. Head of the family has side job in non-agricultural sector
  4. Household members have off-farm activities
  5. Household members have non-farm activities
- Migration
  1. Head of the family works outside the village
  2. There are household members working outside the village

3. Result and Discussion

3.1 Characteristics of Descendants of Transmigrants in Jambi Province

The average age of the descendants of transmigrants who are the head of the household is 42.5 years. Frequency distribution shows that only 19.33 percent are less or equal to 34 years old. Most of them are 35 – 44 years old (38.67 percent) and equal to or more than 45 years old (42.00 percent) (Table 2).

Table 2. Distributon of Descendants of Transmigrants Based on Age of Head of Household in Jambi Province, 2019

Age Group	Frequency	%
=< 34	58	19.33
35 - 44	116	38.67
>= 45	126	42.00
Total	300	100.00
Average	42,5	

Source: Field surveys, 2019

Based on the level of formal education, it appears that the level of the descendants in Jambi Province is still low. More than half (55.33 percent) of the descendants only have junior high school diploma and lower level of education, and only 8.67 percent of them have tertiary education (from D1/Associate Degree 1 to S1/Bachelor's Degree) (Table 3).

The higher an individual's education level, the higher his/her ability to make decisions in utilizing various existing resources in order to increase income. Therefore, the low level of education certainly has an impact on the low ability of individual to take advantage of various livelihood opportunities.

Table 3. Distribution of Descendants of Transmigrants Based on Education of Head of Household in Jambi Province, 2019

Level of Education	Frequency	%
=< Elementary School	84	28.00
Junior High School	82	27.33
Senior High School	108	36.00
University	26	8.67
Total	300	100.00

Source: Field surveys, 2019

Based on the main activities/work, the largest part (almost one third or 63.67 percent) of descendants of transmigrants in Jambi Province works as farmers. Other dominating occupation is construction worker (10.67 percent) (Table 4)

Table 4. Distribution of Descendants of Transmigrants Based on Occupation in Jambi Province, 2019

Type of work	Frequency	%
Farmer	191	63.67
Construction worker	32	10.67
Civil Servant	26	8.66
Self-employed/Entrepreneur	24	8.00
Private Employee	17	5.67
Farm worker	5	1.67
Merchant	5	1.67
Total	300	100.0

Source: Field surveys, 2019

Number of household members or household size also influenced the livelihood strategies of the household. The greater the number of household members, the greater the needs and expenses of the household, so it requires a more appropriate strategy in making a living.

Average number of household members of the descendants is 4.00 people (Table 5). Based on its distribution, the largest share (43.33 percent) of households has 3 – 4 members, followed by households that have less than or equal to 2 members (30.33 percent) and the remaining share (43.33 percent of households has five or more members.

Table 5. Distribution of Descendants of Transmigrants Based On The Number of Household Members in Jambi Province, 2019

Number of Household Members (in person)	Frequency	%
=< 2	91	30.33

3 – 4	191	43.33
>= 5	79	26.34
Total	300	100.0
Average		4.0

Source: Field surveys, 2019

Based on their main activities, 41.28 percent of the total household members are working and the remaining of them, 58.72 percent, are students, doing domestic works, or doing other activities as their main activities (Table 6).

Table 6. Distribution of Descendants of Transmigrants Based on The Proportion of Working Household Members in Jambi Province, 2019

Proportion (%)	Frequency	%
=< 20s	41	13.67
20,99 - 40,99	141	47.00
40,99 - 59,99	58	19.33
>= 60	60	20.00
Total	300	100.0
Average		41.28

Source: Field surveys, 2019

3.2 Social Capital

Social capital of descendants of transmigrants in Jambi Province is relatively good. There isn't any descendant with low social capital. of the total respondents, 46.00 percent is in the moderate category of social capital and 54.00 percent had high social capital. Based on the components of social capital, the highest score is trust (3.09) followed by social norms (3.07) and social networks (2.89) (Table 7)

Table 7. Distribution of Descendants of Transmigrants Based on Social Capital in Jambi Province, 2019

Components	Frequency (N=300)	%
Trust		
Moderate	120	40.99
High	180	60.00
Social Networks		
Moderate	168	56.00
High	132	44.00
Social Norms		
Moderate	130	43.33
High	170	56.67
Total of Social Capital		
Moderate	138	46.00
High	162	54.00

Source: Field surveys, 2019

3.3 Livelihood Strategies

Livelihood strategies of descendants of transmigrants in Jambi Province can be classified into three strategies, namely agricultural livelihood engineering, dual income patterns, and migration.

Based on Table 8, despite being in rural areas, only less than one third (31.00 percent) of the descendants have adopted agricultural livelihood engineering. The other half (39.33) of them applied a dual income pattern (either by combining

agricultural and non-agricultural sources of income, or by combining source of income from their own agricultural land with additional work in agricultural sector but not from their own land). In addition, there are 29.67 percent who adopted migration as their livelihood strategy.

Table 8. Distribution of Descendants of Transmigrants Based on The Livelihood Strategies in Jambi Province, 2019

Livelihood Strategies	Frequency	%
Agricultural livelihood engineering	93	31.00
Dual income patterns	118	39.33
Migration	89	29.67
Total	300	100.00

Source: Field surveys, 2019

In terms of agricultural livelihood engineering, it can be stated that various strategies are carried out. Based on Table 9, increasing the productivity of the land is a strategy the most adopted. Various efforts to increase the productivity include combining fertilizers, using best quality seeds, using pesticides/drugs, and intercropping.

Table 9. Distribution of Descendants of Transmigrants Based on Agricultural Livelihood Engineering in Jambi Province, 2019

Strategy	Proportion (%), N = 93		
	Yes	No	Total
Increasing the productivity of the land	64.52	35.48	100.00
Owning another agricultural land besides their main land	8.60	91.40	100.00
Mobilizing wife to work in farm	26.88	73.12	100.00
Mobilizing children/other household members to work in farm	22.58	77.42	100.00
Always/often attending agricultural trainings	22.58	77.42	100.00
Borrowing money from bank to farm business	20.43	79.57	100.00
Replacing equipment regularly/adding modern technology	46.24	53.76	100.00
Involving wage labors in agricultural activity	29.03	70.97	100.00

Source: Field surveys, 2019

The second strategy most adopted by descendants of transmigrants is hiring workers in agricultural activities, followed by involving wife, children, or other household members to work on the farm, attending agricultural trainings, and borrowing money from banks to increase the productivity of land. Strategy that is least carried out is having another agricultural land beside their main land.

Relating to the dual income patterns, there are various patterns of strategies done by the descendants of transmigrants. In terms of job sides of head of the household, 22.03 percent of them have side jobs in agriculture sector and not in their own land, and 43.22 percent of them have side jobs in non-agriculture sector. In terms of the involvement of household members, 10.17 percent of households have their members working in agriculture sector but not in their own land, and 51.69 percent of the households have their members working in non-agriculture sector (Table 10).

Table 10. Distribution of Descendants of Transmigrants Based on Dual Income Patterns in Jambi Province, 2019

Strategies	Proportion (%), N = 118		
	Yes	No	Total
Head of the household has side job in agriculture sector, not in their own land	22.03	77.97	100.00
Head of the household has side job in non-agriculture sector	43.22	56.78	100.00
Household members work in agriculture sector, not in their own land	10.17	89.83	100.00
Household members work in non-agriculture sector	51.69	48.31	100.00

Source: Field surveys, 2019

Regarding migration, 74.16 percent of households have the head of household/household members working outside their village but still in the same district. 48.31 percent of households have head of household/household members working outside their village but still in the same province. Moreover, there are 41.57 percent of households have head of the household/household members working outside Jambi Province (Table 11)

Table 11. Distribution of Descendants of Transmigrants Based on Migration Strategy in Jambi Province, 2019

Strategy	Proportion (%), N = 89		
	Yes	No	Total
Head or members of household working outside their village, but still in the same district	74.16	25.84	100.00
Head or members of household working outside their district, but still in the same province	48.31	51.69	100.00
Head or members of household working outside the province	41.57	58.43	100.00

Source: Field surveys, 2019

3.4 Influence of Socioeconomic Characteristics and Social Capital on Livelihood Strategies

3.4.1 Model Fit Test: Before conducting further analysis, a model fit test is carried out. Hypotheses are:

Ho: model fits

H1: model doesn't fit

The results of the Pearson goodness-of-fit test showed a significance value 0.104 > α = 10%, in other words Ho was accepted (Table 12). Thus it can be stated that the model fits.

Table 12. Model Fit Test

	Chi-Square	df	Sig.
Pearson	242.551	216	.104
Deviance	258.919	216	.024

3.4.2 Simultaneous Testing: Simultaneous test of multinomial logit models uses likelihood ratio tests with a hypothesis. The results are given in Table 13.

Table 13. Model Fitting Information

Model	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	462.692			
Final	367.492	95.201	22	.000

Based on Table 13, it can be seen that the final model is significant, which shows that models with independent variables are better than models without independent variables (intercept only). In other words, the variables in the model (socioeconomic and social capital) simultaneously and significantly influence the dependent variables (livelihood strategies).

Furthermore, based on the classification table (Table 14), it can be stated that in overall, the accuracy of the model predicting livelihood strategy is 61.00 percent. The highest accuracy of the model is to predict dual income patterns (77.97 percent), followed by agricultural livelihood engineering (53.76 percent) and migration (46.07 percent).

Table 14. Classification Table

Observed	Predicted			
	Agricultural Engineering	Dual Income	Migration	Percent Correct
Agricultural Engineering	50	27	16	53.76%
Dual Income	15	92	11	77.97%
Migration	20	28	41	46.07%
Overall Percentage	28.33%	49.00%	22.67%	61.00%

3.4.3 Partial Test: Results of partial test using likelihood ratio tests are given in Table 15.

Table 15. Likelihood Ratio Tests

Effect	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	367.492	.000	0	.
Education (X1)	387.685	20.193	6	.003
Age (X2)	387.343	19.851	4	.001
Household Members (X3)	380.959	13.467	4	.009
Working Household Members (X4)	404.675	37.184	6	.000
Social Capital (X5)	384.910	17.418	2	.000

Based on Table 15, it can be seen that all independent variables in the model partially have a significant influence on livelihood strategies. The estimation of parameters and odds ratio values is given in Table 16.

Table 16. Estimation of Parameters

Livelihood Strategy[a]	B	Std. Error	Wald	df	Sig.	Exp(B)
Dual income						
Intercept	2.629	.989	7.061	1	.008	
X1 [Education]						

[Elementary]	-1.417	.845	2.814	1	.093	.242
[Junior HS]	-2.781	.854	10.615	1	.001	.062
[Senior HS]	-1.586	.821	3.734	1	.053	.205
[University]	0[b]	.	.	0	.	.
X2 [Age]						
[=< 34]	-.491	.497	.979	1	.323	.612
[35 – 44]	1.319	.380	12.086	1	.001	3.741
[>=45]	0[b]	.	.	0	.	.
X3 [Household members]						
[=<2]	.165	.650	.064	1	.800	1.179
[3 – 4]	-.561	.583	.925	1	.336	.571
[>=5]	0[b]	.	.	0	.	.
X4 [Working household members]						
[=<20]	-2.376	.787	9.107	1	.003	.093
[20.99 – 40.99]	-.359	.449	.639	1	.424	.699
[40.99 -59.99]	.472	.591	.637	1	.425	1.603
[>60.00]	0[b]	.	.	0	.	.
X5 [Social capital]						
[Moderate]	-.826	.324	6.522	1	.011	.438
[High]	0[b]	.	.	0	.	.
Migration						
Intercept	2.462	1.008	5.962	1	.015	
X1 [Education]						
[Elementary]	-1.349	.884	2.328	1	.127	.260
[Junior HS]	-1.816	.872	4.341	1	.037	.163
[Senior HS]	-1.350	.855	2.493	1	.114	.259
[University]	0[b]	.	.	0	.	.
X2 [Age]						
[=< 34]	-.022	.499	.002	1	.964	.978
[35 – 44]	.987	.402	6.024	1	.014	2.684
[>=45]	0[b]	.	.	0	.	.
X3 [Household members]						
[=<2]	-1.025	.648	2.502	1	.114	.359
[3 – 4]	-1.750	.592	8.750	1	.003	.174
[>=5]	0[b]	.	.	0	.	.
X4 [Working household members]						
[=<20]	-2.905	.785	13.699	1	.000	.055
[20.99 – 40.99]	-.748	.474	2.488	1	.115	.474
[40.99 -59.99]	1.122	.590	3.615	1	.057	3.071
[>60.00]	0[b]	.	.	0	.	.
X5 [Social capital]						
[Moderate]	.424	.336	1.599	1	.206	1.529
[High]	0[b]	.	.	0	.	.

3.4.4 Choice between dual income patterns and agricultural livelihood engineering

• Education

Education as variable is the formal education of descendants of transmigrants who are the head of family. The base category for education is University.

Overall, X1 Elementary School, X2 Junior High School, and X3 Senior High School have a significant effect with an odds ratio of less than 1 (0.242, 0.062, 0.205, respectively). This shows that households whose head graduated from university tend to prefer dual income patterns (rather than agricultural livelihood engineering) compared to households whose head is poorly educated.

Findings of this study are in line with several other studies [24], [25], that explained higher level of education (both of head and members of household) will intensify non-agricultural activities of farmers.

- Age

Age as the variable is the age groups of descendants of transmigrants who are the head of family. The base category for age group is age >= 45 years old.

X2_=<34 has no significant effect, while X2_35-44 is significant with an odds ratio greater than 1 (3.741). This means that the tendency to choose dual income patterns (rather than agricultural livelihood engineering) is higher in households with middle-aged household heads than in those with young and old household heads.

Age 35-44 is the most productive age for working. Therefore, many household heads at these ages choose dual income patterns strategy. This result is in line with previous with previous studies [26], [27], [14], [28], but contradicts with Lemi [29].

- Number of Household Members

Overall, there is no influence of the number of household members on the tendency to choose dual income patterns over agricultural livelihood engineering. It can be seen from the insignificance of the number of household members both for X3 =< 2 and X3 =3-4. This finding contradicts some of the results of other studies [30], [12], which showed that the greater the size of the household, the greater the opportunity for them to do off-farm or non-farm works.

- Proportion of Working Household Members

Proportion of working household members as the variable uses proportion of working members > 60 percent as the base category. X4=<20 has a significant effect with an odds ratio of less than one (0.093), while X4_"20.99 – 40.99" is not significant. This means that households with a small proportion of working household members tend to choose agricultural livelihood engineering strategy rather than dual income patterns..

Similar to other studies [31], [32], [33], [34] our study also indicated that the rural households with a high percentage of manpower (or working age members) assets favor the adoption of mixed livelihood strategy.

- Social capital

Social capital as the variable uses high level of social capital as the base category. X5_moderate has a significant effect with an odds ratio of 0.438 This means that households with moderate social capital tend to choose agricultural livelihood engineering rather than dual income patterns. This finding is in line with several other studies' results [24], [30], [35], [36] which showed that low social capital tends to cause difficulties for farmers to be involved in off-farm works.

3.4.5 Choice between migration and agricultural livelihood engineering

- Education

There is no clear pattern and link between education level and the choice between migration and agricultural livelihood engineering. This is evident from the result that only X1_Junior High School has a significant influence with an odds ratio of less than 1 (0.037), while X1_Elementary School and X1_Senior High School are not significant. This study is almost in line with several other studies [34] that

showed almost no pattern/insignificant influence of the education level of household heads on livelihood strategies.

- Age

The tendency to choose migration (over agricultural livelihood engineering) in households with middle-aged household heads is lower compared to the tendency of those with young and old household heads. This can be seen from the significance of X2 ="35-44" (with an odds ratio less than one). Conversely, X2 <= 34 does not show a significant influence.

- Number of Household Members

The tendency to choose migration (over agricultural livelihood engineering) is lower in medium-size households (number of household members of 3-4 people) compared to the tendency of small-size households (< 3 people) or household with members >= 5 people. This can be seen from the significance of X3 = "3-4" (with an odds ratio less than one). Conversely, X3 < 3 and X3 >= 5 do not show a significant effect.

- Proportion of Working Household Members

There is no clear pattern in the relationship between the proportions of working household members and the choice of livelihood strategies, between migration and agricultural livelihood engineering. X4 "=<20" has a significant effect with an odds ratio less than one (0.055). This means that households with a proportion of working household members =< 20 percent tend to choose agricultural livelihood engineering rather than migration (compared to the tendency of households with a proportion of working members > 60 percent). However, this pattern do not differ (is not significant) between households with a proportion of working members of 20.01 percent – 40.00 percent and of 60 percent.

Furthermore, households with a proportion of working members of 40.01 percent – 60.00 percent have a higher chance of selecting migration (rather than agricultural livelihood engineering) than households with a proportion of working members of > 60 percent. This can be seen from the significance of X4 (40.01 – 60.00) with an odds ratio greater than one (3.071).

- Social capital

Social capital does not have a significant influence on household choices between migration and agricultural livelihood engineering. Indifference of social capital, particularly with regard to the choice between migration and agricultural livelihood engineering, is in line with several other studies [31], [34].

4. Conclusion and Recommendation

4.1 Conclusion

The descendants of transmigrants in Jambi Province are characterized by an average age of 43 years old, with low level of education, and dominantly working in the agricultural sector. The average number of members in the household of the descendants in Jambi Province is 4.0 persons. Based on their main activity, around 41.28 percent of them are working.

Most adopted livelihood strategy by the descendants of transmigrants is dual income patterns (39.33 percent), followed by agricultural livelihood engineering (31.00 percent) and migration (29.67 percent). Factors that significantly influence the choice of livelihood strategy by descendants of transmigrants are education level

of household head, age of household head, number of household members, proportion of working household members, and social capital.

4.2 Recommendations

Dual income pattern is the main strategy carried out by the descendants of transmigrants for meeting their needs. For this dual income pattern, the availability of jobs outside agriculture sector is important. Therefore, in order to improve the welfare of the descendants, policies and programs need to be improved to foster non-agricultural business activities in ex-transmigration villages.

Furthermore, it is necessary to have further studies to examine the aspects of the livelihood strategies in relation to income and welfare of the people in ex-transmigration villages

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